COLIS 2025

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FULL AND SHORT PAPERS

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CoLIS 2025

Preface

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CoLIS is a series of international conferences aiming to provide a broad forum for the exploration and exchange of ideas in the field of Library and Information Science, Information Studies, and related disciplines. Since its inception in Tampere, Finland in 1991 this periodic event keeps being a testimony to the scholarly rigour, creativity, innovation, and resilience of the Library and Information Science community.

The 12th CoLIS conference has come back to Glasgow on the 2nd- 5th of June 2025, hosted at the Technology Innovation Centre, University of Strathclyde. CoLIS visited Glasgow for its 6th edition in 2005 and was hosted then as well by the University of Strathclyde.

The CoLIS 2025 program successfully reflects both core topics in Library and Information Science such as Information Behaviour and Library Studies, and emerging areas of strong research focus such as Artificial Intelligence, Censorship, Diversity and Democracy, and Critical Librarianship.

The conference attracted a record total of 143 submissions to the Papers track comprising 95 Full Research Papers and 48 Short Papers. In a double-blind review process involving 101internationally recognised experts, 51 submissions were accepted, comprising 36 Full Research Papers and 15 Short Papers with acceptance rates of 38% for Full Research Papers and 31% for Short Papers. Additional submissions were reviewed and selected for Panels and Alternative Events, Posters and for a Doctoral Workshop. The Full and Short Research papers are published as Paper Proceedings in this special issue of Information Research ((Volume 30, CoLIS 2025, https://doi.org/10.47989/ir30CoLIS). Panels, Alternative Events, and Poster submissions are archived as Adjunct Proceedings in the University of Strathclyde's open research repository Strathprints (https://doi.org/10.17868/strath.00092915).

Keynote presentations were delivered by Dr Jenna Hartel (University of Toronto), Dr Adele Patrick (Glasgow Women's Library), and Dr Toma Tasovac (DARIAH and Belgrade Centre for Digital Humanities).

The CoLIS community presented work on the following themes at COLIS2025, reflecting the diversity of the library and information research areas: *Public Libraries*; *Archives and Records*; *Artificial Intelligence*; *Information Behaviour and Practices*; *Health*; *Diversity, Equity, and Inclusion*; *Library and Information Science Theory*; *Censorship, Diversity and Democracy*; *Information Literacy*; *LIS education and Crises*; and *Knowledge Organisation and Methodology*. In the paper and adjunct proceedings we invite readers to immerse themselves in the evolving scholarly discourse around Library and Information Science, and its contribution to better understanding the interplay between continuities and changes driven by socio-cultural, political, economic, legal, ethical, environmental, and technological factors.

We are deeply grateful to the reviewers who contributed their expertise to the reviewing process, and to the track chairs for their dedication and expert knowledge in managing this process: Conference chairs Ian Ruthven, Perla Innocenti, Emma Nicol of the University of Strathclyde, Scotland, UK; Full Research Papers and Short Papers chairs Perla Innocenti and Emma Nicol of the University of Strathclyde, Glasgow, Scotland, UK and Nils Pharo of Oslo Metropolitan University, Oslo, Norway; Panels, Alternative Events and Posters chairs Rebecca Noone of the University of Glasgow, Scotland, UK and Fidelia Ibekwe of Aix-Marseille University, France; Doctoral Workshop chairs Milena Dobreva of the University of Strathclyde, Glasgow, Scotland, UK and Noora Hirvonen of the University of Oulu, Finland. We are also very thankful to our team of University of

Strathclyde ILS MSc student volunteers and to PGR students Charlotte Jackson and Kieran Robson for their dedicated assistance throughout.

The CoLIS 2025 conference successfully reflected a global, continually changing library and information landscape, and the enduring values of the profession - including intellectual freedom, responsiveness to all members of the library and information community, and a commitment to equity, diversity, and access. May these values keep guiding us through our journeys.

June 2025

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Navigating exceptionalism: the role of public libraries in times of crisis and war rhetoric

Hanna Carlsson and Lisa Engström
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Abstract

Introduction. This article presents the first results from the *LibPrepare* research project, which explores how the democratic mission of public libraries is understood, imagined and potentially compromised in times of crisis and war rhetoric. The aim is to gain knowledge of the mechanisms, motives and potential implications of enrolling libraries in Swedish national security policy.

Method. A thematic text analysis is conducted of three sets of policy texts from national government, national library and professional development sources, reviewing libraries' roles and obligations in times of crisis and war rhetoric.

Analysis. The concepts of new public governance, governmentality and exceptionalism are used to explore how public library actors articulate their role in the emerging politics of emergency preparedness.

Results. The library sector in Sweden is not identified as a prominent or leading actor in crisis preparedness by the Swedish civil contingencies agency. However, key library actors argue that libraries should be included in and take responsibility for societal crises and war preparedness.

Conclusion. The analysis shows how key library actors argue that libraries could, and presumably therefore should, take responsibility for preparing the Swedish population for crises and war. Thereby, they argue for libraries to self-govern and actively be part of the civil defence in a perceived state of exceptionalism. Such acts of responsibilisation may strengthen the legitimacy of libraries in relation to government and governing agencies. However, if libraries become megaphones for public information and promoters of information control, these acts may prove to work in the opposite direction with regard to library users.

Introduction

In this paper we present the first results from the *LibPrepare* research project, which explores how the democratic mission of public libraries is understood, imagined and potentially compromised in times of crisis and war rhetoric. Recent events, such as the Covid-19 pandemic, Russia's full-scale invasion of Ukraine and a growing awareness of the consequences of climate change has brought on a state of emergency in the Swedish crisis management system. Questions regarding crisis preparedness are being brought to the forefront and extensive measures are being taken to make society and its residents prepared for crisis and war. A notable effort is the reconstruction of civil defence, which involves reconceptualisations and implementations of new ideas and visions regarding the organisation and distribution of roles and responsibilities among different actors and sectors of society. The cultural sector, including public libraries, forms part of these discussions and culture is increasingly presented as a significant factor in bolstering the willingness of the Swedish population to defend their country. Considered to be of equal importance is the promotion of information literacy to enable the population's resistance to malign information activities.

Following these arguments, positioning libraries within the framework of civil defence may appear to be a straightforward and pragmatic solution. As publicly funded institutions with a significant presence in local communities, public libraries can play a pivotal role for community building and information provision during times of crisis. However, enrolling libraries in national security policy also invokes questions regarding the potential implications for the societal role of libraries. The envisioning of new obligations in the crisis and war rhetoric tends to renegotiate the balance of responsibilities between the state, the individual and civil society. Furthermore, tensions are conveyed in these new political currents, infused by preparedness for war, that may present a challenge to libraries' democratic mission.

In this paper, we address such renegotiations and tensions by critically exploring how the role of public libraries in preparedness is framed by different actors in Swedish crisis and war rhetoric. To further our understanding of the rationales behind the arguments made, we situate the Swedish politics of crisis and war preparedness in the prevailing paradigm of public administration and governance commonly referred to as new public governance (Osborne, 2006; Kann-Rasmussen, 2024). We also deploy theoretical concepts from governmentality studies to further the analysis of the logics of governing at play. By elucidating different understandings and expressions of public libraries' responsibilities in civil defence, the aim is to gain knowledge of the mechanisms, motives and potential implications of enrolling libraries in national security policy.

The paper seeks to answer the following research questions:

- How is the societal challenge of crisis and war preparedness framed, and how does the library sector in Sweden engage with this framing?
- How can the library sector's involvement in civil preparedness be understood against the backdrop of contemporary logics of public governance, and what are the potential implications of this involvement?

We will now outline previous research to situate this study in a broader scientific context of investigations into different aspects of preparedness. Thereafter we present the theoretical framework, including the concepts of new public governance, responsibilisation and exceptionalism, and our methodology. The analysis that follows consists of two themes: '(Re)framing the wicked problem' and 'Assuming responsibility for crisis preparedness'. Lastly, in the concluding section, we summarise our results.

Previous research

The explicit crisis and war rhetoric, as well as the following attempts to enrol public libraries in national security policy and crisis preparedness, is a novel phenomenon in the post-cold war era, at least in the context of many western countries like Sweden. From this follows the fact that the issue has gained only limited scholarly attention. There is a growing body of research addressing the role of *culture* in preparedness, primarily focusing on the protection of cultural heritage (e.g. Duh et al., 2022; McWilliams and Olsson, 2024). There is also research that critically investigates the current state and perception of crisis and war preparedness (see e.g. Wither, 2020), as well as historical experiences of this situation (Cronqvist et al., 2022; Rossbach, 2017). A vast number of studies in library and information science explore different facets of recent crises, such as, for example, the deepening climate crisis, natural disasters, the Covid-19 pandemic and the spreading of false information enhanced with AI (see e.g. Brobst et al., 2011; Doudaki and Carpentier, 2023; Intahchomphoo and Vellino, 2024; Haider and Sundin, 2022; Silvast et al., 2021; Sparf et al., 2022; Hicks and Lloyd, 2024). Often, these studies address a particular crisis and its implications, and they do not discuss the role of libraries in the context of war. However, reoccurring crises, including a presumed potentiality of war, co-construct a certain state of preparedness. The present study seeks to explore the issues and dilemmas that arise in this situation.

Additionally, the study builds upon existing research that explores public libraries as promoters of democracy, community engagement, civil society and informed citizenry. Previous research has sought to define the democratic mission of public libraries (e.g. Buschman, 2023; Audunson et al., 2020) and explore how this mission may be challenged by societal and political change (e.g. Kann-Christensen and Andersen, 2009; Olsson Dahlquist, 2019; Carlsson et al., 2022; Engström, 2022; Carlsson et al., 2023). The social role of public libraries in the local community (Hansson, 2019; Klinenberg, 2018), and its potential to form a public sphere promoting civic engagement, has been noted in research (Koizumi and Larsen, 2023; Appleton and Hall, 2023). In this paper, we also explore how this role and the responsibilities of public libraries may be subject to negotiations and change in the wake of increased crisis preparedness and the rebuilding of civil defence structures.

Of particular interest for this study is the rich body of research that has examined the instrumentality, contemporary roles and legitimacy of the public library institution (e.g. Kann-Rasmussen, 2024; Larsen et al., 2023; Hvenegaard Rasmussen et al., 2022). How the legitimacy of public institutions is framed, and how these institutions seek justification for their work and position in society, is connected to different understandings of public value and how such value is produced. Hence, research in library and information science (e.g. Buschman, 2003; Andersen and Kann-Rasmussen, 2009; Kann-Rasmussen, 2024) has investigated the consequences of different forms of governance for library practice and legitimacy work. This research forms part of the analytical toolkit of this study, presented in the next section.

Theoretical framework

As mentioned in the introduction, we seek to understand the logics and mechanism of the current trends in Swedish crisis and defence policies against the backdrop of emerging paradigms in public administration and governance, referred to as new public governance (NPG). NPG is an umbrella term for capturing the '*interactive, interorganizational, and indirect forms of governing*' (Torfing and Triantafillou, 2013, p. 10), that many western countries are currently moving towards. Proponents of NPG underscore the importance of collaboration and innovation, arguing that societal challenges can only be effectively addressed through the engagement of multiple actors, including the private sector, civil society and, importantly, citizens (Kann-Rasmussen, 2024). Although NPG is foremost a descriptive rather than an analytical concept, it serves to explain and provide relevant context for making sense of the rationales and directions in public policy analysed

in this paper. As argued by Kann-Rasmussen (2024), NPG stresses the demands of public institutions to contribute to solving societal problems and to '*do good*', tasks that are difficult to question and easily incorporated and taken on. Hence, NPG effectively masks the instrumentality of policy decisions and reinforces a notion of governance as involving regulation or self-regulation (Torfing and Triantafillou, 2013). Consequently, public institutions, such as libraries, to a larger extent take on responsibility for solving societal problems, often so-called *wicked problems*, without specific policy directions or decisions, as a form of '*instrumentality from below*' (Kann-Rasmussen, 2024, p. 592).

Wicked problems usually refer to complex, non-linear problems that are challenging to resolve because of their cross-sectoral nature, their tendency to transcend professional boundaries and their resistance to clear, unambiguous definition (Rittel and Webber, 1973; Kann-Rasmussen, 2024). The term is somewhat ambiguous, and researchers use it both analytically and rhetorically (Lönngren and van Poeck, 2021). In this paper it is used as a sensitising concept, to explore and elucidate how the problem that libraries are expected to address is conceptualised.

To analytically address the issue of governance without governing, we use the concept of *responsibilisation* from governmentality studies (e.g. Dean, 2010; Rose, 1999). *Responsibilisation* refers to the process by which responsibilities shift from the state to individuals or communities (Larsson, 2021; Rose, 1999). We utilise this concept to discuss the broader distribution of responsibilities from the state to other actors, as assumed by the politics of preparedness. Additionally, we explore the role that libraries are assigned and take on in promoting these politics. Furthermore, we incorporate the concept of *exceptionalism*, which refers to the perception of the current situation as extraordinary, thereby justifying extraordinary measures (Rådestad and Larsson, 2018). *Exceptionalism* is used to contextualise the discourse on new roles and responsibilities assigned to and adopted by libraries within a specific political framework.

Methodology

In their examination of the current state of exceptionalism in the Swedish crisis management system, Rådestad and Larsson (2018, p. 5) argue that the end of the Cold War, along with the September 11 attacks in the United States, has led to a security perspective focused on safeguarding critical societal functions. The texts selected for analysis in this study can be seen as manifestations of this turn in domestic security policy. They share a common objective: to delineate or respond to ideas about which functions should be considered essential to society during times of crisis. Consequently, they illustrate how roles and obligations in times of crisis and war rhetoric are envisioned by principal actors in this study. Below, we describe these three selected sets of texts and how we conducted the analysis.

The first text, *The list of important societal functions*, is compiled and published by the Swedish civil contingencies agency (MSB). This list plays a crucial role in governing public institutions, such as public libraries, during emergencies. A notable example of its significance is the role it played during the Covid-19 pandemic. The list published in 2021 identifies functions deemed essential for society, shaping both the roles these functions assumed and the expectations placed upon them. As a result, guardians employed in roles classified as essential were guaranteed access to childcare services, even when such services were unavailable to the general public. During this period, the debate over whether libraries should be included as an essential societal function gained increased attention (Gemmel, 2021). The list of important functions was updated in 2023, is broad in scope and covers fourteen areas with fifty-nine identified societal functions. Each function is briefly described in the list, with examples of actors considered important for the function (MSB, 2023).

The second text analysed is the *Consultation response* from the national library of Sweden (KB) to the mentioned list of important societal functions. The consultation response replies to the updated list of 2023 and comments on five of the areas, relating to six of the identified functions.

The third set of texts is retrieved from Digiteket, which is an online platform for professional development and learning, aimed at library staff in Sweden. It is operated by an editorial team at the Malmö city library on behalf of the national library in Sweden and the Swedish arts council. The material on Digiteket is published as courses, articles and other forms of resources such as videos. The material is sorted under different themes. Our analysis focus on the theme *Preparedness* (Grenholm and Nersesyan, 2024a; 2024b: 2024c), consisting of a longer article and two online tutorials; the first entitled *Preparedness and total defence from a library perspective*, and the second entitled *Free formation of opinion – the goal for society and a mission for libraries*. All materials were published in 2023, revised in 2024 and compiled on behalf of the national library of Sweden. The article reports on an interview study with local library managers and security strategists (Grenholm and Nersesyan, 2024a). The first tutorial consists of three parts: 1) A brief introduction to the formulations in the national library strategy related to total defence. 2) The recent development of total defence in Sweden, including the list of important societal functions. 3) How to learn more about total defence (Grenholm and Nersesyan, 2024b). The second tutorial consists of an introduction and four parts: 1) Free formation of opinion in legal frameworks and policies. 2) Free formation of opinion and manipulation of information. 3) Free formation of opinion as a value to protect. 4) Free formation of opinion in practical activities (Grenholm and Nersesyan, 2024c).

Thematic analysis was employed to analyse the material. This process began with a systematic, individual reading of each text, during which key concepts and terms were identified. These elements were then analysed to discern significant patterns. To evaluate whether a concept or word was part of constructing such a pattern or theme, its relation to the research questions as well as its prevalence in a specific text or across the entire material was considered (Braun and Clarke, 2006, p. 82). Thereafter, we collaboratively reviewed the themes, defined and named them. When writing the analysis, we repeatedly went back and forward, redefined and renamed the themes until satisfied (cf. Braun and Clarke, 2006, pp. 86-87). Below, we present the results of this iterative process.

Analysis

Through analysing the material, we constructed two key themes that structure the presentation. The first theme focuses on how the societal challenge of crisis preparedness is framed in the analysed material. The second theme delves into how the library sector in Sweden is engaging with that challenge.

(Re)framing the wicked problem

Crisis management is broad in scope and involves, for example, natural disasters, accidents, health related issues, technological risks, conflicts and war. Today, in Sweden as well as in other western countries, crisis preparedness is put forth as a non-linear problem of such complexity that it fits with the notion of a wicked problem. However, how this problem is understood and expressed has changed over time, and different sorts of crises have reoccurred throughout history (Kuipers and Welsh, 2017). In Swedish policies, crisis preparedness is closely related to security. After the Cold War, the conception of security changed and expanded to include '*the entire spectrum of threats and disturbances that modern societies face*' (Larsson, 2021, p. 306). This broad conception of security is evident in the *List of important societal functions* published by the Swedish civil contingencies agency.

In this list, an important societal function is defined as an activity, service or infrastructure which maintains or ensures societal functions necessary for society's basic needs, values or security (MSB, 2023, p. 8). The crises described are mainly related to catastrophic conditions where society must be prepared for maintaining emergency medical care, preventing the spread of infectious diseases and safeguarding human life and health. Libraries are only mentioned in relation to *Cultural heritage*, an important societal function described under the section *Democracy and preparedness* (MSB, 2023, p. 19). Here, it is stated that an important societal function for libraries is to collect, protect and preserve material, immaterial and digital cultural heritage and documentation of cultural heritage as well as maintaining activities. Preparedness is thereby related to the material the libraries hold and how it should be managed in case of emergency. Thus, even though other government policies ascribe libraries a role to, for example, make information accessible (see e.g. Sweden. Regeringskansliet, 2022), this is not acknowledged in the list.

However, turning to the material on preparedness published on the platform Digiteket, the more comprehensive understanding of crisis is replaced by a narrower focus on preparing for the potentiality of war. This corresponds with the most recent development in Sweden in which the government suggests that the Swedish civil contingencies agency changes its name to the Swedish agency of civil defence (Sweden. Ministry of Defence, 2024). Additionally, the leaflet *If crises or war comes*, which is distributed to all households in Sweden, was recently updated and the cover changed. In the version from 2017, three illustrations appear on the cover. They respectively portray a family preparing an emergency kit, persons managing flooding and a war-like situation (MSB, 2022 [2017]). In the version from 2024 there is only one illustration covering the front page. It is dominated by a soldier holding a gun (MSB, 2024). The more explicit war-infused policy rhetoric underlines the current state of exceptionalism in Swedish security policy and signals that the wicked problem of preparedness and security has been reframed. These ongoing changes are evident in the texts published by Digiteket, where the problem that libraries are implicitly tasked with addressing is more narrowly framed as preparing for the threat of war.

As mentioned earlier, Digiteket is a national platform for competence development among library staff. The aim of the article on Digiteket under the theme *Preparedness* is to give an updated view on how public libraries in Sweden work with preparedness (Grenholm and Nersesyan, 2024a). The article therefore analyses local library policy and interviews library managers. According to the article, preparedness is foremost connected to the library's role during the arrival of refugees in 2015 and the Covid-19 pandemic. The concepts of total defence and civil defence are only prevalent in quotations of *The Swedish national library strategy*. However, according to the material on Digiteket, more recent local library policy cites Russia's war on Ukraine as a rationale for emphasising the importance of preparedness within libraries (Grenholm and Nersesyan, 2024a). This points to a policy breakthrough regarding how the wicked problem of crisis preparedness is defined and acted upon. At the same time, the materials published on Digiteket illustrate the decentralised and multifaceted nature of how crisis preparedness and questions regarding libraries' role in total defence are understood and enacted within the Swedish library sector.

Both tutorials on Digiteket on preparedness highlight the crucial lessons learned from the Covid-19 pandemic, underscoring the importance of societal crisis preparedness. They place particular emphasis on the pivotal role of libraries within the broader context of total defence and war preparedness. It is notable that the tutorials link to educational material produced by *the Swedish civil contingencies agency*, *the Swedish defence research agency* and *the Psychological defence agency* to learn more about preparedness and disinformation (Grenholm and Nersesyan, 2024b; 2024c). The practice of linking to these agencies can be understood as promoting collaboration and knowledge sharing between different stakeholders, in line with NPG (Kann-Rasmussen, 2024). Through these networking practices, libraries are inscribed in a context of securitisation and defence policy manifesting a perceived state of exceptionalism, rather than other potential

political contexts. Thus, both tutorials argue for libraries to be active in preparedness and in total defence in a context where military agencies are informing the agenda.

Even though both tutorials address libraries' role in preparing for war or war-like conditions, the tutorial on free formation of opinion has a slightly different approach, since its point of departure is libraries as agents for freedom of opinion. For example, the tutorial problematises the claims that democracy and democratic rights can be '*threatened from within*' (Grenholm and Nersesyan, 2024c). This is connected to the interview study with library managers presented on Digiteket, in which some interviewees expressed concerns about how the mission of disseminating societal information and 'correct information' may clash with promoting free formation of opinions. The library managers highlighted that this is particularly challenging in critical situations (Grenholm and Nersesyan, 2024a). Their statements further illuminate the tensions and different understandings within the library sector of how libraries should respond to the wicked problem of civil crisis preparedness.

Assuming responsibility for crisis preparedness

As illustrated in the preceding analysis, civil preparedness in response to the threat of war is conceptualised as a wicked problem. Consequently, the rationale for public institutions within the context of NPG is to identify methods through which they can contribute to addressing this issue. The consultation response formulated by the national library of Sweden (KB) explicitly argues for the role libraries can play in such efforts: '*Libraries are a national infrastructure for access to information, culture, and cultural heritage in normal circumstances and they have a great potential to stand strong even in times of crises and increased preparedness*' (KB, 2023). In relation to the defined areas and functions in the list, KB argues for the following completions (KB, 2023): 1) The aspect of digital inclusion should be accounted for in relation to the area of *electronic communication and mail*, and libraries are an example of institutions disseminating digital tools and competencies. 2) Regarding the area of *democracy*, access to journalism should be mentioned and libraries included as institutions that uphold this function. 3) Relating to *fundamental preparedness*, society must plan for physical and staffed citizen service and libraries can be such places. 4) Also, libraries are contributing to psychological defence as providers of media and information literacy, and this function of libraries should be strengthened and supported. 5) In relation to the area *cultural heritage*, the collection of contemporary heritage must continue. 6) Lastly, infrastructures for research should be included as important societal functions in the area of *research*.

KB has not been appointed to make a consultation response to the *List of important societal functions* and is currently not a preparedness authority. This does not necessarily mean that libraries are not expected to be part of upholding essential societal functions in case of emergency. As Rose (1999, p. 234) argues, nowadays control is dispersed and immanent in the conduct of individuals and organisations. Furthermore, in the paradigm of NPG, cultural institutions such as libraries are expected to find solutions to societal problems and '*to do good*' (Kann-Rasmussen, 2024). In this way, the list does not need to explicitly ascribe responsibility to libraries. By defining essential areas '*necessary for the basic needs of society*' (MSB, 2023, p. 4) during times of crisis and war, an aspiration to be responsible for these societal functions is created which governs the conduct of actors (cf. Rose, 1999, p. 4). The decision of KB to write a consultation response and to argue for libraries' essential role in relation to several societal functions can therefore be seen as the library institution claiming responsibility for preparedness, and thereby as a manifestation of how governing during times of crisis is built on institutions' innovative ways of tackling crisis management and wicked problems (Kann-Rasmussen, 2024; Rådestad and Larsson, 2018).

In their consultation response, KB states that it wants to take the opportunity to highlight the role and function of public libraries in times of crisis or emergency. KB argues that public libraries

constitute a national infrastructure for access to information, culture and cultural heritage in peacetime conditions and has great potential '*to stand strong in times of crisis and increased preparedness*' (KB, 2023, p. 2). The latter was shown during the pandemic and recognised by the government (Sweden. Regeringskansliet, 2022). KB's response is thus rooted both in its formal assignment and in experiences from the Covid-19 pandemic. Based on that, KB suggests that aspects of library activities are added to the list of important societal functions for supporting the work of civic preparedness beyond protecting the cultural heritage. By these suggestions, KB's consultation response argues for the library to be an actor in promoting increased preparedness, not least in times of crisis such as war and pandemic conditions. Hence, through KB, the library sector itself advocates for the vital part libraries can play in times of crisis or emergency, suggesting the form of '*instrumentality from below*' that Kann-Rasmussen (2024, p. 592) associates with NPG.

To bolster the argument, KB's response refers to governmental policies and official reports from the Swedish government that explicitly assign responsibility to libraries, particularly in the context of disseminating knowledge and trustworthy information (see e.g. Sweden. Regeringskansliet, 2022). This is also the case for the material on libraries and preparedness disseminated by Digiteket, which refers to the role libraries today are ascribed in relation to crises and war in policy documents. In this manner, the library sector is turning policy governance into self-governance by integrating these regulations into their own advocacy efforts, thereby asserting their responsibility for crisis preparedness.

Such expressions of responsibilisation are also evident on the Digiteket platform, where it is argued that libraries should actively assume responsibility for societal functions defined as essential by governmental agencies, and to take on responsibility for crisis management. Regarding the first aspect, this is communicated as something library staff participating in the course should learn about (Grenholm and Nersesyan 2024b). The role of libraries in societal preparedness is presented as a fact rather than a topic for debate. The course also aligns with the previously analysed list, with one explicit purpose being to gain knowledge of how '*library activities can be linked to MSB's list of important societal functions*' (Grenholm and Nersesyan, 2024b). Thus, the course not only addresses the responsibilities assigned to libraries by government policies but also explores the proactive roles that libraries themselves can assume in preparedness. Consequently, the selected material illustrates how key actors in the Swedish library sector argue that the library institution could, and presumably therefore should, take responsibility for preparing the Swedish population for crises and war. In the next section, we will discuss the potential implications of this position.

Discussion and conclusion

This limited text analysis serves as a first step in a larger endeavour to explore how the democratic mission of public libraries is understood, imagined and potentially compromised in times of crisis and war rhetoric. In this paper we address this broader issue by elucidating different understandings and manifestations of libraries' responsibilities in civil defence. The aim is to gain knowledge of the mechanisms, motives and potential implications of enrolling libraries in national security policy.

As the analysis demonstrates, the library sector in Sweden is not identified as a prominent or leading actor in crisis preparedness by the Swedish civil contingencies agency. The *List of important societal functions* mainly refers to a selected part of the democratic role of libraries as preservers of cultural heritage. This is hardly surprising given that the protection and preservation of cultural heritage until very recently has been the focus of research and policy on the role of culture and cultural institutions in crisis preparedness (Duh et al., 2022; McWilliams and Olsson, 2024). Rather, it is the national library of Sweden, acting on behalf of the Swedish library sector,

that argues for the significant role this sector can play in preparing the population for crises and war. KB's suggested completion of the *List of important societal functions* denotes a broader and more contemporarily situated understanding of the democratic role of libraries as promoters of free formation of opinions and dissemination of knowledge. KB's idea on how this role may be useful to society in times of crisis corresponds with how the democratic role of libraries is usually discussed in library and information science research, stressing libraries' significance for the local community (Hansson, 2019; Klinenberg, 2018), and their potential to form an inclusive meeting place (Carlsson et al., 2023) or a public sphere (Koizumi and Larsen, 2023; Appleton and Hall, 2023). Although concerns are prevalent in the analysed material regarding the alignment of the broader democratic mission with the objectives of national security policy, the overarching agenda is to highlight the library sector's potential contributions to addressing this emerging societal challenge.

KB's advocacy for an expanded role of libraries in civil defence, and its assumption of this responsibility despite not being explicitly designated such a role, aligns with the softer forms of governance currently prevalent in Sweden and many other western countries. Situating KB's reasoning within the administrative paradigm of NPG and the perspective of governmentality shows how the library sector is being drawn into the contemporary narratives of *exceptionalism* and *responsibilisation.* These narratives permeate the Swedish crisis management system (Rådestad and Larsson, 2018), reinforcing notions of decentralisation and the desire to delegate responsibilities, encouraging organisations and institutions to take on societal problems. KB thereby positions the library sector as a tool for the political decentralisation and reorganisation of emergency preparedness described in existing research (Rådestad and Larsson, 2018).

The advocacy for libraries' role in civil defence can also be understood as an expression of justification for libraries' legitimacy in a society where legitimacy stems from the institution's ability to contribute to solving wicked problems (Kann-Rasmussen, 2024). Previous library and information science research has pointed to the beneficial role public libraries can play in crises such as the Covid-19 pandemic (see e.g. Adle et al., 2023; Lenstra et al., 2022). However, as the analysis shows, the framing of crisis preparedness as a wicked problem is currently in a state of change, moving from a broader definition of crises to a primary focus on war and war-related threats. In the material analysed, no broader reflections are made on this change and whether libraries should engage differently when preparedness is referring to preparing for war. However, there are examples of contrasting voices, which, although less prominent in the material, express concerns about libraries' enrolment in national security policy in general. These voices become evident in the concerns expressed by library managers regarding the potential implications for how libraries should fulfil their mission to promote free formation of opinions if enrolled in civil defence. This suggests that there may be divergent interpretations of the specific responsibilities of libraries, as well as tensions between their current social role and their potential involvement in crisis and war preparedness.

These conflicting voices further point to one possible implication of libraries' engagement in crisis preparedness: that such involvement would hamper their promotion of the free formation of opinions. This in turn might affect the library's relation to its users. In the politics of preparedness, the library works as a bridge between governmental agencies and the population, since the library is given, and takes on, the role of disseminating credible information, digital competencies and resilience to citizens. The perceived need for libraries to disseminate information and strengthen individuals' digital competencies, which both Digiteket and KB account for, shows how crisis preparedness delegates responsibility to the individual (Rådestad and Larsson, 2018; Rose, 1999). Libraries are thus presented as institutions that can foster individuals capable of self-reliance and critical thinking, helping them to resist being misled by disinformation (Rådestad and Larsson, 2018). Such acts of responsibilisation may strengthen the legitimacy of libraries in relation to the

government and governing agencies. However, if libraries become megaphones for public information and promoters of information control, these acts may prove to work in the opposite direction with regard to the library users. Such tensions warrant further consideration and exploration, preferably involving an international outlook that goes beyond the Swedish case and allows for comparison between countries.

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Library time: in pursuit of liberatory leisure

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Abstract

Introduction. Our contemporary perception and experience of free time and leisure has been deleteriously degraded by the work-leisure binary. However, the public library's leisure mode affords a distinct experience of time to its public that has the potential to exist outside the binary, and with that potential, the opportunity to imagine larger possibilities as well.

Method. This paper is exploratory, applying a syncretic, interdisciplinary approach to applying theories of work and leisure to critical librarianship.

Analysis. I fill a research gap by analysing the public library as a leisure space, applying the paradigms of Robert Stebbins, Julie Rose and Tricia Hersey among others.

Results. Public libraries are unique leisure spaces with the potential to offer patrons experiences of leisure beyond the dominant leisure-work binary: library time.

Conclusion. While public libraries are ripe with liberatory potential, attention must be paid to extant barriers to access for all members of the public, particularly those experiencing homelessness, who arguably have the greatest need for and least ability to realise leisure.

Introduction

Recreation is the Atlas on the shoulders of which the other roles of the public library rest. (Williamson, 2000, p. 184) Rest makes us more human. It brings us back to our humanness. (Hersey, 2022, p. 27)

The industrial age, which not coincidentally coincides with the public library age, has seen a steady degradation of leisure into a mere component of effective work, the work-leisure binary. Much of this is due to metastasising inequality, the neoliberal hollowing of social services and a normalisation of precarity, but no small part of this de-leisuring can be traced back to a general failure to conceptualise leisure as a meaningful part of human existence unto itself.

This paper seeks to reactivate and harness the leisure role of the public library. Specifically, the paper argues that when examined as a leisure space, the public library affords a distinct experience of free time to its public, one with the potential to exist outside the work-leisure binary, and afford the library's public the opportunity to imagine liberatory possibilities beyond that capitalism-clouded dichotomy. By resurfacing and centring both the library's historical role as a leisure space as well as its unique contemporary leisure qualities, this paper explores the potential of the library operating outside the leisure-work binary in a specific model of liberatory free time: *library time*.

The public library as leisure space is an underexplored facet of both LIS and leisure studies, and this paper offers contributions to both fields. It explores the library's leisure role through multiple paradigms, building on Robert Stebbins's and Jenna Hartel's work using Julie Rose's *Free time*, while interrogating those paradigms with the critiques of E. P. Thompson and Martin Hagglund, and ultimately looking to the liberatory potential of applying Tricia Hersey's vision of rest as resistance to library spaces. Although this paper focuses on the potential of activating library time in public libraries in the United States, its analysis is widely applicable.

This paper is not a step-by-step guide to breaking capitalism's degradation of free time, rather it marks an initial exploration of the library's role in realising that possibility. Systemic transformation is needed for any true liberation from our neoliberal moment, but as a knowledge, curiosity and leisure centre, the public library has great potential as a space in which and around which to begin organising towards that liberation. Our framing of leisure itself sets the limitations for what it can accomplish. We can view it as a restorative adjutant to work, or, as this paper argues for, we can recognise it as an independent resource with liberatory potential.

The paper first examines relevant paradigms of leisure and leisure spaces in terms of their capacity to either reproduce or reject the neoliberal status quo, with particular attention paid to the work-leisure binary and Ray Oldenburg's third place concept. It then examines public libraries as leisure spaces according to those criteria, ultimately suggesting that libraries as leisure spaces offer the potential for realising liberatory leisure, and offering the concept of *library time* to describe that potential, while also recognising the limits on liberation that the leisure divide and neoliberal funding requirements present.

Leisure and leisure spaces defined

Two key concepts need to be defined to shape the rest of this paper: leisure and leisure spaces. This paper consciously bypasses discussion of leisure activities themselves, which have been widely discussed in previous LIS scholarship into leisure (Barniskis, 2023; Hartel, 2003, 2009). While the importance of LIS scholars and information workers understanding information behaviour and retrieval around serious and casual leisure pursuits is clear, the question of how public libraries create the potential for leisure activities in the first place merits exploration. The implications of the answers to this question will be the focus of this paper.

Leisure and free time

We begin with the definition of leisure crafted by leisure studies pioneer Robert Stebbins, whose definition of the concept was introduced to LIS by Jenna Hartel (Hartel, 2003). Stebbins offers a seemingly straightforward conception of leisure as '*uncoerced activity undertaken during free time where such activity is something people want to do and, at a personally satisfying level using their abilities and resources, they succeed in doing*' (Stebbins, 2005, p. 350). Two terms within this framing however need further unpacking for this paper's discussion of public libraries: *uncoerced* and *free time*. For Stebbins, the absence of coercion is the essence of leisure: '*Lack of coercion to engage in an activity is a quintessential property of leisure. No other sphere of human activity can be exclusively characterized by this property*' (Stebbins, 2005, p. 350). And while voluntary use is also a key characteristic of public library patronage, and will be discussed in later sections of this paper, the implications of *free time* need further unpacking before we proceed.

Implicit in free time's construction is the perception that time that is not inherently free. The presence of *free* as a modifier signals a deviation from an unfree norm. Whether our time is not actually our own is temporarily beside the point, as the ubiquity of the phrase such that it inserts itself into a leisure theorist's conception of leisure shows that the premise is widely accepted. This is the effect of neoliberal time degradation. Value is extracted by breaking time into discrete measurable units, and comparing the amount of productive labour compressed into each time unit. That time that cannot be exploited is returned as free time. To use Miranda Fricker's formulation, this dilution of leisure constitutes a form of epistemic injustice, specifically a *hermeneutic injustice* (Fricker, 2010), in which people are denied epistemic access to an entire concept: leisure as an experience divorced from work.

This blinkered view reflects a warning from E. P. Thompson half a century ago that one of industrial capitalism's most insidious and subtle effects is to ensnare our conception of time in a work-leisure binary. Thompson cautions:

> If we are to have enlarged leisure, in an automated future, the problem is not 'how are men going to be able to consume all these additional time-units of leisure?' but 'what will be the capacity for experience of the men who have this undirected time to live?' (E. P. Thompson, 2017, p. 36)

The problem has not improved in the intervening decades. Writing in this century, Martin Hagglund describes the work-leisure binary as a recursive loop, almost an ouroboros of wage labour, arguing that the leisure itself has become too captured by capitalism to have meaning outside of restoring workers' vitality. Hagglund writes:

> Our wage labor is a means for the end of leading our lives in a realm of freedom that opens up beyond our working hours. Our free time outside of work, however, itself becomes a means for the end of restoring our strength and ability to work. (Hagglund, 2019, p. 316)

The bleakness of these analyses points to the need for both a change in systemic conditions as well as theoretical engagement with leisure and free time.

Julie Rose productively engages with that theoretical need by disrupting the conceptual work-leisure binary. Rose points out that leisure is not so much the antonym of work, but rather an objection to necessity (Rose, 2016, p. 39). Echoing the emphasis that Stebbins places on the absence of coercion, Rose argues that leisure is its own end: '*leisure is associated with contemplation because it is done for its own sake, unlike those activities that are done because they are instrumentally necessary to one's ends*' (Rose, 2016, p. 37). Rose conceptualises the ultimate root of this anti-necessity as free time, an all-purpose resource on par with income and wealth:

> the time beyond that which one must devote to meeting one's own, or one's dependents', basic needs. In order to pursue a wide range of individual ends, to pursue one's conception of the good whatever it may be, one generally requires free time.' (Rose, 2016, p. 41)

Rose proposes these reconceptions as part of a broader intervention into distributive theories of justice, arguing that in a just society, free time must be adequately available among all people. Rose recognises that theory alone will not disrupt dominant leisure practices, but this requires state intervention as well: '*The theory [of justice] must both treat free time as a discrete component in its distributive metric and realize a just distribution of free time with specifically targeted interventions*' (Rose, 2016, p. 68). As will be shown in this paper, the public library becomes a valuable proving ground for such theories of justice, as well as liberation.

Library time

To that end, this paper proposes another gloss on *free time*. Free time is time that cannot be bought, only shared. It is *free* because it cannot be rationalised into monetary understanding. Free time thrives in public leisure spaces, in particular those that are organised around the provision of free services and freely occupied public space. Within the public library context, we could call this *library time*. This paper offers a new coinage in part because analysis of free time needs to be context-specific. Missing from the high-level conceptions of leisure and free time described above is the embodied nature of leisure time. Because human bodies must be somewhere, so too must leisure happen in particular spaces, especially the leisure typical of library spaces: '*To consume culture, which takes place in space, is to use time*' (Henderson and Frelke, 2000, p. 21). Library time is a specific intervention into place, and accordingly we next turn to leisure spaces.

Leisure spaces

Leisure has a prerequisite need for space. As leisure geographers Henderson and Frelke put it: '*People make decisions about leisure based on a combination of time and space. Time and space taken together are likely prerequisites necessary for leisure*' (Henderson and Frelke, 2000, p. 21). Or, as David Crouch sums up: '*When individuals are 'doing' leisure … they find themselves in a place*' (Crouch, 2000, p. 64). These statements are so basic as to be taken for granted, and in fact spatial analysis is underexplored within LIS-leisure studies, but this does not negate its importance. Leisure is a product and process of spatial practices and design. Here, it is worth clarifying that this paper is focused only on physical leisure spaces. While the debate over whether leisure spaces can exist online opens intriguing lines of interrogation, that discussion lies beyond the bounds of this exploration. Specific spaces are conducive to specific leisure activities, and the possibility of leisure at all. In their early study of the relevance of place to leisure studies, Henderson and Frelke emphasised the centrality of the relationship between space and leisure activity, writing: '*People use spaces as containers, or sites, for leisure and recreation activities. All leisure is space specific*' (Henderson and Frelke, 2000, p. 20). Again, this is a basic point, but an essential one for analysing leisure, as space is '*the context that gives these activities meaning and colors people's encounters*' (Henderson and Frelke, 2000, p. 20). However, even these definitions focus more on leisure than space, so we must next turn our attention to a major, though inadequate for liberatory purposes, paradigm of leisure space, the third place.

In *The great good place*, Ray Oldenburg conceives of our time as split between three *places*: first, home and family; second, work; and third, places outside the first two spheres that allow for conversation, socialisation and relaxation. Oldenburg describes third places as '*public places that host the regular, voluntary, informal and happily anticipated gatherings of individuals beyond the realms of home and work*' (Oldenburg, 1997, p. 16). Or, more succinctly, '*the settings of informal public life*' (Oldenburg, 1997, p. 16). Although Oldenburg did not include libraries in his conception of third places, in fact pointing out that unlike '*hospitals or libraries, which have exacting,*

complicated, and expensive internal requirements, third places are typically modest, inexpensive, and small by comparison,' (Oldenburg, 1997, p. 203), public libraries and LIS scholars have seized upon the third place framing as an explanation for how libraries fit into the greater sociological picture of human experience (Harris, 2007; King County Library System, 2024; Klinenberg, 2018; Lawson, 2004; Wood, 2021). And at first glance, it would seem that the recognition of the need for protected spaces outside of work points to a conception of time that exists beyond wage time.

However, despite the tripartite structure, Oldenburg's construction of the third place provides an archetypal example of work-leisure binary theorising. By its very terms, third places depend on the existence of the binary to come into existence. The third place needs work to exist in order to have meaning. Ultimately, Oldenburg's tripartite theorisation reflects a rather dim view of humanity and our capability to live meaningful lives outside of capitalism:

> The second place is the work setting, which reduces the individual to a single, productive role. It fosters competition and motivates people to rise above their fellow creatures. But it also provides the means to a living, improves the material quality of life, and structures endless hours of time for a majority who could not structure it on their own. (Oldenburg, 2023, p. 16)

Efforts to stretch the third place framing to include libraries are no doubt well-intentioned, offering an updated explanation to taxpayers for the value of libraries generally through analogy with other generally treasured social spaces. But this represents a missed opportunity to demarcate what distinguishes public libraries from other spaces and institutions. James Elmborg presciently pointed out that attempts to fit libraries into the third place framework risks sacrificing their inherent character to compete with commercial establishments by becoming more like commercial establishments. Glossing Henri Lefebvre, Elmborg warns '*adopting commercial practices in space will transform the library from an absolute space to an abstract space, one devoid of any real meaning or purpose. Following the Third Place model seems destined to take us in that direction*' (Elmborg, 2011, p. 349). Indeed, some LIS literature proposes that public libraries do just that (Harris, 2007, p. 150).

Of course, theories can evolve and be adapted by the theorist's successors. A posthumously published essay by Oldenburg and his frequent collaborator Karen Christensen actively included libraries as a third space, although without elaborating on what had changes had occurred either to libraries or the third place paradigm to make libraries a fit (Oldenburg and Christensen, 2023). And none of this is to say that third places do not offer valuable social goods within the current neoliberal context. But the point is that the theory's necessary entanglement with the work-leisure binary places limits on libraries when we attempt to push them into the framework, and it is an ill fit. The third place envisions socialisation, not liberation.

If the possibility of imagining and liberation is the goal of leisure, this leaves us with a need for a working definition of leisure spaces that can allow for spaces beyond the work-leisure binary. In the next section, this paper will analyse libraries as leisure spaces along the following criteria: leisure happens 1) in spaces built to accommodate it, 2) where coercion is absent, 3) and people do actually engage in leisure.

Libraries are leisure spaces

When describing leisure spaces, two factors come into play: the physical plant and the governance of that plant. Leisure is an embodied act, and the layout of a leisure space must be conducive to bodies engaging in leisure activities (Crouch, 2000), and the space must be free of coercive regulatory controls (Stebbins, 2005). Accordingly, this section will examine public libraries as leisure spaces along the tripartite scheme outlined above: 1) they were intended to be leisure spaces; 2) they are actually used as leisure spaces; and 3) they are free from coercion.

Leisurely roots: libraries were intended to be leisure spaces

From their inception, public libraries represented state and library administration intention to create leisure spaces. This section resurfaces the leisurely history of public libraries by looking at the early discourse surrounding library use as well as the physical plants that were constructed.

Although the educative mission of the public library tends to get more attention, early library administrators and workers recognised that the library's potential leisure functions were just as, if not vastly more, popular with their publics. Among the first vehicles of leisure that public libraries provided was access to fiction. Writing of the nineteenth century United Kingdom context, Robert Snape points out that although a precise accounting is elusive, '*there is no doubt that leisure was of major importance. Fiction and other recreational literature were provided for both reading at home or on the premises from the beginning*' (Snape, 1995, p. 22).

Indeed, early libraries induced patronage as much through the provision of pleasant spaces to pass the time as much as through access to knowledge and information. This was partially motivated by desire to get people through the door: '*Smoking rooms were introduced in a small number of libraries as a way of attracting people who might not otherwise have visited them*' (Snape, 1995, p. 24). In Denver, John Cotton Dana recognised the value of library leisure spaces, writing in his widely influential *Public library handbook*: '*Of all possible advertising the best, perhaps, is a cheerful and accommodating atmosphere. … The library is not a business office; it's a center of public happiness first, of public education next*' (Dana and Denver Public Library, 1895, pp. 14–15). Likewise, Cardiff librarian John Ballinger described the design of the library's reading room to allow for and encourage rest:

> the room was to be so large as to allow of every newspaper and periodical having a fixed place, with plenty of space for readers to move about without knocking against chairs, jostling other readers, and generally making things uncomfortable; also that a few seats and tables should be provided where people might sit to write, to read odd papers not given a fixed location, papers brought in by themselves, or, if they wished, to idle, neither reading nor writing, but just resting. (Ballinger, 1908, pp. 68–69)

Library administrators also hoped to inculcate middle-class values by modelling middle-class leisure spaces in libraries. As Hayes and Morris note in their survey of the leisurely history of the public library: '*A major argument for the establishment of public libraries … was the part they could play in maintaining social order and promoting moral values by providing better leisure opportunities*' (Hayes & Morris, 2005a, p. 77). The New York Free Circulating Library literally modelled these values by situating their collections in '*converted houses and storefronts, and their interiors were carefully designed to foster a more intimate, welcoming atmosphere. They were to serve as model homes, as both an example and a refuge for the poor crowded into dark and noisy tenements*' (Glynn, 2015, p. 204).

Libraries also afforded the state opportunities to encourage *healthful* forms of recreation. Early St. Louis public librarian Arthur Bostwick's Progressive Era survey of American public libraries highlighted the library's leisure role: '*It is good public policy to encourage healthful and innocent forms of recreation; hence municipal parks and playgrounds. These offer physical recreation; the library furnishes intellectual entertainment - surely no less desirable and legitimate*' (Bostwick, 1910, pp. 25–26). Time in libraries was also time not spent in saloons and public houses, allowing temperance reformers another opportunity to *uplift* the working class (Stauffer, 2016; F. M. L. Thompson, 1981). Though not all recreation was perhaps as healthful. Snape recovers the submerged history of libraries as gaming centres: '*A further and generally less well-known aspect of recreational provision in public libraries before the First World War is that of games, smoking and conversation rooms*' (Snape, 1995, p. 24). The point remains that public libraries have intentionally

offered a variety of leisure activities from their inception, and as will be briefly discussed in the next section, patrons accepted these offerings.

Libraries were actually used for leisure activities

Whether by librarian design or innate desire, leisure activities formed the early basis of public library patronage. More than that, facilitation of leisure reading is what initially secured the success of public libraries: '*The leisure role in spite of being disliked and considered less important within the profession did, however, secure its usefulness by making public libraries popular …*' (Hayes and Morris, 2005a, p. 80). Describing his majority patronage, Justin Winsor, an early superintendent of the Boston Public Library, testified that:

> What will harm some will work no harm to others, thought it may do them no more good than to grant them a pastime, and it is with this object that three quarters of the reading of people not professedly bookish is carried on; and whether it be desirable or not, the pastime readers are the most of the people to whose wants public libraries of the popular sort minister. (Winsor, 1876, p. 431)

Citing studies from Snape and Thomas Kelly, Hayes and Morris found that the vast majority of early libraries primarily lent fiction, with loan percentages ranging as high eighty-three percent. (Hayes and Morris, 2005a, p. 77). And, they note, leisure remains the primary driver of public library usage today: '*Traditionally the role of the public library in providing leisure opportunities has been undervalued, yet evidence suggests that this is the main reason why people use libraries*' (Hayes and Morris, 2005b, p. 138). But as Stebbins and Rose both remind us, the most important factor in determining whether the public library functions as a leisure space is freedom from coercion and necessity (Rose, 2016, p. 41; Stebbins, 2009, p. 619), which will be discussed in the next section.

Voluntary use

The public library cannot compel library attendance, nor can it compel specific use of library materials, perhaps to the dismay of some librarians. Granted, educators can create compulsory assignments for students requiring library research, and parents may take their children to the library against the child's will, but these are outgrowths of external compulsory institutions, the school, the family, not the internal operation of the library itself. This inability to compel frees both the library and the patron to promote and pursue leisure. As Lawrence White noted, '*the significant difference between the mandatory use of the primary and secondary public schools for most families with children and the voluntary use of the public library by adults and children*' (White, 1983, p. 7). According to White's study, '*most adult usage of the library's reading materials is for recreational purposes (broadly defined), not education*' (White, 1983, p. 7).

Closely related to the library's voluntary use for patrons is the unstructured quality of that use. It may seem contradictory, given the immense amount of intellectual and physical labour devoted to creating and maintaining accessible structures of knowledge organisation throughout the library's stacks and hard drives, but what I am pointing to is the absence of any agenda being foisted upon library patrons when they enter the building or access the library's home page. Patrons are free to begin their enquiry from any point, A or Z, and likewise are free to not make any enquiry at all. While there are echoes of Oldenburg here, crucially the commercial focus of third place framing still structures the access and use of third places. While conversation may flow freely, customers are still expected to buy a cappuccino before hanging out in a coffeeshop for hours. Conversely, there is no way to *win* at *library patron*, and there is no measurement or requirement of effective patron use beyond the scope of whatever personal project might inspire a given patron to access the library's resources or physical space. That said, metric tracking certainly is a reality for library staff when it comes to funding. Embracing the library's leisure mission for patrons may eventually trickle down to library worker experience, but for now, this paper confines itself to the patron experience.

Further, the unstructured quality of library mission applies not only to information provision, but also to clientele choosing. Public libraries aim to serve their entire community through universal service. Andreas Vårheim argues that:

> the public library is one of the most universalistic institutions there is in that it is open to all, not only people entitled to specific universal benefits as the child benefit (in some countries) or public schooling because they have children, but everyone, young and old, black and white. The public library has a wider clientele, in principle every member of society. (Vårheim, 2009, p. 376)

This universality allows for a wide spectrum of leisure information retrieval: hedonistic information searching (Elsweiler et al., 2011), task-based searching and serious leisure searching (Hartel, 2003, 2009). Beneath specific leisure activities, the absence of constraint afforded by the public library is uniquely positioned to encourage perhaps the most powerful of voluntaristic motivators: curiosity.

Curiosity

Here we focus on the primary motivations of curiosity, rather than the secondary information-seeking behaviour that flows from them. And not only is curiosity a primary motivation, but it has long been recognised as something that reconnects us with our humanity. Centuries ago, Hobbes included curiosity in *Levithan*'s catalogue of human motivations, arguing that it is curiosity that sets humanity apart from other animals:

> *Desire*, to know why, and how, CURIOSITY; such as is in no living creature but *Man*; so that Man is distinguished, not onely by his Reason; but also by this singular Passion from other *Animals*... [capitalisation, italics, and spelling all Hobbes's] (Hobbes, 1996, p. 42)

More recently, eminent curiosity scholar Daniel Berlyne concurred with the Hobbesian assessment, breaking curiosity into two categories: perceptual and epistemic curiosity, which Berlyne defines respectively as the '*curiosity which leads to increased perception of stimuli and the curiosity whose main fruits are knowledge …*' (Berlyne, 1954, p. 180). Importantly, epistemic curiosity is a particularly human trait. Berlyne writes: '*Human 'epistemic curiosity' [is] to be distinguished from the 'perceptual curiosity' that is found in lower animals as well as in human beings …*' (Berlyne, 1954, p. 189). The former is found in all animals when they encounter a novel object or situation, but the latter is a distinctly human quality. And importantly, it exists as a voluntary activity as well as a stimuli response.

As discussed above, people will of course seek out information because of external pressures, whether they were given a research assignment by a teacher or because they need to find an address for an appointment. But internal motivation also drives people to pursue knowledge for the pleasure of gathering more knowledge. Whether that pleasure derives from the reduction of boredom or the reduction of confusion, curiosity is a fundamental human drive nurtured by library time.

Thanks to the free and voluntary access to varied information resources they provide, public libraries are ideally suited to engage with the curiosity drive. Although the biases, omissions and erasures of cataloguing schemes and library collection development have been well-documented, public libraries still ostensibly operate as spaces of free enquiry. Indeed, Hayes and Morris explicitly note that '*Overdue considers libraries to be "curiosity satisfaction centres" where people can research family history, read books, listen to music, watch videos, surf the Internet …*' (Hayes and Morris, 2005a, p. 80). With the exception of some special collections, patrons are not required to justify the need for any materials they request. Alleviation of boredom is just as acceptable a justification for information access as *lifelong learning*. Public libraries are perhaps the only public

institution that recognises human curiosity as an epistemic need that is also its own end, and one that merits satisfaction without charge.

Curiosity reconnects us with our humanity on a deep level and invites imagination, as well as interrogation of norms. The uniquely curiosity-enabling character of the public library signals the liberatory potential of library leisure. The character of free time enabled by public library leisure is unique, and merits the introduction of a new frame of leisure afforded by library time: liberatory leisure.

Liberatory leisure

Theoretical foundations

Our perceptions of a given space can be as important as the physical layout of that space, and this affords us the opportunity to experiment with the kind of leisure space we want public libraries to be. Johnson and Glover remind us:

> Space creates conditions for the reproduction and resistance of social structures in society. Our perceptions of a space enliven, animate, and occupy it, thereby offering complex coded, re-coded, and de-coded versions of social life. Consequently, different experiences of space give rise to radically different spaces. (Johnson and Glover, 2013, p. 192)

It is in this spirit of spatial recoding that this paper argues for a radical vision of the library leisure space. While Rose foregrounds free time as justice, the public library's unique leisure status both requires and invites a further step. A liberatory vision of free time and leisure recognises that neoliberalism's conception of time traps us in work, both physically and mentally. This reality leads Tricia Hersey to posit that the path out of degraded time is one of rest, and that for '*our rest to be generative we must be always leaping from an anticapitalist agenda*' (Hersey, 2022, p. 72).

Given how long we have lived under the work-leisure binary, E. P. Thompson points out that breaking free may well mean applying capitalism's industriousness to rediscovering leisure:

> But if the purposive notation of time-use becomes less compulsive, then men might have to re-learn some of the arts of living lost in the industrial revolution: how to fill the interstices of their days with enriched, more leisurely, personal and social relations; how to break down once more the barriers between work and life. (E. P. Thompson, 2017, p. 37)

Hersey restates this proposition in terms of forgotten rest, while also emphasising rest's power:

> Everything we know about rest has been tainted by the brainwashing from a white supremacist, capitalist system. As a culture, we don't know how to rest, and our understanding of rest has been influenced by the toxicity of grind culture. We believe rest is a luxury, privilege, and an extra treat we can give to ourselves after suffering from exhaustion and sleep deprivation....Like hope, rest is disruptive, it allows space for us to envision new possibilities. (Hersey, 2022, p. 60)

And this is where the library's status as a knowledge centre and curiosity generator comes to the fore. The library is already well-positioned to help awaken the imaginations of those seeking liberation from the binary, and to help to rediscover forgotten alternatives. It is a place where we can begin the work of taking back time, as Sheila Liming exhorts us to do in *Hanging out*, her own treatise on resisting productivity and external time management:

> This is why hanging out begins with taking time, looting and liberating it from the coercions of fear and complicity. We must take time in order to kill it and render its

> defenses against us inert. We must take time in order to understand what it means to have it, which is the first step to dreaming about what else we might do with it. (Liming, 2023, p. 208)

But liberation cannot be accomplished alone. And here the public aspect of public libraries comes into focus, for better and worse.

Publicness, mutuality and the leisure divide

The public library's very publicness, in both the sense of being a state institution and a community space, works to position it as a potential site for liberatory work, transforming individual satiation of the needs for curiosity and rest into social needs. It is a site where Hersey's call for community care might be realised:

> I am clearly stating that to center rest, naps, sleep, slowing down, and leisure in a capitalist, white supremacist, ableist, patriarchal world is to live as an outlier. A pilgrimage infused with softness, intentionality, and community care. We will not be able to interrupt the machine of grind culture alone. We need each other in more ways than we are allowed to believe. This work is about radical community care. (Hersey, 2022, pp. 18–19)

The library's freedom from mission beyond providing access to knowledge and information to as many people as possible means it is a site free for people to enact care work. This inclusiveness is especially essential when grappling with the *leisure divide*. Because while libraries are spaces where '*homeless men can leave their status as "streeties" at the door, passing as just another library patron and thus gaining respite for a while at least*' (Hodgetts et al., 2008, p. 944), the library's legacy as an institution of middle-class respectability also works to exclude, especially when it comes to unhoused patrons.

The problem of access to leisure has been an object of study and criticism since at least *The theory of the leisure class* (Veblen, 1934), and access to library time is not immune from socioeconomic barriers either. Borrowing the concept from Payal Arora, Will Marler writes: '*The "leisure divide" describes differential access to digital entertainment, play, and socializing between socioeconomic groups*' (Marler, 2023, p. 1317). This differential can be triggered by broader societal dismissal of the very poor. Justin Harmon vividly describes the struggle for leisure time while homeless:

> The pervasive reality is that, while many homeless people may find time for recreational or leisurely activities, those activities are often relegated to the fringes of their existence due to the simple fact that the struggle for many, life-sustaining activities have been criminalized, thus criminalizing poverty and the right to exist …; there is simply no time, nor space, for leisure. (Harmon, 2021, p. 39)

But it is not only broader societal forces that squeeze out leisure time from the marginalised, but library policies as well. While facially neutral, common library policies like overdue fines, residency requirements and baggage rules tend to affect unhoused patrons far more than the middle-class, limiting access to leisure. But we can also diminish the divide with patron-centric solutions. For instance, Michigan's Capital Area District Library offers a mid-day movie, scheduled specifically so that their unhoused patrons can make it back to overnight shelters in time for check-in (Kelleher, 2013, p. 27). It is in bridging the leisure divide that we see some of the immediate practical effects of embracing the library's leisure mandate. But beyond the merely practical, Barniskis notes that providing access to casual leisure activities to the marginalised '*may be an act of love, useful for solidarity in the face of oppression, or the need to regenerate*' (Barniskis, 2023, p. 7). This is the potential of library time.

Conclusion

There are limitations to the library time framework. Neoliberal funding schemes for taxpayer-supported institutions such as public libraries tend to reward the quantifiable and economically rational. But the sort of library use and promotion this paper encourages necessarily defies this sort of rationality. Indeed, the resistance that Hersey offers up through rest is to the very notion that our experience of time is quantifiable and commodifiable. These ideas may not be immediately practicable in today's neoliberal environment, but the point of this paper is not to offer a ten-point programme for overthrowing capitalism, but rather to offer an idealist reset about the mission of public libraries. Getting too bogged down into current budgetary limitations also limits our imaginative horizons. If we cannot imagine a library better than the one we currently maintain and reproduce, we surely will not realise it. But this does not mean there are not leisurely interventions that we can take now. Further research into where and how these programmes have had success is needed. Again, the library alone cannot bring about economic shifts. But it can open a temporal crack in our patrons' experience of their world. Maybe not a wide one, at first, but the more the work-leisure clock slows down, the more our liberation speeds up.

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Public library services for migrants in national government policies across eight European countries: a comparative analysis

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Abstract

Introduction. This study is the first to explore how public library services for migrants are prioritised in national government policies across eight European countries: Denmark, Finland, Germany, Hungary, Iceland, Norway, Poland and Sweden.

Method. Using a comparative case study approach, the study analyses national library and immigration policy documents from the 1970s to the present, with qualitative content analysis identifying key themes and policy developments.

Analysis. The research examines policy trends, recurring themes and country-specific differences, focusing on library services for migrants in national policies.

Results. The study highlights variations in how library services are incorporated into national migration policies, and how library services for migrants are included in national library policies. Influencing factors include economic migration, humanitarian crises and policy shifts. Finland, Norway and Sweden have comprehensive national policies, while Denmark and Iceland have largely relied on local initiatives, and Hungary, Germany and Poland offer limited guidance.

Conclusion. This paper lays the groundwork for future research, suggesting in-depth case studies to examine national challenges and the alignment between national policies and local practices.

Introduction

As global migration reshapes societies, public libraries are adapting to meet the needs of increasingly diverse populations. With their mandate for universal access and service, libraries are positioned to address the complex needs of migrant communities through language programmes, cultural activities, digital inclusion and the promotion of social cohesion. Research on library services for immigrants and refugees has grown in recent years, highlighting their role in advancing integration and inclusion (Kosciejew, 2019; Grossman et al., 2022)

Pilerot (2018) shows how the 2015 European humanitarian crisis transformed library services in Sweden, introducing challenges like linguistic diversity and specialised programmes. Similarly, Martzoukou and Burnett (2018) identify language learning as a key factor in meeting Syrian refugees' information needs in Scotland, improving social participation and wellbeing. Johnston (2018) evidences how conversation-based programmes can support integration in multiethnic communities.

Lloyd's (2015) theory of information resilience underscores libraries' role in refugee resettlement by supporting information literacy and access to critical resources. Libraries help build social capital among migrants, as shown by Vårheim's (2014a, 2014b) research linking trust in libraries to generalised trust. These findings align with broader evidence that intergroup contact reduces prejudice (Pettigrew et al., 2011; Johnston, 2019).

Recent research on Hungarian and Polish libraries reveals that their response to Ukrainian refugees following the Russian invasion was shaped by limited guidance from national-level authorities, relying on grassroots initiatives and internal motivation (Johnston et al., 2024). Preliminary findings from interviews with librarians in Croatia, Denmark, Finland, Iceland, Lithuania, Norway and Sweden suggest that national-level policies and legal frameworks have limited influence on library practices in this area (Mierzecka et al., 2025). These findings raise questions about the existence, content and effectiveness of national policies in addressing the needs of refugee and migrant populations.

However, there is limited research on how policies regarding library services for migrants have been promoted and prioritised by national governments. Searches in Google Scholar, Scopus and Web of Science produced no relevant results. While the *IFLA guidelines for library services to displaced persons* (Gerasimidou, 2022) emphasise support for migrants, they do not discuss national policies. Understanding the relevant policy frameworks is critical given Europe's integration challenges, where migrants face double the risk of poverty (Eurostat, 2022), and rising populist radical right politics fuel anti-migrant sentiment, shaping policies and attitudes (Mudde, 2019; Ivaldi and Zankina, 2024).

Research questions

This study is a comparative analysis concerning how library services for migrants are promoted and prioritised in national library and immigration policies, considering factors such as migration volume, recent migration history and policy restrictiveness. It explores national-level policies pertaining public library services for migrants across eight European countries: Denmark, Finland, Germany, Hungary, Iceland, Norway, Poland and Sweden, addressing the following questions:

- What library services for migrants have been prioritised in these countries?
- How have national policies on library services for migrants evolved since the 1970s?
- What similarities and differences exist in national policies across the eight countries?

Given the limited research in this area, the study aims to describe and compare the status of national library policies and establish a foundation for further inquiry.

European migration trends and integration policies

European migration since the 1950s can be divided into several distinct postwar periods, using both observable patterns and political response as a basis for segmentation. It has transformed the demography of many Western European countries, changing Europe from a continent of emigration to immigration. In the 1950s and 1960s Western European countries began to recruit *guest workers* throughout Southern Europe, North Africa and Turkey to alleviate labour shortages created by postwar economic reconstruction and recovery (De Haas et al., 2020). As a result, the number of foreign (non-national) residents in Europe increased from approximately four million to ten million between the 1950s and 1970s (Bettin and Cela, 2014). Many European nations also experienced substantial immigration from former colonies.

The 1973-74 oil crisis was a critical juncture in European migration and immigration policy. Western European countries suspended labour recruitment programmes and moved to more restrictive immigration policies (Castles, 1986). Migration did not cease completely but resumed via family unification channels, asylum-seeking particularly from Eastern Europe and Latin-America, and via irregular entry points (Castles and Miller, 2009). During the 1980s, there was an influx of asylum seekers fleeing wars in Iran and Afghanistan and many African countries. The collapse of the Iron Curtain around 1990 led to a migration surge from Eastern to Western Europe, while the Yugoslav wars (1991-2001) triggered large refugee movements (De Haas et al., 2020). The enlargement of the European Union (EU) towards the east and the Schengen Agreement effective from 1995 increased labour mobility (Bello, 2022; Döll, 2024; Fries-Tersch et al., 2021). The 2010s witnessed, until then, the largest humanitarian crisis in Europe since World War II, driven by conflict in the Middle East and North Africa (Fries-Tersch et al., 2021). The Russian invasion of Ukraine in February 2022 triggered new challenges for the 2020s, as millions fled their homes as refugees. This started the fastest-growing and largest humanitarian crisis in European postwar history, with millions of Ukrainians fleeing to Poland and Romania, and more distant neighbouring countries such as Germany and the Nordic-Baltic countries (UNCHR, 2024).

These migration trends have led to major changes in European integration policies. Earlier policies marked a tension between assimilation and multiculturalism but have largely been superseded by more systematic integration programmes focusing on language learning, civic education and anti-discrimination. Still, national models and policy divergences exist, and these frequently mirror national and local responses to current crises (Hagelund, 2020; Joppke, 2007; Solano et al., 2024). Local governments and community groups, in addition to national governments, have important roles in integration programmes, with localised '*integration policies for refugees and asylum seekers varying widely across European nations*' (Wolffhardt et al., 2019, p. 33).

The high number of refugees during the 2015 crisis and the Ukrainian war led the EU, its member states, and the affiliated European Economic Area (EEA) countries to reconsider their migration and integration policies. In 2022, the European Union implemented the *Temporary Protection Directive for Ukrainian refugees* (European Council, 2022). This regulation establishes an EU-wide framework for providing temporary and collective protection, and avoids the need for individual asylum applications, which reduces pressure on national asylum systems. In addition, national governments have changed their policies. For instance, countries bordering Ukraine have created reception centres and made their administrative procedures more efficient to handle the arrival of refugees (UNCHR, 2024). Also, the European Commission's *Action plan for integration and inclusion (2021–2027)* outlines integration strategies for education, employment, healthcare, and housing (European Commission, 2020).

Method and data

This study adopts a comparative case study research design to examine how national library and immigration policies have addressed the needs of migrant populations across the selected countries. Focusing on national library policy documents and relevant parts of immigration policies, a comprehensive analysis of the historical development and the contemporary status of library service policies for migrants is conducted. The qualitative content analysis covers documents from the 1970s to the present, allowing for an in-depth exploration of policy variations and their influence on library policies. Document analysis is used for exploring existing policies, and to gain knowledge into the priorities and historical development of policies (Bowen, 2009; Dalglish et al., 2020; Wesley, 2014). By reviewing relevant library and immigration policy documents, this study aims to identify patterns, themes and changes over time. Data are national library policy documents and immigration policy documents identified from each country, with a focus on how specific library services for migrants have been prioritised. Secondary data was gathered from academic research, other government reports and publications from library associations.

The Nordic countries (Denmark, Finland, Iceland, Norway and Sweden) are included because of their well-developed public library systems, history of progressive social policies and considerable experience with immigration in recent decades. Poland and Hungary are included as latecomer immigration countries, with less established institutions and policies regarding services for migrants and opens for examining the early phases of library services policy development. The recent arrival of Ukrainian refugees in these countries adds a timely dimension to the study. Germany's experience with large-scale migration, especially during the 2015 humanitarian crisis, and having a federal government, can provide unique insights into library service policies' role in integration and social cohesion. Comparing the three types of migration policy regimes, this study aims to create knowledge about the present status and development of library service policies for migrants.

The countries studied differ regarding their migration histories and migration policies. Consequently, each country collects specific migrant statistics which are not easily comparable. Furthermore, their policy and strategy documents are developed at different levels of government with the involvement of different actors. These circumstances and the lack of former research calls for an explorative case study approach (Yin, 2014).

Findings: library service policies for migrants in eight European countries

This section contains country case studies of the eight selected countries, describing and analysing the contemporary status and historical development of national-level library service policies for migrants.

Denmark

In 1985, migrants and their descendants made up 3.3 per cent of the population, increasing to 16 per cent for migrants and 4 per cent for descendants by 2024 (Statistics Denmark, 2024). In the latter half of the 1960s, the first *guest workers* arrived in Denmark from Turkey, Pakistan and Yugoslavia, and the first initiative emerged to establish a collection of literature for guest workers, motivated by a desire to ensure equal library services for all. With increasing migration and diversity among migrants, the Danish National Library Authority proposed in 1975 that a state-funded collection for migrants be established. With the revision of the library law in 1983, this collection became a reality, and migrant users were equated to Danish citizens, which meant new responsibilities for public libraries regarding outreach work towards immigrants and refugees (Dahlkild and Bille Larsen, 2021).

Denmark's 1998 integration law aimed to ensure equitable participation of newcomers across political, economic, professional, social, religious and cultural dimensions, supported by a municipality-led three-year introductory programme. Simultaneously, the measures aimed to help newcomers achieve self-sufficiency and understand the fundamental values and norms of Danish society (Danske love).

The transfer of integration work to municipalities meant that the integration of migrants also became a local library task, albeit not mandated by legislation. Where migrants had previously been viewed in a library context as representatives of other cultures needing access to literature in their native languages, they were now seen as individuals who needed help to become part of Danish society (Dahlkild and Bille Larsen, 2021). This led the Danish Library Association to work intensively for several years to raise politicians' awareness of the significant role that libraries played in the integration of migrants. The Danish Library Association's efforts to define libraries' roles were particularly evident after the Danish government launched the so-called *Ghetto plan* in 2018: '*One Denmark without parallel societies – No ghettos by 2030*' (Regeringen, 2018), which did not designate a role for libraries. This was despite the fact that over the past decades, a wide range of integration initiatives had been developed in libraries – work that intensified with the influx of refugees over the past decade, especially Syria and Ukraine.

Finland

The share of people with foreign backgrounds in Finland has grown from under 1 per cent in 1990 to approximately 10 per cent in 2024, comprising 10.19 per cent of the population (Statistics Finland, 2024).

The *Aliens Act*, enacted in 1983 without a dedicated immigration programme, was followed by the first *Act on the Promotion of Immigrants* in 1999, which was updated in 2023. Over time, these acts have expanded from provisions such as adult education and job training to include comprehensive measures, including integration programmes, literacy education, native language instruction and training in social, cultural and life-management skills. Finnish or Swedish language instruction has remained across all versions (Kotouttamislaki 493/1999; 1215/2005; 1386/2010). Asylum policies have tightened to align with stricter European standards (Tuominen and Välimäki, 2021).

Since 1928, public libraries in Finland have been regulated by Public Library Acts, with the core principle that library use and borrowing are free. The latest act emphasises promoting equal access to education, culture and information, fostering active citizenship, democracy and freedom of expression, all rooted in community, pluralism and cultural diversity (Kirjastolaki 904/1998; 1492/2016).

The Council of Public Libraries (YKN) is a coordinating body for public libraries forming national strategies and policies. It has, since 2011, developed strategies emphasising equality and universal access to library services, regardless of background. Migrants are mentioned in terms of embracing diversity, with libraries as meeting places for different cultures, where migrant needs should be considered. The strategies stress the importance of diverse collections and visibility for various social and cultural groups (YKN, n.d. a; n.d. b). They promote flexible service models to meet diverse needs while ensuring equitable access across geographical and cultural divides (YKN, n.d. c).

While these strategies do not list specific services for migrants, public libraries in Finland offer initiatives such as guided tours, advisory services, language instruction, story hours in multiple languages, study clubs and collaborative cafés to foster interaction between immigrants and the local population (Baghbani et al., 2016).

Germany

As of 2023, 16 million (19 per cent) of German residents are immigrants and 5 million (6 per cent) are descendants of immigrants, while 3.2 million are seeking refuge or asylum. The main countries

of origin for foreign citizens in Germany today are Turkey, Ukraine, Syria, Romania and Poland (Statistisches Bundesamt, 2024a; 2024b).

Immigration to West Germany began in the mid-1950s with workforce recruitment agreements with countries like Italy, Spain, Greece, Turkey, Morocco, Portugal and Yugoslavia (Bundeszentrale für politische Bildung, 2020). East Germany had similar agreements with Cuba, Vietnam and Angola (Berlinghoff, 2018). Another significant wave followed the dissolution of the Soviet Union, bringing 3.1 million *Spätaussiedler* (late repatriates) to Germany (Geißler, 2014). Migration within the EU has increased since the 1990s and refugees from conflict zones, including Lebanon, the Balkans, Syria and Ukraine, have also sought refuge in Germany (Statistisches Bundesamt, 2024b).

Despite these movements, the German federal state did not formally recognise immigration as a permanent reality until the late 1990s, leading to a '*lack of policies and perspectives on migration, integration, and minorities*' (Geißler, 2014). The first immigration act was passed in 2005 (Zuwanderungsgesetz, 2004), followed by the skilled labour immigration act in 2019 (Fachkräfteeinwanderungsgesetz, 2019), both including integration measures. However, libraries are not mentioned in these or other migration and integration policies.

In 2022, 60 per cent of full-time public libraries offered services for migrants, such as native language collections, German language learning programmes and specialised offerings (Wimmer, 2023). Despite this, library services for migrants have played a marginal role in national policy papers from 1971 to 2022 (mostly issued by library associations) and in the nine state-level library acts, with the exception of the report from the organisation of German municipalities, the Municipal Joint Office for Administrative Management (KGSt)'s *KGSt-Gutachten Öffentliche Bibliothek* (KGSt, 1973, pp. 60–61).

Conceptual work on library services for migrants has primarily come from the library profession. The terminology used reflects libraries' evolving roles: from *social library work* in the 1970s to *intercultural* or *multicultural* library work in the 1980s, *social inclusion* in the 1990s, and more recently, *inclusive library services* and *diversity in library work* aimed at promoting equity and openness within a diverse society.

Hungary

In Hungary, the proportion of citizens with a foreign background is very low, and most immigrants are of Hungarian cultural and linguistic heritage. The first significant influx of refugees came from Romania (1988–1990) driven by the ethnic conflicts during the Ceausescu regime, and from Serbia (after 1991) driven by the war (Gödri, 2005). By 2002, over 90 per cent of immigrants were from neighbouring countries, with 75 per cent having Hungarian ethnic backgrounds (Gödri, 2005).

Hungary's EU membership (2004) and entry into the Schengen Zone (2007) significantly changed the volume and composition of its immigrant population. The number of Hungarians from neighbouring countries decreased, while immigration from third countries rose. In 2003, 19,365 immigrants were registered, 89 per cent from Europe, 8 per cent from Asia, 2 per cent from America, and 1 per cent from Africa. By 2023, immigration had tripled to 61,347, with 39 per cent from Europe, 55 per cent from Asia, and 3 per cent each from America and Africa (Központi Statisztikai Hivatal, 2024).

Despite these shifts, the share of migrants with non-European backgrounds remains especially low, and most migrants still have Hungarian ethnic roots. Consequently, migrant integration is not as important for Hungarian public libraries as in other European countries. The municipal library system in Budapest, particularly a branch located in its most multicultural district, addresses the current needs of the migrant population through tailored collection development and programming (Johnston et al., 2024).

Hungary's 1997 *Library Act* and subsequent strategic planning documents do not include support for migrants as a central library task (Skaliczki, 2011). Budapest's Foreign Language Library, established in 1956, originally focused on Russian-language materials but expanded in 1978 to include foreign-language literature from around the world. With a collection exceeding 600,000 documents, it serves foreign-language communities and national and ethnic minorities through nineteen county libraries.

During the 2022 Ukrainian humanitarian crisis, some libraries near the border and in larger cities participated in support activities organised by local municipalities or the government. However, these efforts did not develop into permanent library services (Johnston et al., 2024).

Iceland

Immigration to Iceland has risen significantly since the late 1990s, with foreign citizens making up 18 per cent of the population by mid-2023. While this shift has boosted the economy, challenges remain in migrant integration, particularly in language training, skills recognition and public-sector employment (Koutsogeorgopoulou, 2023).

The *Libraries Act of Iceland* (2013) supports equal access to knowledge, diverse perspectives and lifelong learning, fostering inclusion and democracy. However, the national policy framework for public library services for migrants remains limited.

Library services for migrants in Reykjavík are outlined in two key documents. *Open counselling for immigrants* (2016) advocates for a *one stop shop* to help migrants access city services and suggests mobile units circulating among libraries, schools and heritage institutions (Mannréttindaskrifstofa Reykjavíkur, 2016). *Refugees and applicants for international protection with Reykjavík City Services* (2023) promotes language courses and activation programmes through libraries and the Icelandic Red Cross, which provides psychosocial support and language training, such as the *Talk together* programme (Reykjavíkurborg, 2023; Rauði krossinn á Íslandi, n.d.).

Other cities, like Akureyri, have developed relevant policies. The *Municipality of Akureyri's multicultural strategy* (2010) emphasises using schools as bridges and ensuring foreign-language materials in libraries (Akureyrarbær, 2010). The *Akureyri library policy 2023–2025* promotes active migrant participation (Amtsbókasafnið á Akureyri, n.d.).

The Ministry of Social Affairs and Labour (2023) published *The Green Paper on the Matters of Immigrants and Refugees*. While libraries were not explicitly mentioned, the document included goals aligned with library services, such as improving access to information and educational opportunities for migrants. Building on this, the Ministry's 2024 white paper *A Society for Everyone* outlines long-term integration goals: (1) promoting migrant participation, (2) ensuring accessible services for all, and (3) expanding access to Icelandic language learning. Again, libraries are not directly referenced (Ministry of Social Affairs and Labour, 2024).

Norway

The development of public library services for migrants in Norway reflects increasing immigration since the early 1970s, alongside changes in national immigration and library policies. In 1970, migrants constituted 1.5 per cent of the population, and by 2024, first-generation migrants made up 16.8 per cent, with second-generation migrants at 4.0 per cent (Statistics Norway, 2024).

Initially, policies focused on cultural preservation, with libraries providing multilingual materials to help migrants maintain ties to their home countries. Over time, this multicultural approach was complemented by a focus on social integration, including Norwegian language learning, social inclusion and civic engagement programmes. In the 1970s and 1980s, public library migrant services primarily involved providing books, newspapers and other materials in migrants' native languages (Ministry of Local Government and Labour, 1974; 1980; Ministry of Church Affairs and

Education, 1974). In 1991, a government report recommended expanding libraries as social meeting places for refugees and immigrants, marking a policy shift toward viewing libraries as community centres for social and cultural integration (Ministry of Culture, 1991, p. 85).

In 2003, a cultural policy white paper called for more resources and the development of new library services for migrants. It proposed that circulating multilingual print materials was no longer sufficient, recommending better use of information technology, national digital services and libraries as meeting places (Ministry of Culture and Church Affairs, 2003). Another white paper emphasised strengthening libraries as contributors to inclusion, integration and cultural diversity, including Norwegian language acquisition and computer classes (Ministry of Culture, 2009, p. 25, 145). In the 2010s, the focus on social inclusion and community engagement grew stronger, with libraries also working with other local government organisations providing migrant services, and voluntary organisations in offering computer training, reading programmes, language cafés, women's groups, writing workshops and reading circles (Ministry of Justice and Public Security, 2016). The *Borrow a citizen* programme highlighted how libraries could foster social interaction between immigrants and residents, promoting mutual understanding and reducing social isolation (Ministry of Justice and Public Security, 2016, p. 78).

Poland

Polish immigration statistics reflect only those with permanent residence permits, resulting in relatively low overall immigration numbers - 7,000 until 2004 and 16,707 in 2023 (Statistics Poland, 2023a). However, in 2023, nearly one million Ukrainian residents were under temporary protection in Poland (Statistics Poland, 2023b).

Poland lacked a formal national migration policy until 2024 when the government introduced the immigration strategy *Regaining control. Ensuring security. A comprehensive and responsible migration strategy for Poland for 2025-2030* (Rule of Law, 2024). This strategy addresses hybrid attacks from Russian and Belarusian authorities on Poland's eastern border and imposes restrictions on refugees, particularly those crossing unauthorised.

State and local strategic documents largely delegate migrant social integration to NGOs (e.g., Ministerstwo Funduszy i Rozwoju Regionalnego, 2017). There is no legislation specifying public libraries' roles in migrant integration, and the topic is rarely mentioned in provincial library strategies – only four out of eighteen mention free library services for newcomers (DBP, n.d.; JCK, 2021; WiMBP, n.d. a; WiMBP, n.d. b). The National Library of Poland and the National Library Council have not issued recommendations on migrant services, even during the February 2022 humanitarian crisis.

Despite the lack of national policies, Polish libraries support migrant needs, mainly through NGO cooperation and experience. For example, Gdańsk's municipal library's strategy for 2021-2030 aims to expand social services for all residents, including migrants (JCK, 2021, pp. 12-13). These services include Polish language courses in partnership with UNICEF and support for foreigners through the *On one side* project with the Gdansk City Office (JCK, 2022; 2023).

The Information Society Development Foundation (ISDF) is a key organisation working with libraries. In 2022-2023, their *Library for all. Different. Equal. Important* project, aimed at integrating young refugees, involved thousands of Polish libraries. The ISDF provided training to librarians to adapt activities to local community needs (ISDF, 2024).

Sweden

During the 1950s and 1960s, labour immigration to Sweden was significant, but since the 1970s, refugee immigration has dominated. In 2023, over 2 million people were foreign-born, which is 20 per cent of the population (Statistics Sweden, 2024).

Initially based on assimilation, Sweden's immigration policy shifted to integration in 1975 (Swedish Government Bill 1975:26), focusing on immigrants' equal rights to social welfare linked to labour market participation. It adopted a multicultural objective, allowing migrant groups to maintain their native language, culture and ties to their homeland (Borevi, 2014). The current policy goal is to ensure equal rights, obligations and opportunities for everyone, regardless of ethnic or cultural background (Swedish Government Bill 2008/09:01, 3.3).

In the 1970s, public libraries began purchasing literature in major migrant languages as part of the multicultural integration policy. The 1984/85 Government Bill on literature and public libraries marked the first comprehensive initiative focused on library services for immigrants (Swedish Arts Council, 1986).

Both the first (1996:1596) and second (2013:801) Library Acts emphasise libraries' role in addressing migrants' needs in terms of book purchases and digital services (Swedish Library Act, 1996:1596; 2013:801). Libraries became key in providing civic information, especially during the 2015–2016 humanitarian crisis, organising activities like language cafés (Pilerot, 2018).

Public libraries are the responsibility of municipalities. However, since the early 2000s, the state has increased its control to ensure more equitable services across geographical, social and ethnic lines. A 2004 addition to the Library Act required local and regional library plans detailing how they would meet these goals. In 2022, a national library strategy emphasised libraries' role in societal and democratic development (Rydbeck, 2024).

Sweden's refugee and integration policies have been generous, but since 2022, with the rise of an anti-immigrant populist party, immigration policy is undergoing significant changes. The impact on public libraries remains uncertain.

Comparative analysis

Evolution of migrant library service policies

The development of public library services for migrants across the eight European countries studied reflects broader changes in national policies regarding migration and integration. In the 1970s, library services for migrants were mostly about providing books and materials in migrants' native languages, with a focus on multiculturalism and the preservation of migrant cultures. Over time, the focus has altered towards social integration, with an emphasis on language learning, digital inclusion and active participation in society. Factors driving these policy changes included increasing economic migration, humanitarian crises (e.g., the Yugoslav wars in the 1990s, the Syrian humanitarian crisis in 2015), and also political shifts towards more restrictive immigration policies.

Themes and priorities

Recurring themes in the promotion and prioritisation of public library services for migrants within national policies include multilingual collections, language learning support, digital inclusion and cultural competence. All of the eight countries provide multilingual materials to help immigrants maintain cultural ties and ease their integration process. This theme was particularly strong in the early phases of migrant library services policy in the 1970s and 1980s, reflecting a multicultural approach that aimed to respect and preserve cultural diversity.

Although there is huge variation in country practices, there is an emphasis on facilitating language acquisition in most countries, either through formal language courses, language cafés or similar services. Language learning has been seen as a critical factor in migrant integration, and libraries have played an important role in providing accessible language education. National policies also encompass events, storytelling and community engagement activities to foster a sense of belonging and social cohesion (e.g., in Iceland, Sweden, Denmark, Finland and Norway). These

activities often serve as bridges between migrant communities and the larger population, promoting mutual understanding and reducing social isolation. Digital services became a focus especially during the Covid-19 pandemic, with initiatives aimed at supporting digital literacy and information access for migrants. Digital inclusion has become increasingly important as more services move online, and libraries have stepped in to address digital inequality among migrant populations. Libraries have served as safe spaces where cultural and linguistic barriers could be addressed. They are also facilitating integration through social interaction, information access and language learning, although the inclusion of library services in national policies varies.

Differences in policy approaches

The promotion of library services for migrants varies significantly across the eight countries, influenced by country-specific sociopolitical and institutional contexts. The Nordic countries have a long history of developed welfare states based on universal services along with well-established public library systems that have supported an inclusive approach to migrant services. Libraries are operating under local government initiatives but are committed to national integration goals. The turn from multiculturalism to integration-focused policies is evident, but libraries have continued to emphasise cultural preservation along with social integration. In Germany, as a federal republic, public library services for migrants vary significantly between regions. Federal government and state government guidance is limited, and coordination efforts are up to library associations and municipalities. This decentralised approach results in inconsistencies, with some regions offering extensive services and others providing limited support. Hungary and Poland have not historically prioritised library services for migrants. In Hungary, integration efforts have been minimal because of the predominantly ethnic Hungarian migration, while in Poland, responses have been reactive to current crises, such as the influx of Ukrainian refugees. Both countries have implemented restrictive integration policies, which are reflected in the limited library services for migrants. The focus has been on addressing immediate needs rather than fostering long-term integration, and libraries lack the resources and policy backing needed to provide comprehensive support.

In the Nordic countries, there is relative alignment between national integration policies and library services policy, with varying degrees of formalisation between levels of government. In Norway, library services to migrants are explicitly mentioned in national immigration policy and in national library policies. Additionally, the Norwegian National Library regularly produces national strategies mentioning services to migrants. Sweden has the most hands-on national library legislation and policies towards the municipalities and municipal public libraries (e.g., the elaborate Swedish national requirements regarding municipal library plans). Finnish immigration policies mention services typically provided by libraries for migrants, though they do not explicitly reference libraries or library services. Conversely, national public library strategies outline a wide range of services for migrants but do not explicitly frame them in the context of immigrants. In Denmark and Iceland, municipal library services for migrants also show compliance with national goals and general legislation on integration, but without explicit national library or immigration policy mandates. Notably, Iceland's municipal-level policy framework for library services for migrants has evolved over the past five to ten years, with a new national integration policy recently introduced. Overall, despite variation in the Nordic national library policy frameworks, public libraries have become relevant players in the migrant integration processes in the five countries.

German federal and state government library service policies are practically non-existent, with German Library Association policy development initiatives and local library policies and programming driving services for migrants. In Hungary and Poland, the role of public libraries in integration is not supported by national policies. Most initiatives rely on local government or NGO interventions, and the restrictive national stances on immigration limit the potential for libraries to engage in comprehensive migrant integration activities.

Discussion

The findings of this study have several implications for national governments and library institutions. First, there is a need for greater coordination between national library policies and immigration policies to ensure that public library services effectively support migrant integration. National governments should acknowledge the role of public libraries as relevant actors in integration strategies and provide adequate funding and policy support to facilitate this role. Libraries, in turn, should adapt their services to migration trends, digital inclusion needs and cultural diversity by offering targeted programmes such as language learning, digital literacy and community-building activities. While not discussed in this paper, this study of national library services policy also has the potential to contribute to theories of institutional development and policy development. The research highlights how abrupt changes in historical migration patterns and sociopolitical contexts have shaped the evolution of library services for migrants towards integration-focused services on the one hand, while on the other hand, the basic multicultural policy trait inherent in traditional multilingual library services still persists.

Conclusion

This study has analysed how library services for migrants have been promoted and prioritised within the national library and immigration policies across eight European countries from the 1970s until today. The research underscores considerable differences in the development of these policies, influenced by factors including economic migration, humanitarian crises and political change. While some countries have developed comprehensive national policies that integrate public library services with the general integration policy and strategies, others rely on local-level initiatives with more or less national guidance.

The study gives insights into the integration of library services for migrants within national policy frameworks. It points to the importance of coordinating library and immigration policies to better support migrant integration and sheds light on the role of libraries as relevant actors in promoting integration. The findings also contribute to the fields of library science and public policy development by offering a comparative analysis of library service policies for migrants across different national contexts, providing potential theoretical contributions to policy development and institutional development.

Future research needs more in-depth case studies of individual countries to explore the specific challenges in developing national library service policies toward migrants. This includes longitudinal studies to assess the impact of library service policies on migrant integration over time while focusing on the realities and priorities of municipal and regional library systems. This points to the need for studies of the lack of alignment between national library service policies and municipal library practices as found in Mierzecka et al. (2025).

Policymakers and library professionals can draw several insights from this study to improve the coordination and promotion of library services within national policy frameworks. National governments could provide clear policy guidance and support for libraries as part of wider migrant integration strategies. By developing more collaboration between national policymakers, municipalities and public library systems, library services can be more effectively used to support migrant integration and contribute to social cohesion.

While this study focuses on public library services for migrants in the light of national government policies across eight European countries, the findings have implications that can inform policies and practices in non-European contexts as well. This includes, for example, identifying gaps or areas for improvement in public library policies for migrants, and indicating best practices (e.g., language support programmes, cultural integration activities and access to information resources), and learning from how European public libraries respond to humanitarian crises, such as sudden influxes of refugees, to prepare and manage similar situations.

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Tracing the archival turn: genealogies, dimensions and implications

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Abstract

Introduction. The archival turn, emerging in the 1990s, signifies a shift in how scholars conceptualise and engage with archives across disciplines. This study examines the theoretical origins, ontological, epistemological and methodological dimensions of the archival turn and its implications for archival theory and practice.

Method. This research employs a theoretical and conceptual analysis, synthesising literature from history, philosophy, cultural studies and archival science. It traces key intellectual influences, including Ranke's historiographical methods, Foucault's discourse theory and Derrida's concept of archive fever, to contextualise the archival turn's evolution.

Analysis. The archival turn is analysed through its ontological, epistemological and methodological dimensions. These dimensions highlight how the turn redefines the concept of archives, challenges traditional assumptions and encourages more critical approaches to archival materials.

Results. The archival turn has led to ontological shifts, expanding the definition of archives beyond institutional repositories. Epistemologically, it has reframed archives as sites of knowledge production and power rather than neutral collections. Methodologically, it has encouraged critical archival engagement, rethinking provenance and addressing archival silences. However, scholars debate whether the archival turn has substantively transformed historiographical methodologies or if it remains primarily a theoretical abstraction disconnected from archival practice.

Conclusion. The archival turn has enriched interdisciplinary scholarship and challenged traditional notions of archives. However, tensions persist between theoretical conceptualisations in the humanities and the practical concerns of archival studies. While it has reshaped scholarly perspectives on archives, its impact on archival methodologies and professional practice remains a subject of ongoing debate.

Introduction

The word *turn* refers to a shift or change in direction, as well as a transformation in perspective or stance. In the context of research in the humanities and social sciences, a turn typically signifies a change in the core concepts, methodologies or focal points of a discipline. It often introduces new theoretical frameworks, research methods or paradigms, thereby driving the field towards new directions. Examples include the linguistic turn, the sociological turn and the corporeal turn. Around the 1990s, the archival turn emerged as part of this series of disciplinary reorientations within the humanities and social sciences (Arvatu, 2011). Broadly speaking, the archival turn refers to an academic or practical trend across various disciplines that emphasises the critical use or examination of archival materials. This shift has become a prominent topic of discussion in disciplines such as history, anthropology, sociology, media studies, literature and art, establishing itself as a significant trend across multiple fields.

Current research has demonstrated considerable interest in the archival turn across several domains. In cultural studies, the archival turn has been explored in feminist theory (Eichhorn, 2013), queer studies (Marshall and Tortorici, 2022) and postmemory research (Eigler, 2021). Within literature and the arts, scholars have examined the archival turn in contexts such as visual arts (Simon, 2002), contemporary art (Callahan, 2022) and documentary filmmaking (Kim, 2020). The social sciences have also contributed to this discourse, with studies addressing its relevance to psychology (Brannigan, 2021), political science (Erlenbusch-Anderson, 2024), legal studies (Mawani, 2012) and the history of science and technology (Portuondo, 2016). Moreover, postcolonial studies have placed particular emphasis on the archival turn, investigating how colonial archives marginalise Indigenous voices (Sabbagh-Khoury, 2024), the role of archives in narrating histories of colonisation (Chivallon, 2016) and the neoliberal archival turn in the Caribbean (Muñiz, 2022). While the archival turn has been explored through cultural, historical and postcolonial lenses, there has yet to be a systematic discussion on its genealogies, core dimensions and implications for archival studies.

This study explores three key questions: (1) What are the theoretical genealogies of the archival turn? (2) What are its core manifestations across the ontological, epistemological and methodological dimensions? (3) What are the implications of the archival turn for archival studies? To address these questions, this paper analyses relevant scholarship, identifying major intellectual traditions and disciplinary intersections that have shaped the development of the archival turn. Rather than treating the archival turn as a singular theoretical framework or a directly observable phenomenon, this study approaches it as a heuristic tool for understanding broader shifts in scholarly discourse on archives. By tracing its genealogies and dimensions, the paper examines how the archival turn has been articulated across disciplines and what implications it holds for archival studies.

Genealogies of the archival turn

The rise of archives in nineteenth-century historiography

In the tradition of historiographical research, archives have long been regarded as an indispensable foundation, as history in the nineteenth century, in its quest for scientific legitimacy, turned to a fascination with archives in an effort to outline the *true contours* of the past. In the nineteenth century, with the professionalisation of academic disciplines and the advancement of scientific methods, many emerging fields sought to define their disciplinary boundaries and legitimacy by establishing and controlling specific sites of knowledge production, such as universities, laboratories and museums (Eskildsen, 2008), which served to differentiate one discipline from another while providing spaces for training new professional practitioners. During this period, particularly in German-speaking countries, historians were eager to elevate history to the status of a science (Lustig, 2020), and under this intellectual pursuit, history needed to clarify its research methods and objectives to delineate its disciplinary boundaries.

In this context, Leopold von Ranke placed significant emphasis on archival research. Between 1827 and 1831, Ranke travelled through Germany, Austria and Italy, seeking documents and archives; during this time, his work *Ueber die Verschwörung gegen Venedig* came to be seen as emblematic of the archival turn in his historiographical approach (Eskildsen, 2008). It was during this journey that Ranke established his historiographical principle of '*wie es eigentlich gewesen*' (to write history as it actually happened), asserting that the historian's primary duty was to reconstruct past events as objectively as possible. This required rigorous analysis of primary sources and a faithful presentation of historical facts, rather than interpretations shaped by modern values or personal biases. Following his engagement with archives, Ranke firmly believed that the archive was the only legitimate site for the production of historical knowledge: he declared that the writing of modern history should abandon the traditions shaped and passed down by earlier writers and instead be grounded in original archival sources (Eskildsen, 2008). Ranke's methodological emphasis on the analysis of archives and the presentation of objective historical facts had a profound impact on the professionalisation of historical research: during this period, the archive came to be understood as a *laboratory of history*, mirroring the scientific laboratory's aspiration for reproducibility of results. This emergent archival practice underscored the pursuit of a certain *objectivity* in historiographical research through the examination of traces and relics of the past (Lustig, 2020).

Twentieth-century critiques: rethinking objectivity in historiography

In the twentieth century, German critical theorist Walter Benjamin critiqued historicism's linear view of progress and its assumption of objective historical reality, rejecting the idea of history as merely an accumulation of past facts. Opposing historicism with his historical materialism, Benjamin distanced himself from Ranke's goal of showing things as they actually were, which he called '*the strongest narcotic of the century*' (Benjamin, 2002). For Benjamin, history is not a continuous chain of objective facts tied to the empty linearity of past, present and future, but rather a series of '*sudden appearances*' (Ji, 2008). In *Theses on the philosophy of history*, he argued that '*history is not constructed on homogeneous, empty time, but on a time filled with the presence of the now* (*Jetztzeit*)' (Benjamin, 2003). This concept frames history as the occurrence of events, not a process, with historical events requiring reinterpretation within each specific *now*. For Benjamin, the truth of history lies not in reconstructing a past objective image but in uncovering marginalised, forgotten or suppressed voices, advocating a historiography for the oppressed (Wang, 2018).

Benjamin's cultural analysis also shaped the archival turn. His essays on mass media, art and cultural transformation introduced an archival approach central to his unfinished *Arcades project*. Similarly, *One way street*, a fragmented collection of aphorisms and observations, mimicked the randomness of clippings, reports and images. Both works, deeply inspired by photography, used montage structures to reinterpret the present through the past. On a deeper level, they reveal a temporal logic akin to photography, emphasising how revisiting the past clarifies the present (Simon, 2002). Benjamin's historiographical and cultural theories profoundly influenced later developments in historical and cultural studies. His view of history as something that can be engaged, reinterpreted and reconstructed in the present embodies his montage theory, providing a foundation for postmodern historiography, cultural studies and memory studies, offering new perspectives and methodological innovations for historical research.

Power, knowledge and memory: Foucault and Derrida on the archive

It is widely acknowledged that the archival related theories proposed by Michel Foucault and Jacques Derrida have marked a significant shift in academic research, inspiring scholars across numerous disciplines to engage in an ever-expanding intellectual dialogue on archives (Manoff, 2004). It is necessary to highlight their critical contributions to the archival turn, given that their theories have stimulated profound debates and garnered extensive attention in both theoretical and artistic scholarship, thereby advancing the scholarly focus on archives. In Foucault's *The*

archaeology of knowledge, the archive is not merely a physical repository of documents or a collection of historical records. Rather, it is a system of rules governing discursive practices and the production of knowledge, determining what can be said, written and accepted as truth or knowledge (Foucault, 1993). Foucault's theory on archives underscores the relationship between power and knowledge, positioning archives as key to understanding this dynamic. Archives reveal how discourses are formed, dictate the narratives of history and shape the production and dissemination of knowledge. They function as mechanisms of historical and cultural production, reflecting societal structures and cultural norms.

Derrida's understanding of the archive, primarily articulated in *Archive fever: a Freudian impression* (1995), draws on Sigmund Freud's theories. Derrida conceptualises the archive as being driven by two conflicting forces: on the one hand, the death drive (Thanatos), which entails forgetting, erasure, oblivion and the annihilation of memory; and on the other, the life instinct (Eros), which seeks to preserve and archive, attempting to safeguard and protect historical memory (Derrida, 1998). Here, the term *fever* is not a medical condition but a philosophical and psychological metaphor, representing a deep desire for the archive - a relentless pursuit of collecting, preserving and uncovering the truths that archives might hold. For Derrida, '*archive fever*' reflects humanity's obsession with the past and the desire to control memory, history and the future. It points to a fundamental human impulse: the dual drive to preserve memory and traces while simultaneously selecting, organising and interpreting them. This impulse is not merely nostalgic but inherently tied to the pursuit of power, as controlling archives and memory equates to controlling the narratives of knowledge and history.

As discussed above, during the establishment of modern historiography, particularly in the context of Ranke's historical methods, historians emphasised the authority and use of archival materials, seeking to access the past and uncover the *true* face of history through documentary evidence. However, from the mid-twentieth century onwards, scholars such as Michel Foucault, Jacques Derrida, Hayden White and Carlo Ginzburg began to critique traditional historiography's pursuit of *objective truth*. Instead, they emphasised the power-dependent and constructed nature of archival materials and their role in the production of knowledge, arguing that archives are not neutral repositories but sites of discursive and ideological contestation. This suggests that traces of the archival turn were already present in the rationalisation process of historiography, but it was only with the intellectual and philosophical developments of the twentieth century that the archival turn re-emerged, revealing its varying implications across different historical periods. As related research has pointed out, the motivations behind the archival turn in modern archival theory and its broader studies are not rooted in a desire to restore history as it once was (Eichhorn, 2013), but rather in a transformation of the archive into an innovative field of practice – an active space of knowledge production and cultural creation. In examining the theoretical antecedents of the archival turn, one can discern the tension between these two phases of the archival turn.

Dimensions of the archival turn

Since the 1990s, the archival turn has emerged as a significant trend across various academic fields, including history, philosophy, sociology, psychology, literary criticism and cultural studies (Mawani, 2012). However, this study does not aim to exhaustively examine the specific contexts or meanings of the archival turn within each discipline. Rather, it seeks to identify and analyse the shared characteristics of the archival turn across disciplines, with the goal of illuminating how this phenomenon reflects broader shifts in interdisciplinary approaches to archives and the evolution of knowledge. Ketelaar (2017) has highlighted two key aspects of the archival turn: first, a shift from viewing archives as mere sources of information to understanding them as epistemological spaces and products of cultural practice; second, the use of the archive as a metaphor, often leading to ontological reconceptualisations of the archive itself. Through a review and analysis of relevant

literature, this paper argues that the archival turn can be examined on three interconnected dimensions: ontological, epistemological and methodological.

Archive in flux: the ontological shifts in the archival turn

The ontological dimension of the archival turn is reflected in the continuous expansion of the concept of the archive. As Derrida critically observed, '*Today, nothing is more unreliable or unclear than the word archive*' (Derrida, 1998). The classical definition of the modern archive is found in T.R. Schellenberg's *Modern archives*, where archives are described as

> *Those records of any public or private institution which are adjudged worthy of permanent preservation for reference and research purposes and which have been deposited or have been selected for deposit in an archival institution* (Schellenberg, 1956, p. 16).

However, with the advancement of the archival turn, the archive has taken on increasingly metaphorical meanings. It is now regarded as elastic and dynamic, capable of absorbing new elements and interpretations while also undergoing destruction, denial and decay, which showcase the expansion and contraction of its conceptual boundaries.

For instance, in Ann Cvetkovich's *An archive of feelings* (2003), the archive refers to community-based collections that encompass not only documentary materials but also a broader range of collected objects (Cvetkovich, 2008). Similarly, Jack Halberstam, in *In a queer time and place* (2005), calls for imagining the archive as a '*floating signifier*', casting a net wide enough to include almost any form of accumulation. Halberstam further argues that the role of the archive must go beyond traditional document repositories to become active participants in theories of cultural relevance, the construction of collective memory and the complexity of records (Halberstam, 2005). Nowak (2022) analyses the concept of the '*natural archive*', suggesting that materials such as plant specimens, tree rings and ice cores can also be considered archives, complementing historians' traditional documentary sources. Burgum (2022) proposes the '*city as an archive*'. Sue McKemmish similarly expands the concept of the archive, advocating for the inclusion of oral and written records, literary works, landscapes, dances, artworks, built environments and artefacts within its scope (McKemmish, 2005). As Cook (2011) has observed, these new interpretations and practices reveal a duality: the modern archive is increasingly understood as symbolic, metaphorical and discursive, rather than merely institutional, cultural or administrative. This duality challenges traditional notions of the archive while simultaneously broadening the ways in which archives can be understood and utilised.

The ontological dimension of the archival turn is further reflected in the emphasis on the *materiality* of the archive, which opens up avenues for examining its technological and media dimensions. From the perspective of New Materialism, the material world is not a passive object awaiting transformation but an active participant in social and cultural processes, highlighting the intersubjectivity between the material and human worlds. Within this framework, archives are imbued with agency - a force that actively shapes and participates in social and cultural dynamics. Consequently, the archive transcends its role as a mere repository of records and emerges as a site of complex technological practices embedded in broader sociocultural contexts. Such practices underscore the archive's nature as a form of *Kulturtechnik* (cultural technique), a concept that emphasises that technology is not merely a collection of physical tools or machines but encompasses all means and methods through which culture is created and disseminated. For Friedrich Kittler, technology inherently embodies the social dimensions of power and knowledge. In other words, media apparatuses are not neutral in their operation; rather, they impose an intrinsic framework of rules, often in concealed ways. While we appear to use or control media, our usage is predicated on accepting the internal logic of their operations (Yu, 2023). This reflection on the power of technology resonates with Derrida's insight on the process of '*archivization*': the technical structure of the archive determines not only the archivable content

but also the structure of its emergence and its relationship to the future. The archive produces as much as it records the event (Derrida, 1998).

Site of knowing: the epistemological shifts in the archival turn

Archives and archival institutions can be understood in two ways: first, as physical repositories for the storage of historical and administrative records; and second, as frameworks and principles that shape and regulate systems of knowledge. The archival turn represents a shift toward the latter understanding, emphasising the archive as an active participant in the dynamic processes of knowledge production and the construction of social memory.

At its epistemological core, the archival turn highlights the archive as an active historical construct requiring critical interpretation and analysis. The archive is not merely a tool for historical research but an independent and significant field of study within history and the humanities, demanding a critical and interpretive approach. Arlette Farge, in *The allure of the archives* (1989), reflects on her experiences in French archives, describing the overwhelming power and allure of archival materials:

> *It is excessive and overwhelming, like a spring tide, an avalanche, or a flood. This comparison with natural and unpredictable forces is not arbitrary. When working in the archive you will often find yourself thinking of this exploration as a dive, a submersion, perhaps even a drowning … you feel immersed in something vast, oceanic.* (Farge, 2013, p. 4)

Farge also warns against treating archives as mere sources of information or definitive evidence, cautioning scholars to maintain critical distance and avoid assuming that archives inherently offer the full meaning of the documents they contain (Farge, 2013). Similarly, Carolyn Steedman's *Dust* (2001) offers a profound reflection on the archive, arguing that it consists of fragmented remnants of history, often preserved by chance rather than intent. These fragments, through their orderly arrangement in files, ledgers, lists and indictments – and even through their absences – quietly reveal the workings of state power (Steedman, 2002). Steedman further explores the symbolic significance of *dust*, both as a physical presence in the archive and as a metaphor for the ways historians interpret and engage with archival materials (Zhang, 2009). Natalie Zemon Davis, in *Fiction in the archives* (1990), focuses on the microhistorical events and individual cases revealed in archival records. Her work, in part, responds to the medieval chronicle tradition's long-standing neglect of humanistic content, instead emphasising the historical value of individual experiences. Davis's approach embodies the core spirit of the archival turn: the archive is not merely a container of history but a constructed entity that must be critically interpreted.

The epistemological dimension of the archival turn also emphasises that archives are not static entities but dynamic processes – essential sites and practices for knowledge creation, cultural production and activism. Markus Friedrich conceptualises archives as '*sites of knowledge*', arguing that they not only preserve and provide knowledge but actively produce it. He posits that a modern history of knowledge must pay close attention to archives themselves while recognising their deeply localised nature, as archives function as knowledge infrastructures shaped by their specific historical and cultural contexts (Friedrich and Dillon, 2018). Similarly, Osborne (1999) draws an analogy between archives and scientific laboratories, suggesting that both serve as '*sites of knowledge production*'. However, this laboratory metaphor extends beyond the notion of the *laboratory of history* associated with the establishment of modern historiography, instead imbuing it with a more dynamic and expansive meaning. Archives are not merely spaces for retrospection or knowledge production but also pathways for examining and deconstructing contemporary legacies, consciousness and traumas. This perspective is evident in recent social movements and cultural practices, such as the proliferation of visual archives in East Asia since the 2000s, which are closely tied to social activism, community engagement and alternative cultural practices (Pan,

2018). These visual archives diverge from official narratives and mainstream media, offering new ways to define the forms and representations of society and community. Unlike historical archives, visual archives aim not only to document and preserve but also to establish institutions and provoke critical reflection. Similarly, the field of archival studies has increasingly engaged with *archival activism*, although within the context of the archival turn, it becomes difficult to discern whether this represents a turn towards activism within archival studies or a turn towards archives within activism.

Archives have also become a prevalent and significant theme in contemporary art practices and exhibitions. For instance, in *The watcher files project* (2013–2015), artists Sand and Imatani transformed their encounters with police archives into a series of artistic works, including oral and physical performances, poetry, photographic triptychs, graphite drawings, graphic texts and sculptures. Their project explored the dynamic relationships between police archives and the citizens who constitute and intersect with them, examining how such archives participate in shaping history and memory (Carbone, 2017). The archival turn in the arts, of course, brings with it unique aesthetic strategies. Artists frequently rework archives to reinterpret historical narratives through techniques such as deconstruction, collage, juxtaposition, rearrangement and even fabrication, thereby creating and disseminating alternative stories.

Beyond the repository: the methodological shifts in the archival turn

Robert Darnton has described the experience of archival research as intellectually stimulating because it challenges preconceived notions – you enter the archive with certain conceptions, patterns and hypotheses, but you may encounter anomalous materials that conflict with them, prompting you to reconsider your previous understanding of the past (Buchanan, 2010). This demonstrates the critical and reflective nature of knowledge discovery in archival research, which has gained increasing attention in the social sciences under the framework of the archival turn. The rapid expansion of archival research across disciplines has prompted methodological reconsiderations, disrupting the conventional view of archives as mere repositories of documents. In *The archive project* (2017), Niamh Moore and colleagues propose the concept of a *contemporary archival sensibility* as a framework for engaging with archival research. According to Moore et al. (2020), this sensibility is based on four key principles. First, it involves rethinking *provenance* by examining the origins of archives, exploring new modes and formats of collection, preserving the coherence of archival structures and considering the relationships between individual items and their broader contexts. Second, it expands the definition of the archive, shifting the focus from the archive as an inherent property of certain materials or groups to its processes and the role of the collector. This broader approach positions archives not as static objects but as dynamic constructs tied to their creation and use. Third, it addresses the *black box* of archival practices and research, critically analysing operational processes and the entanglement of materiality and meaning in interpretation. Fourth, it reconsiders the impact of digital technologies, arguing that digitisation fundamentally reshapes concepts such as documents, collections, databases and archives. These principles of contemporary archival sensibility reconceptualise archives as social constructions and cultural practices. They encourage a critical approach to archival work, promoting a re-examination of traditional concepts and methodologies while engaging with the profound transformations brought about by digitisation. Overall, this shift presents a more dynamic and reflexive understanding of archives as living and interactive entities, deeply intertwined with the contexts in which they are created and used.

The development of archival research methodologies relies on a deep understanding of the archival turn's ontological and epistemological dimensions. Key questions include: How can we uncover the *silences* in archives and the histories they obscure? How can we balance respect for the original cultural contexts of archival materials with their relevance to contemporary society? What determines our focus on specific groups or events? What forms of translation, transcription,

or transformation are necessary, and how can we filter vast archival materials to identify the most critical information? How do researchers' identities shape their engagement with archives, and who ultimately benefits from archival research? Finally, what is the purpose of archival research, and how does it shape the questions we ask and the knowledge we produce (Callahan, 2022)?

The implications of the archival turn for archival studies

Fostering broader scholarly dialogue

The preceding analysis reveals a noticeable disconnect between the interpretation and application of archives in the humanities and the theoretical frameworks and practical operations within archival studies. Discussions of the archival turn in the humanities and the research conducted within archival studies often seem to develop along two parallel and largely independent trajectories, suggesting a significant lack of interaction and knowledge exchange between the two fields. Michelle Caswell observes that theoretical works on the archival turn within the humanities frequently overlook critical contributions from archival studies. She argues that this omission is not incidental but indicative of a deeper issue: scholars in the humanities often resist engaging with the academic work produced within archival studies (Caswell, 2023). Caswell calls for greater collaboration between humanists and archival scholars. Similarly, Sara Callahan acknowledges that archival practitioners are almost entirely absent in her own research on archival theory; when they are mentioned, it is often in metaphorical terms (e.g., artists doubling as archivists) or as uncritical enforcers of contemporary power structures (Callahan, 2022).

This distinction underscores a fundamental challenge in fostering interdisciplinary dialogue: while humanities scholars often conceptualise archives in theoretical and metaphorical terms, archival practitioners engage with them as tangible, managed entities. Bridging this divide requires mutual engagement – humanities scholars need to incorporate archival theory and practice into their analyses, while archival scholars must also make their research more accessible to interdisciplinary audiences. One approach to achieving this is recognising the plurality of archival perspectives across disciplines, as encapsulated in Anne Gilliland's concept of the '*archival multiverse*'.

Anne Gilliland introduces the concept of the archival multiverse, which she defines as encompassing '*the diversity of evidentiary texts, memory-keeping practices and institutions, bureaucratic and personal motivations, community perspectives and needs, as well as cultural and legal frameworks*' (Gilliland et al., 2017). This concept challenges the notion of a single, universal archival framework and instead acknowledges that different disciplines, communities and cultural contexts engage with and interpret archives in diverse ways.

Within the field of archival studies, recognising this pluralistic nature of archives is crucial for fostering interdisciplinary dialogue. Rather than insisting on a singular definition of *the archive*, the archival multiverse encourages scholars to engage with multiple archival traditions, theoretical frameworks and methodological approaches. By embracing these diverse perspectives, archival scholars and humanists can create a more inclusive and productive scholarly discourse, bridging the gap between theory and practice.

Rethinking archival theory

The archival turn emphasises that archives are not static entities but dynamic processes – essential sites and practices for knowledge creation, cultural production and activism. Within the static–dynamic relationship, this perspective shifts the focus from the provenance of records to their broader contextual background. As social, cultural and technological environments continue to evolve, the concept of archival provenance has also undergone significant transformation. Traditionally, provenance referred narrowly to the originating institution responsible for creating records, often described as *entity-based provenance*. However, this understanding has expanded to encompass a more inclusive notion of provenance, involving multiple actors throughout the

entire lifecycle of records. This revised view of provenance extends beyond the traditional single institutional creator to recognise multiple creators, including not only the original creators of the records and the individuals involved but also the archivists and researchers who preserve, process and interpret these materials. This approach highlights the processual, dynamic and multi-subjective nature of provenance, drawing attention to the complex interactions between records and the various actors engaged with them throughout their existence. Under this framework, archives are no longer seen as passive reflections of history but as vibrant spaces of dialogue – a constantly reinterpreted and reassembled collection of narratives. Archives, in this sense, become active sites where stories are woven, unravelled and reimagined over time.

The archival turn builds upon the insights of postmodern archival theory, extending its critical reflections into new areas of practice. While postmodern archival theory challenges traditional notions of objectivity, neutrality and authenticity, the archival turn pushes these critiques further by exploring how archival practices actively shape social memory, cultural identity and historical narratives. Rather than being opposing frameworks, these perspectives mutually reinforce one another. Postmodern archival theory provides a crucial theoretical foundation for understanding the power structures within archival processes, while the archival turn applies these insights to engage with contemporary issues such as participatory archives, community memory and social justice. As Ketelaar (2017) suggests, the innovations prompted by the archival turn are not a rejection of past theoretical developments but rather a continuation of the broader evolution of archival thought—what he terms '*archival returns*'.

Some scholars argue that the archival turn risks overlooking the substantial contributions of foundational disciplines such as library and information science (LIS), archival management and history, where archival theory and practice have historically been most robust (Marshall and Tortorici, 2022). However, this perspective is somewhat reductive. The archival field has long been engaged in self-reflection and renewal, continuously evolving its practices and theories. In dialogue with the archival turn, archival scholars have increasingly addressed issues of social justice, human rights, identity and inclusion (Ghaddar and Caswell, 2019). Rather than being a rupture from archival tradition, the archival turn represents both a challenge and an opportunity. It compels archival scholars and practitioners to critically reconsider archival methodologies while fostering theoretical innovation and practical transformation. By integrating insights from postmodern archival theory, the archival turn repositions archival studies as a field that critically engages with the diverse ways archives are constructed, contested and mobilised in the contemporary world.

Conclusion and discussion

Since the 1990s, the archival turn has emerged as an influential trend within the humanities and social sciences. Inspired by the archival theories of intellectual figures such as Walter Benjamin, Michel Foucault and Jacques Derrida, this turn has prompted a renewed recognition of the significance of archives across multiple disciplines. The ontological, epistemological and methodological dimensions of the archival turn have not only deepened inquiries into the nature of archives but also fostered interdisciplinary dialogue and stimulated new reflections on disciplinary theories.

On an ontological level, the archival turn re-examines the concept of the archive and its material existence as a medium of history and memory, challenging traditional assumptions and moving archives from the margins to the centre of scholarly inquiry. Epistemologically, it explores how archival materials shape our understanding of the past and influence the ways in which knowledge is constructed. Methodologically, the archival turn encourages scholars to adopt more critical approaches to studying archives, recognising them not merely as repositories of information but as sites of power, memory and identity production.

However, despite its contributions, some scholars question whether the archival turn has led to substantive methodological transformations in historical research. Mawani (2012) argues that, despite extensive critique, the archive continues to function as a domain of historical objectivity, suggesting that the archival turn has expanded theoretical perspectives without necessarily altering historiographical methodology. This raises an important question: while the archival turn has reshaped how scholars conceptualise archives, has it truly changed how history is written?

Similarly, some scholars caution that the *archive* that captivates humanities scholars is often a Foucauldian, hypothetical and metaphorical construct, rather than the tangible, managed information resources that archivists engage with in practice (Bastian, 2016). This distinction underscores a broader challenge: while the archival turn has encouraged more critical engagement with archives, its emphasis on theoretical abstraction has, at times, widened the gap between archivists and scholars in the humanities. This tension highlights the need for greater interdisciplinary collaboration, ensuring that theoretical advancements in the humanities are meaningfully integrated into archival practice.

Nonetheless, for archival studies, the archival turn has provided valuable insights for fostering academic dialogue and rethinking theoretical frameworks, offering opportunities for both theoretical and practical innovation. As the Indo-European root of the word turn – tere – suggests, conveying meanings such as friction, drilling, piercing and twisting, the archival turn embodies a continuous, dynamic process of transformation (Marshall and Tortorici, 2022).

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Exploring the adoption of collections as data in the GLAM context

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Abstract

Introduction. This research investigates the adoption of *collections as data* in GLAM institutions, aiming to highlight best practices for computational use and machine-readable sharing of digital collections.

Method. Drawing on the existing literature regarding collections as data, this research identifies key aspects that should be considered and assesses selected datasets based on these aspects.

Analysis. The selected datasets were analysed based on key aspects to identify best practices and gaps.

Results. The findings revealed areas needing improvement, including impact, ethical rights, citation and limitation information.

Conclusion. The work has identified key aspects and provided examples of best practices. Future work includes the inclusion of additional aspects to analyse the publication of collections as data such as sustainability and discoverability.

Introduction

GLAM (Galleries, Libraries, Archives and Museums) have been exploring new ways to make their digital – both digitised and born-digital – collections available to foster responsible reuse. New initiatives such as GLAM Labs (https://glamlabs.io/) and collections as data (https://collectionsasdata.github.io/), in combination with the FAIR (https://www.go-fair.org/fair-principles/) and CARE (https://www.gida-global.org/care) principles, have recently emerged to promote computational and responsible use of digital collections including techniques based on the use of artificial intelligence (AI) and machine learning (Wilkinson et al., 2016; Padilla et al., 2019; Carroll et al., 2020; Alkemade et al., 2023; Candela, Gabriëls, et al., 2023; Lee, 2023). Specific working groups have been created in the context of data organisations such as the Research Data Alliance Interest Group on Collections as Data (Research Data Alliance, 2024). Other initiatives, such as AI4LAM, are focused on the application of AI to cultural heritage content (AI4LAM, 2024).

Previous work has tackled the analysis of how digital collections can be made available for computational use (Padilla et al., 2019; Candela, Chambers, and Irollo, 2023; Candela, Sáez, et al., 2023; Dişli, 2024) and encouraged global consensus-building on the ethical responsibility and perceived benefits for GLAM professionals in presenting collections as open data resources (Knazook et al., 2023; Padilla et al., 2023). The copyright and licensing conditions for collections as data have also been discussed (Dişli and Candela, 2025), and remain an ongoing challenge for the release of GLAM data collections. Despite all these efforts, there is still room for improvement in the establishment of best practices and standardisation. The testing of new methods and approaches developed very recently has been undertaken mainly by well-funded, national organisations, primarily in the Global North.

In cases where organisations have made significant efforts to adopt *collections as data* practices, several challenges have emerged, including budget and resourcing constraints, technical limitations, required skills, qualified personnel, traditional and established trends and copyright issues (Candela et al., 2022; Dişli and Tonta, 2023). Overcoming these challenges, addressing the encountered gaps, identifying potential problems and establishing standardised processes are crucial for assessing current initiatives.

The purpose of this work is to provide an analysis of the current state of the adoption of collections as data principles in GLAM institutions. In line with this purpose, selected GLAM datasets published in a machine-actionable format are analysed and assessed based on specific criteria. This work also aims to contribute to the adoption of best practices and the development of the necessary standards and guidelines for the publication of machine-actionable collections.

This work seeks to answer the following research questions: 1) to what extent do existing datasets published in alignment with the collections as data approach meet the identified aspects?; 2) what are examples of best practices for promoting the broader adoption of collections as data?; 3) what are the key challenges faced by GLAM institutions in the adoption of collections as data according to best practices and guidelines; and 4) what actions are needed to address these challenges?

The main contribution of this work is to analyse evidence of computationally ready collections as a way of evaluating a shift in practice. The results will contribute to identifying best practices for publishing machine-actionable collections in the GLAM domain and to establishing standards in this regard.

Related work

GLAM institutions have been exploring new approaches for enhancing the accessibility and reusability of their collections and metadata. Notable initiatives such as Collections as Data, the International GLAM Labs Community and the Research Data Alliance Interest Group on Collections

as Data (https://www.rd-alliance.org/groups/collections-as-data-ig/posts/?post=170960) promote the publication of machine-actionable collections. Other domains such as web archiving, which has traditionally been carried out by GLAM organisations, have also explored the publication of machine-actionable collections and its documentation (Candela, Chambers, and Sherratt, 2023; Carlos Lelkes-Rarugal, 2024).

At the core of collections as data efforts lies the longstanding work on making cultural heritage collections available openly. In this context, various projects and policies have been developed over the years. To support the open release of cultural heritage collections, the Open GLAM (https://openglam.org/) movement was launched, accompanied by the development of a Declaration on the subject (Scann et al., 2020). Additionally, Creative Commons has contributed to open access efforts in the cultural heritage domain (Creative Commons, 2025). Platforms such as Europeana also actively support and encourage open access (Europeana Pro, 2025a).

Over the past few years, institutions such as the Getty Research Institute (https://www.getty.edu/research/tools/vocabularies/lod/index.html) and the Rijksmuseum Data Services (https://data.rijksmuseum.nl/) have been exploring new ways to publish digital collections. Previous works have focused on various methods to make GLAM content available in the form of machine-actionable collections. Some examples include: i) the application of the FAIR principles to libraries, archives and museums (Koster and Woutersen-Windhouwer, 2018); ii) a checklist providing relevant items to consider when publishing collections as data (Candela, Gabriëls, et al., 2023); iii) a datasheet approach to provide clear, transparent and standardised documentation for digital collections (Alkemade et al., 2023); iv) the identification of key aspects (e.g., formats, licence or terms of use) to consider when publishing machine-actionable collections (Candela, Sáez, et al., 2023); v) a workflow to publish collections as data (Candela, Chambers and Irollo, 2023); and vi) a conceptual model for cultural heritage collections as data (Dişli, 2024).

In parallel, there has been a growing interest in data spaces as new infrastructures with which to share data in a secure and trustworthy environment (Dobreva et al., 2022). In this context, a workflow was recently made available to facilitate the publication of datasets (https://marketplace.sshopencloud.eu/workflow/I3JvP6). In the UK context, a recent report provides detailed training materials, along with case study examples, to support cultural heritage institutions and their funders in the building of a unified UK digital collection to unlock their full potential (Bailey et al., 2024), as well as the exploration of infrastructural futures for digital cultural heritage (Ross, et al., 2024). In parallel, and given the increase of data published in the last years, GLAM institutions have started to restrict access to collections for training commercial AI (https://www.kb.nl/en/news/kb-restricts-access-to-collections-for-training-commercial-ai) as well as to promote the *responsible adoption* and use of AI (National Library of Scotland, 2024).

When making digital collections available, publishing examples of use is essential to show researchers how the data can be reused. In this sense, Jupyter Notebooks have emerged as a reproducible tool to provide code and documentation. Many institutions have started to employ Jupyter Notebooks to introduce researchers to their digital collections (Candela, Chambers and Sherratt, 2023; Maemura and Byrne, 2024).

Assessing reuse of digital collections is crucial for the institutions in order to demonstrate their impact (Hughes, 2012; Tanner, 2016; Warwick and Bailey-Ross, 2020). However, this can be a challenging task for GLAM institutions. Toolkits such as D-CRAFT (https://reuse.diglib.org/) provide different methods to assess the reuse and impact of digital collections as well as tutorials and examples of use. These approaches are essential for GLAM institutions and projects in need of measuring the impact of their work.

Despite all these efforts, to the best of our knowledge, there is no analysis of existing collections published as datasets in terms of criteria based on the combination of FAIR, CARE and impact

aspects. This can be useful for GLAM institutions willing to adopt the collections as data principles following best practices and guidelines.

Methodology

A literature review of existing approaches to publish machine-actionable collections described in this work (see section Related work) was performed to identify relevant and key items to consider when making available machine-actionable collections. This work is mainly based on previous work published by relevant communities and initiatives relating to the adoption and publication of digital collections suitable for computational use.

Building on this existing work, relevant topics were selected such as documentation covering various features like curation rationale, impact on the community and the institution, usage details and publication methods. This research is based on the FAIR and CARE principles. While most of the selected aspects align with the FAIR principles, particularly reusability and interoperability principles, certain aspects also emphasise bias and rights, which are central to the CARE principles. In addition to these principles, some examples of relevant developments used to identify key aspects to publish collections as data include: i) the checklist and workflow to publish collections as data since it provides recommendations and best practices focused on small and medium-sized institutions, and data spaces for cultural heritage (Candela, Gabriëls, et al., 2023, Candela, Chambers and Irollo, 2023); ii) the datasheets for cultural heritage datasets concerning the provision of documentation based on key dimensions such as data provenance and biases (Alkemade et al., 2023); and iii) the D-CRAFT tool providing means to measure impact and reuse of digital collections (D-CRAFT, 2025). As a result, sixteen items were selected as is shown in Table 1.

No	Aspects	Descriptions
1	Documentation	Documentation about curation rationale, provenance and source data.
2	Examples of use	Practical applications or research examples showing the use of the dataset.
3	Accuracy	Accuracy of data, based on OCR quality, metadata quality e.g., LOD.
4	Bias	Discussion of biases (See for example, the DE-BIAS project: https://pro.europeana.eu/project/de-bias).
5	Limitations	Known limitations e.g., missing information.
6	Impact	Information regarding the impact and reuse of the digital content.
7	Terms of use	Conditions and restrictions governing the access and usage of the dataset, including licence, rights and limitations on certain use cases.
8	Licence	The terms under which the dataset can be used, shared or modified (e.g. Creative Commons (https://creativecommons.org/) and Traditional Knowledge Labels (https://localcontexts.org/labels/traditional-knowledge-labels/)).
9	Rights	Legal ownership of the data. Beyond the licence, this may include moral or ethical rights, such as community rights.
10	Citation information	Citation guidelines to help users properly cite the dataset.
11	Identifier	A unique identifier for datasets, such as a DOI (Digital Object Identifier).
12	Collaborative edition platforms	Inclusion of the dataset in collaborative edition environments such as the Social Sciences and Humanities Open Marketplace and Wikidata.
13	Metadata standards	Metadata structured in accordance with international standards such as MARC and Dublin Core.
14	Machine-readable metadata	The structuring of metadata in a way that allows machines to read and interpret it.
15	Machine-readable file format	File formats that are structured and formatted for automated processing (e.g., JSON, XML, RDF, CSV).
16	API	Providing an Application Programming Interface to access the dataset. This assessment considers the API facilitates access to the dataset itself.

Table 1. Key aspects to consider when making available collections as data.

In Table 1, each aspect has been assigned a number, which is used below in the presentation of findings for brevity.

To address the research questions, machine-actionable datasets from various GLAM institutions were selected through extensive web-based research. The datasets are all published under open licences enabling reuse and included on Labs websites or GLAM research repositories. The selection process prioritised datasets from diverse institutions and data types (including metadata, text or multimedia content) to ensure a broad representation of different approaches. Additionally, datasets from institutions recognised as best practice examples in providing collections as data were included. These datasets were also chosen as examples because they were observed to be published in accordance with the FAIR and CARE principles.

The datasets were assessed using the document analysis method, a systematic approach for reviewing and evaluating printed or electronic materials (Bowen, 2009), focusing on aspects such as metadata information, formats and licensing details. In reporting the findings, a ✓ symbol in Table 2 indicates that a dataset addressed the aspect, while an ✗ denotes its absence. The analysis aimed to identify the strengths and weaknesses of the datasets, determine the extent to which the identified aspects are fulfilled, and provide an overall evaluation of their machine-actionability. The results are expected to serve as examples of best practices for GLAM institutions interested in adopting the collections as data approach.

Results

The method described in the previous section was applied to a selection of datasets suitable for computational use and made available by GLAM institutions. The datasets mostly consist of bibliographic data, OCR texts, images and metadata, including information on artworks, manuscripts, archaeological finds and web archives from GLAM institutions. While the majority of the datasets seem to address more than half of the criteria, five of them fail to address most of the criteria.

Dataset	Type	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	Total
London Terrorist Attack 7th July 2005 - Collection Seed List	Meta-data	✓	✗	✓	✗	✓	✗	✓	✓	✗	✓	✓	✗	✓	✗	✓	✗	9
Alter Realkatalog of Berlin State Library	Meta-data	✓	✓	✓	✓	✓	✓	✓	✓	✗	✓	✓	✗	✗	✓	✓	✗	12
State Library of Queensland - Photographs 1914-1918	Images	✓	✗	✓	✗	✗	✗	✗	✓	✗	✗	✗	✗	✓	✗	✓	✗	5
Biblioteca Virtual Miguel de Cervantes	Bibliog-raphic data	✓	✓	✓	✗	✗	✗	✓	✓	✗	✓	✗	✓	✓	✓	✓	✓	11
Timarit.is	OCR and images	✓	✓	✗	✗	✗	✗	✗	✗	✗	✗	✗	✓	✓	✓	✓	✓	7
Chronicling America	OCR and images	✓	✓	✓	✗	✗	✗	✓	✓	✓	✗	✗	✓	✓	✓	✓	✓	11
Austrian National Library - Historical Postcards	Images and Meta-data	✓	✓	✓	✗	✗	✓	✗	✓	✗	✓	✗	✗	✗	✗	✓	✓	8
Rijksmuseum	Bibliog-raphic data	✓	✓	✗	✗	✗	✗	✓	✗	✗	✗	✗	✓	✓	✓	✓	✓	8
National Library Diet, Japan	Bibliog-raphic data	✓	✓	✓	✗	✗	✓	✓	✓	✗	✓	✓	✗	✗	✗	✓	✓	10
Smithsonian American Art Museum as LOD	Meta-data	✓	✗	✗	✗	✗	✗	✓	✓	✗	✗	✗	✗	✓	✓	✓	✓	7
CoinSampo - Finland	Meta-data	✓	✓	✗	✗	✗	✗	✗	✓	✗	✗	✗	✗	✓	✓	✓	✓	7

OPenn - Collection of Indic Manuscripts	Images and Meta-data	✓	✓	✗	✗	✗	✓	✓	✓	✗	✗	✓	✗	✗	✗	✗	✗	**6**
KU Leuven Libraries Magister Dixit Collection	Meta-data	✓	✓	✗	✗	✗	✗	✓	✓	✗	✓	✓	✗	✓	✓	✓	✗	**9**
Total		**13**	**10**	**7**	**1**	**2**	**4**	**9**	**11**	**1**	**6**	**5**	**4**	**9**	**8**	**12**	**8**	

Table 2. Assessment results according to the digital collections selected.

Most datasets are satisfactory in terms of documentation, examples of use, accuracy, terms of use, licence, metadata standards, machine-readable metadata and file formats and API. The documentation includes information about the dataset, provenance, curation rationale and source data. The '*examples of use*' criterion was based on providing descriptions of potential uses and existing tools or prototypes. Accuracy has been assessed based on factors such as whether the texts are OCR-processed, the clarity of images, and the completeness and accuracy of metadata. It has also been examined whether information about these aspects is included in the dataset.

Despite satisfactory aspects, the dataset analysis shows that improvements are needed in several aspects. For instance, with the exception of one dataset, none discuss bias and only two datasets provide information on limitations. Additionally, apart from four datasets, no information is provided regarding the reuse and impact of the datasets. Only one dataset includes information about moral and ethical rights. Guidance on how to cite datasets is not widely adopted and only a few datasets use unique identifiers, such as DOIs. The inclusion of datasets in collaborative platforms, such as Wikidata, also has not been widely embraced.

Discussion

This work assesses the adoption of collections as data in GLAM institutions based on certain criteria derived from the FAIR and CARE principles, aiming to answer four key research questions outlined in the Introduction section.

Regarding the first research question, the results show that while datasets largely comply with FAIR principles, further work is needed to align them with CARE principles. Related to the second question, exemplary datasets have been identified. In particular, datasets that address most of the aspects are good examples of adopting collections as data. However, it should be noted that all the datasets have aspects that require improvement.

Concerning the third research question, and considering previous works (Candela et al., 2022; Dişli and Tonta, 2023), this research identified several challenges in the adoption of certain aspects of collections as data. In identifying these challenges, the FAIR and CARE principles have also been taken into consideration. The lack of information on moral and ethical rights makes it difficult to publish these datasets in alignment with the CARE principles, as does the limited information about bias in the selection of dataset content. Furthermore, for some datasets in this selection, the absence of unique identifiers, the exclusion of the dataset from collaborative editing platforms and the lack of citation information make it difficult to ensure their findability, accessibility and reusability. Additionally, the impact values of the datasets were found to be low, suggesting that they are either not sufficiently promoted or not provided in formats conducive to reuse. All these

issues can be due to several reasons related to a lack of funding and resources. However, GLAM institutions are starting to consider aspects such as bias to provide documentation about their datasets (Europeana Pro, 2025b).

In response to the fourth research question, several recommendations have been proposed for GLAM institutions wishing to adopt collections as data. Institutions should consider the challenges identified above in order to strengthen the FAIR and CARE nature of their datasets. To this end, the findings of this study serve as a valuable reference as it highlights exemplary practices that offer solutions to the challenges encountered while at the same time identifying some of these exemplary practices' shortcomings. In creating and improving their machine-actionable collections, institutions can build upon these existing examples by adopting their strengths while also being aware of and addressing their limitations. This practice will contribute to a more comprehensive and advanced adoption of the collections as data principles.

Conclusions and future work

This work presents an analysis of current trends and best practices to make available digital collections suitable for computational use. Several initiatives promote and foster the adoption of the collections as data principles in the GLAM domain. The results show a wide diversity of approaches when making available digital collections. They also show that there is evidence of ease of alignment between emerging and historical practices for the publication of digital collections, which can be used to encourage institutions to adopt new methods when making available their digital collections.

Though efforts were made to select datasets from diverse institutions and with various types of content such as bibliographic data, OCR texts, images and metadata, the sample remains a limited selection. The present study can be extended by including additional datasets with a higher level of variety regarding features such as language, content and country of origin. Future work to be explored also includes investigating additional aspects such as sustainability, archiving and digital preservation of collections as data. Additionally, the aggregation of machine-actionable collections on shared platforms through protocols like OAI-PMH (https://www.openarchives.org/pmh/) and emergent trends based on the use of data spaces, as well as interoperability issues concerning the use of vocabularies to describe datasets such as DCAT (https://www.w3.org/TR/vocab-dcat-3/), are aspects that need to be considered.

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'What we have lost is patients who can't handle the information' – information misuse and open record access

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Abstract

Introduction. This paper aims to broaden the understanding of information misuse by drawing on findings from an ongoing study investigating how open record access in paediatric psychiatry influences documentation practices. It explores the boundaries of what constitutes information misuse, raising the question: can individuals misuse their own information?

Method. Semi-structured interviews with fifteen paediatric psychiatry clinicians experienced in open record access documentation were used as a basis for conceptual discussion on the notion of information misuse.

Analysis. Conceptual discussion based on thematic analysis of interview transcripts.

Results. Informants described situations regarding both clinicians' and patients' information behaviours that are highlighted as possible instances of authorised information misuse extending beyond malicious intent or personal gain, broadening the concept's boundaries beyond descriptions in current research.

Conclusion. Findings indicate that the concept of information misuse is far more nuanced than current research often assumes. An action deemed misuse in one context might be considered best practice in another, emphasising that the distinction between information use and misuse is heavily influenced by context and the consequences of the action.

Introduction

Medical records, initially a working tool held close to heart by medical staff, have evolved into an increasingly shared document providing online access for patients. This shift reflects the global zeitgeist of patient-centred care and a legal and ethical change towards recognising patient ownership of their health data, with medical records being increasingly viewed as belonging more to patients than clinicians. Motivations behind what in the article will be referred to as open record access to medical records include enhancing healthcare efficiency, increasing patient empowerment and encouraging patients to take more responsibility for their health (Moll et al., 2018; Tapuria et al., 2021). Online systems granting patients access to their medical records have been implemented globally, allowing individuals to stay informed about their health and strengthening communication with healthcare professionals (Mamra et al., 2017). Many patients report an improved understanding of their health through open record access, which can also facilitate self-management and positive health outcomes (Kujala et al., 2022; Neves et al., 2020; Zanaboni et al., 2022). However, some patients and clinicians have raised concerns about the potential negative outcomes of open record access, which may verge on information misuse. These include the involuntary disclosure of sensitive information (de Lusignan et al., 2014), anxiety or distress caused by reading sensitive content in personal health records (Wang et al., 2023) and the omission of critical preliminary or sensitive information from records to prevent confusion or anxiety among patients (Blease et al., 2023; Denneson et al., 2017; Pisciotta et al., 2019).

Similarly to information use that has remained under-studied and -theorised in information science research, information misuse has attracted only rather sporadic attention so far in the literature (Nguyen and Simkin, 2017; Pasquetto et al., 2024; Sinha and Randall, 2022). While it is easy to provide examples of fairly clear cases of what counts as information misuse and its underpinning factors, open records access provides a useful context to investigate and theorise cases of experienced misuse that are anything but straightforward.

This article aims to expand the understanding of information misuse and problematise the concept, drawing on findings from an ongoing study examining the effects of open record access on information practices within paediatric psychiatry. Findings in the study propose that the concept of information misuse is more nuanced than current research suggests, extending beyond actions such as personal gain or malicious intent. By critically engaging with the literature and examining how possible information misuse might impact the integrity of medical records, patient-provider relationships and overall care quality, this paper aims to broaden the discussion of what constitutes information misuse and why.

Related literature

Exceptions and challenges in psychiatric record access

The risk of adverse effects of open records access has been suggested to be especially high in the context of psychiatric care (Wang et al., 2023). Access to psychiatric records online remains limited and contentious. In Sweden, where a national eHealth portal has been operating since 2015 providing online records access in all 21 regions of the country, as of 2018, only two regions had allowed online access to psychiatric records, reflecting a broader hesitation to share these sensitive records digitally. Paediatric psychiatry, in particular, is an area of heightened vulnerability and complexity. At the present, open record access practices in paediatric psychiatry vary widely across Swedish healthcare regions: while some regions restrict access entirely, others provide limited access with age-based restrictions for children and their guardians (Bärkås, 2024).

Clinicians can, during documentation, use designated keywords, such as *early hypothesis* or *threats and violence*, to shield particularly sensitive information from appearing online through the Swedish patient portal *Journalen* (Petersson and Erlingsdóttir, 2018). These restrictions and keyword-based blocking practices are intended to protect the functions of the document as a

working tool, as well as the patient's privacy, and to prevent potential information misuse in sensitive cases. That said, a manual blocking system, as described, relies on the documenting clinician to anticipate which specific information may be considered sensitive for a particular patient at any given time – an assessment that can vary significantly from one patient to another.

Information misuse

In the field of information behaviour, information misuse encompasses various aspects and parallel concepts. In a simple sense, information misuse can be understood as an antithesis of the still relatively under-studied (even if interest has been increasing in health contexts and beyond, cf. e.g., Chen's 2015 notion of information use (Savolainen, 2009)). Kari (2010) identifies seven approaches to conceptualise information use as information practices, information search, information processing, knowledge construction, information production, applying information and effects of information. The opposite or negation of each of these can be understood as a form of information misuse. To illustrate, examples of information misuse might include manipulative behaviours such as selectively presenting or withholding information to mislead others (Pasquetto et al., 2024; Karlova and Fisher, 2013). Additional examples involve privacy violations, such as the misuse of customer data (Nguyen and Simkin, 2017), and the exploitation of information for malicious purposes, including harassment or blackmail driven by personal gain (Sinha and Randall, 2022).

When discussing data misuse, essentially a variety of information misuse, Pasquetto et. al (2024) emphasise the challenges in defining what it entails, noting that it encompasses a range of behaviours, from unintentional methodological errors to deliberate, misleading use of data to influence public opinion. Misuse definitions are further complicated by epistemological differences, as what constitutes misuse in one community may be seen as best practice in another. The review highlights the need for a shared understanding of misuse that prioritises the wellbeing of individuals, communities and the environment. Pasquetto et. al (2024) further discuss how the fear of misuse is a significant barrier to data sharing in the open science community. Concerns include the potential for misinterpretation, errors in secondary analysis and the fear of replication experiments revealing flaws in original research.

Information misuse is also indirectly implicated in the notions relating to disinformation. Karlova and Fisher (2013) introduce misinformation and disinformation as extensions of information behaviour, exploring how inaccurate or deceptive information diffuses through social networks. They emphasise the importance of information literacy in recognising and evaluating credibility cues. Huvila (2018) argues that information literacy and practices exist on a spectrum, with varying degrees and nuances of purposefulness depending on the specific context. He interrogates potential conceptualisations of what it entails not to be information literate in terms of illiteracy and unliteracy. Similarly, there is individual variation in how certain practices are perceived as suboptimal and in how they affect different individuals and groups engaged in particular information literacy practices. What one person may interpret as ambiguous or indicative of information illiteracy another might view as a flexible and resourceful strategy. Earlier research has also argued that notions like information seeking and acquisition suffer similarly from too rigid dichotomising. The concept of *information-taking* (Huvila, 2022) focuses on the processes through which information is made one's own, rather than its subsequent application through understanding, learning or making sense. It encompasses a wide range of activities, both active and passive, that relate to how individuals or systems acquire and internalise information for various purposes. As Ingold (2017) notes, this spectrum extends from deliberate action to passive reception, offering a broader framework than terms like information acquisition (Savolainen, 2016). By including modes such as seeking, non-seeking, browsing and passive engagement, information-taking avoids rigid boundaries between these activities, presenting them as interconnected

aspects of a larger information experience. This perspective highlights the spectrum of how information is absorbed, prepared for use and transformed into personal or functional value.

Besides residing in a continuum between clear cases of misuse and others equally clearly being not misuse, misuse is also relative to stakeholders and their perspectives. Nguyen and Simkin (2017) delve into how firms' misuse of customer data generates perceptions of unfairness tied to privacy violations from the customer's perspective, even if the firm itself considers such information use completely legitimate. The findings reveal that beyond pricing, factors such as service quality and communication practices significantly affect customers' perceptions of fairness. This approach not only highlights the ethical implications of information misuse but also demonstrates its potential to undermine customer trust and loyalty. Also, the research into data misuse has highlighted the diverging perspectives on equitable use and misuse concerning what is considered a fair redistribution of benefits, especially when information is collected from vulnerable or marginalised communities (Pasquetto et al., 2024).

As an example of earlier theorising of information misuse, a study by Vikas Sinha and Bill Randall (2022) examined factors leading trusted insiders to misuse their authorised access to information. The study emphasises that insider threats cannot be fully mitigated through technical solutions alone, highlighting the importance of understanding the motivations and behaviours behind such actions. To illustrate, the authors present a hypothetical example involving a human resources manager with access to sensitive employee information, such as compensation details, social security numbers, health records and performance reviews. An individual in this role, motivated by malicious intent, could exploit this data to manipulate records, target vulnerable employees or engage in blackmail for personal gain. The framework proposed by Sinha and Randall aims to deepen understanding of how authorised insiders engage in opportunistic information behaviour and the conditions under which such misuse occurs.

Information misuse in healthcare systems

The literature on information misuse in healthcare systems has largely overlooked instances where misuse might originate from patients themselves, making this paper a valuable addition to the broader discussion on information misuse and what it constitutes. The existing literature highlights significant ethical, legal and practical challenges arising from unauthorised access, alteration or theft of sensitive patient data. Caputo et al. (2008) provide insights into detecting information misuse by studying how insider behaviour varies between malicious and benign users, employing empirical methods to identify indicators of potential misuse. This approach is relevant for healthcare settings, where the risk of internal misuse can compromise patient confidentiality and trust. In healthcare, unauthorised access and alterations are particularly concerning, with examples ranging from privacy breaches to data manipulations that affect patient outcomes (Pool et al., 2024; Smith, 1998). This research underscores the risks within healthcare, where professionals who improperly handle medical data may face serious legal repercussions, including dismissal and prosecution under data protection laws (Smith, 1998). In healthcare, breaches involving unauthorised access and data manipulation present critical concerns, impacting both patient privacy and care quality. Smith (1998) details various incidents illustrating the severe consequences of such violations. For example, a nurse was incarcerated under the Computer Misuse Act of 1990 for altering a prescription in 1994, while another faced permanent dismissal for unauthorised access to a colleague's medical records. Other cases include a general practitioner charged with perverting justice and manslaughter for falsifying records to conceal an incorrect prescription and a nurse dismissed after erasing malpractice-related records.

The misuse of medical information poses significant ethical challenges, involving issues such as confidentiality, secrecy and the integrity of patient-provider relationships. Jayasundra (2004) emphasises that healthcare professionals are ethically bound to protect patient data, despite rapid technological changes that introduce new vulnerabilities. Pool et al. (2024) address these issues

from a sociotechnical perspective, noting that both technical and human factors contribute to medical records misuse. Their model identifies two dimensions – data misfit (including availability, meaning, and place misfit) and improper data processing – offering a framework to understand how misuse impacts healthcare delivery and patient safety. This approach aligns with findings from Smith (1998), who documents various legal consequences for health professionals and organisations failing to protect patient data, highlighting the real-world implications of data misuse in healthcare.

Methods

This study draws from the analysis of semi-structured interviews with fifteen clinicians from various professions in paediatric psychiatry, all experienced in documenting within an open record access system that provides insight to both patients and their guardians. The investigation focused on documentation practices in this particularly sensitive setting, where clinicians, paediatric patients and guardians may consciously safeguard information and where levels of trust between doctors, patients and guardians can vary significantly.

Participant recruitment and consent

Participants were recruited through upper management in paediatric psychiatry departments across Sweden, as well as through public advertisements placed in hospital areas around Stockholm and Uppsala. All participants provided informed consent, signing a document allowing their interviews to be recorded and used solely for research purposes. The consent form emphasised the anonymity of the data; all identifying details were removed during transcription to maintain confidentiality. Participation in the study was entirely voluntary, with no financial or material compensation provided.

Interview procedure

All interviews were conducted by the author, who had no prior relationship with the interviewees. Given the demanding schedules of clinical staff, interviews were conducted digitally via Zoom, allowing participants to choose times that best fit their availability and enabling broader participation. All sessions were recorded with participants' consent, and the recordings were transcribed and anonymised to protect privacy. After transcription, the voice recordings were deleted. The interviews, which lasted approximately one hour each, were conducted in Swedish with participants fluent in the language; transcripts were later translated for publication. The interviews were conducted in a semi-structured format, allowing flexibility while focusing on key topics relevant to the study. Interviews began with an off-the-record introduction, during which participants were briefed on the study's aims and assured that they could pause or withdraw from the interview at any time. This introduction also allowed participants to ask questions before the recording commenced. Each interview lasted approximately one hour, allowing interviewees ample time to add final remarks at the end.

Data collection and analysis

In line with thematic analysis methods (Braun, 2022), the transcriptions were coded to identify prominent themes and concepts. Coding centred on clinicians' information practices, clinical dilemmas and ethical considerations regarding medical record ownership and usage. The coding process allowed for an in-depth exploration of the nuances within clinicians' documentation practices in the context of open record access. Questions focused on various aspects of documentation behaviour, including the process of recording information in medical records, whether practices have changed since records became digitally accessible and any guidelines provided to clinicians on documenting in open records. The questions also delved into clinicians' concerns about omitting information, such as preliminary results, suspicions based on experience or future assessments, and whether staff now prioritise factual data over other observations. Additionally, clinicians were asked if they document outside of the official record, if transparency

influences patient or guardian behaviour and whether they adapt records to be more understandable to non-professionals. Further questions addressed whether clinicians had experienced any adverse consequences from open record access and if any cases have raised ethical concerns or hesitation about documentation.

Findings

Information misuse in healthcare reveals a paradox involving insiders, malicious intent and perceived benefits. The study's findings show that patients themselves sometimes engage in behaviours that could be considered misuse of their own information. While individuals typically have the right to access their health information – since confidentiality does not apply to them – exceptions exist. For instance, access may be restricted when disclosure could significantly undermine the purpose of their care or treatment, in a Swedish context regulated under the Swedish Public Access to Information and Secrecy Act (25 ch. 6 §).

Clinician informants in the study report that specific patients, befriending and identifying with their disease, leverage the information provided through open record access as a means of controlling their care and actions from the staff, hindering their proper care and treatment, as shown in the following informant quote:

> *What we have, what we have lost, is patients who can't handle the information, and who use it to ... How should I express it ... Some patients, especially those with personality issues, may* want *to be sick. I mean, they, they have an identity tied to it, and they, in a way,* befriend *their illness, if I may put it that way. And that's part of the problem, so it's not that they are, are, kinda, they* are *sick [sighs with a small laugh]. And then, they can, use things we write to ... Let me give you an example just so you understand; If, for example, I write that I assess this patient as not suicidal because 'this and this and this and this ...' For instance, 'has plans for the future' or 'has clearly used their crisis plan,' or whatever I can write. So when they come to me next time, they say 'I have no plans for the future'. So, they have seen my argumentation and how I position myself in the medical records to support a low suicide risk, for example. And then they use it to, and it's not that they actually change in their ... They are not more or less suicidal, but they create a rhetoric and a way of talking that sort of makes it difficult for us to use our medical language to support what we think eventually. What we use today will be used against us at the next visit. We never used to encounter that before.* (Informant (5), Upper Management Clinician, Paediatric Psychiatry)

In this scenario, there would seem, at first, to not be sensitive information that needed to be blocked in the record; what the clinician reported was '*has plans for the future*,' something that would not be labelled as sensitive information but as a positive care outcome. The patient later uses this same documentation to control their care in ways that are negative to their treatment, a possible form of information misuse seen from a clinician's perspective. This shows a somewhat paradoxical situation showing the complexities of open record access in psychiatry. The informant voiced concerns in the above quote that they are losing patients who struggle to handle the information in their medical records. Several informants have expressed similar concerns in the study, with patients turning open record access into what could be argued to be a tool of control through documentation, complicating clinician-patient interactions and adopting a rhetoric that challenges clinicians' ability to employ medical language effectively. This is shifting the clinical documentation process from a supportive tool into something with the potential to be misused, with patients leveraging documented information to influence care decisions. Clinicians report that some patients, informed by access to clinicians' notes, use specific language that prompts mandatory actions like admission, even when clinicians believe these actions may worsen the patient's condition. This creates a tension where clinicians feel compelled to act against their professional judgement due to legal and procedural obligations. The findings revealing that

clinicians fear their current documentation choices may be used against them in future interactions challenge the primary goals of open record access for patients. While online access to medical records is intended to improve healthcare, empower patients and foster transparency and information freedom (Moll et al., 2018; Tapuria et al., 2021), the study reveals that open record access may entail unanticipated complexities for certain patient groups who possibly misuse the information in their medical records, hindering their own care.

Control through documentation

One clinician informant in the study describes a case involving a young girl with severe anorexia. Due to her condition, she has strict movement restrictions and is not permitted to exercise in any way. However, the clinician suspects that the entire family may be struggling with eating disorders, indicating a broader family issue. Aware that the parents read the medical records, the clinician documented observation of the family biking to the eating disorder unit despite the daughter's restriction against any physical activity. The clinician highlighted their lack of adherence to the prescribed care plan, aiming to provoke a reaction. This approach proved effective: by the next appointment, the parents had read the entry, asked questions about it and began following the treatment guidelines more closely, turning the medical record into a tool creating an opportunity for reflection.

Another clinician noted that if a patient became upset over something documented in the record, they would use the situation as a therapeutic opportunity, encouraging the patient to explore why certain words were distressing and using it to deepen their therapeutic dialogue. This, however, was argued to depend on the prior establishment of clinician-patient trust.

Additionally, several informants describe threatening situations that may be regarded as information misuse, most likely driven by malicious intent, with information accessed through online patient portals enabling open record access. Informants describe patients showing up uninvited at clinicians' homes or repeatedly calling their private phones in a threatening manner after working hours. This is facilitated by Sweden's unique openness regarding public information, where names and addresses are official records and easily accessible online through websites that profit from ad revenue. As a result, anyone without a protected identity is at risk of home harassment if they offend the wrong person. This risk is heightened in fields like adult psychiatric care, where medical records, even with specific information blocked through keywords, are still openly signed with the clinician's full name. The issue has drawn the attention of the Swedish Association of Young Doctors (SYLF), which has advocated for the pseudonymisation of medical records to enhance clinician safety (Wernström, 2023).

These cases highlight how patient access to medical records can serve as a tool of control – empowering clinicians to influence patient or family behaviour while also allowing patients to reflect and use the same documentation in differing ways. The findings shed light on the complexity surrounding the concept of information misuse. What one individual may consider misuse might, for another, represent best practice. This ethical ambiguity of proper use of information is evident in both clinicians' use of information to provoke specific actions and patients' use of information to exert control over their care – actions that, according to clinicians, may not always be beneficial for the patients or their psychiatric conditions.

Discussion

Complex information uses

Previous studies underscore the diverse nature of information misuse, illustrating its application across various sectors – from the security risks associated with insider threats to the deterioration of consumer trust resulting from data mismanagement. Drawing from the existing literature, we can define information misuse as the inappropriate leverage of accessible information by individuals within a system, typically insiders such as healthcare providers or private companies.

However, this paper highlights a different facet of information misuse in the context of healthcare, where patients – with legitimate access to their health information – may use their medical documentation in ways that counteract their recovery. Unlike Sinha and Randall's model (2022), there are no motives like financial benefit or fears of repercussions; instead, patients may hinder their care through behaviours tied to their psychiatric conditions. This behaviour is not necessarily driven by conscious malicious intent. Instead, it reflects the complexities of the patient's condition, where access to certain information influences self-harming behaviours and limits the efficacy of care interventions.

A question arises from these healthcare examples of possible information misuse: when does information go from simply being information use to information misuse? For example, does controlling someone else's actions through information constitute misuse, or is it sometimes a legitimate or even necessary action? In healthcare, a pregnant patient seeking control over their care through questioning their medical records may most likely not be considered information misuse. Still, the same behaviour might be viewed differently in a self-harming patient whose actions conflict with therapeutic goals. These distinctions underline the importance of considering context, purpose and consequences in evaluating information behaviours.

How does one misuse information?

In this paper, it is essential to question whether the term information misuse is even appropriate to use, as the concept is far from straightforward. Huvila (2018), in his discussion on alternatives to the traditional literacy/illiteracy dichotomy, argues that information practices exist on a spectrum. These practices vary in degrees of purposefulness, depending on specific contexts. Similarly, what one person interprets as ambiguous or indicative of misuse another might view as a flexible and resourceful strategy. This highlights the complexity of assessing information use and misuse, as individual norms, ideals and practices often clash.

Pasquetto et al. (2024) also address the challenges in defining misuse, noting that it encompasses a wide range of behaviours – from unintentional methodological errors to deliberate misuse aimed at influencing public opinion. Definitions of misuse are further complicated by epistemological differences, as what one community might perceive as misuse could be seen as best practice by another. These differing perspectives emphasise that use and misuse cannot always be understood as binary opposites. Instead, they must be examined within their specific contexts and evaluated based on their outcomes and consequences. Drawing on examples from the study, patients who leverage their access to medical information to prompt mandatory actions that obstruct their proper care could be seen as engaging in information misuse. This is particularly evident when such actions hinder clinicians from using precise medical language and compel them to act against their professional judgement.

Is misuse of information simply abnormal use?

The boundary between use and misuse often hinges on questions of power, norms and intent. While deviations from ordinary practices are frequently viewed negatively, not all forms of control or unconventional practices are inherently harmful. For instance, patient empowerment involves exercising control and ownership over one's healthcare information, which is generally seen as positive. On the other hand, what happens when systems or individuals define normal use too narrowly? Rather than focusing solely on norms, the concept of misuse could instead address how systems function. Misuse does not necessarily have to involve illegal acts. It can arise from unmet needs or systemic misalignment.

From an ethical perspective, questions about the clinician's role regarding information misuse come into play. Is it, drawing on the example in the study, ethical for the clinician to intentionally provoke a patient with information in their medical record to initiate a response, or is this, in fact, information misuse? The informant in the study claiming that the patients *can't handle* their

information also leaves questions concerning what proper handling of one's information even means. Handling information is, at its core, a subjective process. Similarly, patients may use information to exert control over their care in ways that clinicians view as unhelpful or even harmful, but where the patients believe it to be the other way around. This dynamic raises broader questions about how information use – whether by patients or clinicians – can be framed as misuse depending on the intent, outcomes and context.

Vulnerable information

In psychiatric care, information carries a unique weight compared to other medical fields. Open record access, while empowering patients, may paradoxically harm both patients and clinicians by undermining trust and impeding the use of medical records as effective working tools, making them a target for possible information misuse. One could argue that the accessibility of digital medical records exacerbates the issue of possible information misuse, the prior administrative effort for patients to access them acting as a barrier to frequent access. Today, the digitalisation of records has made them readily accessible, often just a click away on smartphones – devices nearly ubiquitous in modern society among both children and adults. While this ease of access supports patient autonomy, it also amplifies the risks of harmful information misuse, particularly for those with psychiatric vulnerabilities.

Conclusion

Drawing on examples from the healthcare domain, this paper problematises the concept of information misuse – traditionally defined as unauthorised or improper use for personal gain – to include what could be seen as a form of authorised misuse. This includes instances where patients, exercising their legitimate access to medical records, use this information in ways that challenge clinical norms or therapeutic goals. In psychiatric care, such behaviours highlight a tension between patient empowerment and clinical judgement. For instance, psychiatric patients may use their records to control their health journeys in ways they believe are beneficial, even if these actions undermine proper care. Such scenarios are not driven by malicious intent but rather by the distorted perception of what will aid them - a perception shaped by their psychiatric illnesses and specific circumstances.

The findings illustrate practical and theoretical challenges tied to what can be understood as information misuse and its implications in contexts with a direct impact on people's health and wellbeing as with open record access in healthcare. While transparency aims to empower patients and foster trust, it can paradoxically hinder care, strain clinician-patient relationships and complicate recovery. Clinicians also face risks associated with potential information misuse, including harassment due to the accessibility of their personal information.

Additionally, clinicians may ethically be argued to misuse their documentation themselves when using it as a tool to provoke reactions from patients. These findings contribute to a broader discourse on the spectrum of information practices. Misuse, rather than being a binary concept, reflects clashing norms and interpretations. Information practices are context-dependent, where actions seen as resourceful by one group may be viewed as misuse by another (Savolainen, 2007). Similarly, Pasquetto et al. (2024) highlight the complexity of defining data misuse, noting that what one community sees as problematic may be considered best practice in another. These perspectives underscore that misuse is not a binary concept but a reflection of clashing norms, ideals and practices within specific contexts. In healthcare, what constitutes misuse is often determined by context: for example, a pregnant patient seeking to question and control their care through access to medical records is unlikely to be labelled as misusing information; however, a self-harming patient leveraging similar access to resist therapeutic interventions might be seen as crossing into misuse. Such examples highlight the need to evaluate information practices based on intent, purpose and consequences rather than rigid norms.

In psychiatric care, where information carries heightened vulnerabilities, digitalisation has amplified both the opportunities for empowerment and the risks of misuse. The study's findings underscore the need for documentation systems that balance accessibility with safeguards for all stakeholders, in the case of healthcare, supporting both clinicians and patients without undermining care or trust.

By viewing information misuse as a continuum shaped by context, intent and outcomes, we move towards a more nuanced understanding better suited to navigating the ethical and practical challenges of information use in complex environments such as healthcare.

Ultimately, this study reframes information misuse as not merely improper use but as information behaviours that deviate from normative expectations, driven by complex personal, contextual and systemic factors. Perhaps, at its core, information misuse might best be understood as information used in ways that cross established boundaries of what constitutes acceptable or ordinary use, ranging from deliberate exploitation to behaviours driven by misunderstanding or illness.

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'It's such a blackbox function': Norwegian academic librarians' ambivalent perceptions towards AI use in academic libraries and academia

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Abstract

Introduction. In this study we report on the perceptions of Norwegian academic librarians towards the emergent role of AI in academic libraries, both in service delivery and library operations.

Method. A qualitative study was conducted through semi-structured interviews with eight academic librarians at two Norwegian universities.

Analysis. The interview transcriptions were inductively analysed and coded using F4analyse.

Results. Most participants had positive experiences with AI in various tasks and acknowledged its influence on teaching information literacy. However, they expressed scepticism towards AI due to transparency and data security concerns. The lack of guidelines led to uncertainty in their roles, and practices varied across universities regarding AI applications for students.

Conclusion: The study reveals academic librarians' perceptions of AI as a double-edged sword, offering benefits but also presenting challenges, particularly related to ethical issues. Frustration was expressed over the lack of unified AI implementation guidelines, causing uncertainty among librarians and students. These underscore the need for clear AI guidelines and enhancement of librarians' AI competence.

Introduction

Artificial Intelligence (AI) tools have significantly impacted library services and operations over the years and should be considered in all of them (Cox, 2024; Kautonen and Gasparini, 2024). In our empirical research, we aimed to explore librarians' perceptions of how AI has impacted their daily work and their reflections on this subject.

Librarians have always been interested in adopting new technology and thereby enhancing their own technical skills and information literacy, both to streamline their own tasks, but also to guide students (Kautonen and Gasparini, 2024). While AI can replace or simplify tasks like cataloguing and metadata production (Cox, 2024), librarians' roles remain essential due to the evolving information landscape (Cox and Maduzar, 2024). Due to their long-standing use of descriptive AI or machine learning for improving metadata (Cox, 2024), libraries were reasonably prepared for the introduction of generative AI, such as Chat GPT.

Academic librarians need to be proactive involved in AI strategy development and understand how AI impacts research and education to offer relevant services to patrons (Gasparini and Kautonen, 2022: Kautonene and Gasparini, 2024; Lo, 2023). However, perceptions towards AI use varies. It could be seen as either a beneficial tool or a potential threat (Gasparini and Kautonen, 2022). Cataloguing and classification are core tasks of librarianship and often mentioned as examples of routine tasks which could be supported or even replaced by AI (Andersdotter, 2023; Ishengoma, 2024; Thornes and Mangerøy, 2024). When new technology has replaced routine tasks, and in many cases, also supplanted human labour it is not surprising that some people are anxious about, or even actively opposed, to for example, what the revolution of AI represents (Gasparini and Kautonen. 2022; Kautonen and Gasparini, 2024; Grote et al. 2024).

Lack of competence and knowledge but also lack of guidelines could be the possible reasons for the mentioned uncertainty. The uncertainty has led to a demand for regulations and institutional guidelines (Grote et al. 2024; Ishengoma, 2024; Lo, 2023). However, regulations and guidelines are demanding because of the complexity and difference in AI tools (Kautonen and Gasparini, 2024). Librarians' ability to adopt new technology is also influenced by the culture of experimentation and '*constraining institutional infrastructure*' (Ishengoma, 2024, p. 1066).

Both internationally (Lo, 2023) and nationally, strategies have been proposed and published in relation to AI use. Norway's higher education advisory body, Universities Norway [UHR] (2024), stated in its 2024-2028 strategy that it would '*contribute to the responsible use of artificial intelligence and other transformative technology*'. However, guidelines for the use and implementation of AI applications vary among Norwegian universities and academic libraries. For instance, Sikt AI-chat, a national system similar to Chat GPT, is approved for use by both students and staff in some universities, whereas in others, it is approved only for staff. Another example is Keenious, an application for effective academic information searching and recommendation (Johansen and Borlund, 2022; Kautonen and Gasparini, 2024), used by many academic libraries in Norway. However, some libraries haven not included it in their software portfolio.

The Library Committee UHR (2023) states in its latest action plan that university libraries should

> *Promote work with skill, knowledge, and competence goals related to source criticism, artificial intelligence, algorithms, and other technological developments that are relevant for information, source, and data handling.*

Kautonen and Gasparini (2024, p. 1) assert that university libraries should publish guidelines for the '*responsible practice for the use of* AI'. Nevertheless, while some university libraries have incorporated AI into their strategic plans, others have not.

Literature review

Numerous studies have investigated academic librarians' perceptions of AI integration in libraries worldwide. Studies conducted in Africa show the eagerness of academic librarians to adopt AI technologies tempered by concerns about job security, privacy, data security and funding (cf. Ajani et al., 2022). Similar trends are observed in Asia, with AI tools in use in some libraries and librarians viewing AI as an opportunity, but concerns about funding, technological skills, and data privacy remain (Ali et al., 2020; Ali et al., 2024; De Leon et al., 2024; Harisanty et al., 2024; Huang, 2024).

Andersdotter's (2023) mixed-method study on AI training in Swedish libraries found enhanced understanding of AI among participants. The study highlighted a dual challenge for librarians: considering AI applications in library operations and incorporating AI skills and knowledge into the information literacy training they provide to users.

Thornes and Mangerøy (2024) surveyed Norwegian librarians in 2023 (233 respondents) and 2024 (193 respondents) about their AI attitudes. A large majority (82-85 per cent) saw AI as a useful tool. Yet, about a third feared AI might take over tasks, slightly less in 2024. While two-thirds wanted more AI knowledge, only half had been offered relevant courses.

In a survey by Grote et al. (2024), most participants were familiar with AI and recognised its benefits, but 88 per cent identified ethical challenges and 60 per cent perceived a lack of resources for training as a challenge. The researchers recommended librarians take an active role in AI introduction and highlighted the importance of library management in providing staff with AI training opportunities.

Cox and Mazumdar (2024, p. 334) identify five different areas of AI use in libraries: 1) library back-end processes characterised as '*routine and clerical tasks*' (such as programming, sorting returned books), 2) services such as systematic reviews and reference queries, 3) creation of communities of data scientists, 4) data and AI literacy (recommendation tools, translation grammar etc.), 5) user management (statistics). They also state that, '*librarians will continue to have a very important role, especially given AI's dependence on data*' (Cox and Mazumdar, 2024. p. 330).

In summary, there is a global trend towards adopting AI in libraries. However, concerns regarding job security, privacy, data security and the need for AI-related skills and training remain. To effectively use AI and maintain valuable services, academic librarians must understand and address these challenges.

The literature on AI use in academic libraries is developing, however, there is a dominance of survey-based research methods, with limited qualitative or mixed-methods studies. Findings based on participants attending workshops and learning circles and having a special interest in AI may be biased (cf. Grote et al., 2024; Andersdotter, 2023). Besides this, perceptions of Norwegian librarians towards AI use in libraries, academic writing and the future of the library profession have not been thoroughly investigated. Thus, aligning with Cox's (2023) call for empirical studies on AI in libraries, particularly outside the UK, we aim to explore the attitudes of Norwegian academic librarians towards AI use in library services, academia and their own roles. The study has the following overarching questions:

- RQ 1: How do academic librarians perceive the potentials/challenges of integrating AI into library services?
- RQ2: What are the consequences of using AI in academic libraries on the roles and responsibilities of academic librarians?

Theoretical perspectives

The Technology acceptance model (TAM), which has had several extensions (TAM2 and TAM3) provides a good framework to understand the attitudes of users towards new technologies such as AI tools. TAM (Davis, 1989) posited that perceived ease of use (PEOU) and perceived usefulness (PU) influence users' attitudes and intentions towards accepting and using technology. TAM 2 (Venkatesh and Davis, 2000) extended TAM and added factors that affect perceived usefulness, including subjective norms (i.e. the perceived social pressure to engage in a behaviour), image (the influence of using technology on one's status in a social system), job relevance (the applicability of the target technology to the job/task), output quality (perceived quality of technology in performing a task), experience (with a technology), and result demonstrability (correctness of the outcome of the technology/system). TAM3 (Venkatesh and Bala, 2008) further extended the model by adding predictors of perceived ease of use by variables such as computer self-efficacy, computer anxiety, perceived enjoyment and objective usability.

A recent review of literature on the usage of this model in library and information science highlights '*several policy implications for improving technology use within libraries*' (Ishengoma, 2024, p. 1067) and especially takes into consideration emotions, politics and social aspects. Complex institutions like libraries need clear policies but also a culture of experimentation to ensure adaption to new technology (Ishengoma, 2024, p. 1067). The TAM has to little extent been used to investigate artificial intelligence adoption in libraries (cf. Ishengoma, 2024). Additionally, ethical aspects are not included directly in TAM.

Methodology

To deeply understand librarians' experiences and perceptions of using AI in library services, this study used a qualitative research design and semi-structured interviews with a descriptive phenomenology approach (Bryman, 2021; Sundler et al., 2019). The data was collected as part of the larger international NIAGARA research project (https://niagaragrant.com/), involving partners from Norway, Poland, Tanzania and Zambia.

From the researchers' network, eight librarians at two Norwegian university libraries accepted to participate. Interviews were facilitated by the authors during September 2024, conducted in Norwegian, in person and via Zoom and varying from 36 to 75 minutes. The interviews were transcribed and translated into English using a safe system developed by University of Oslo titled AUTOTEKST (https://autotekst.uio.no/en). The transcriptions were checked with the audio files and anonymised by the authors. Inspired by Braun and Clarke (2006) the anonymous transcripts were coded inductively by one of the researchers in F4analyse desktop version 3.4.5 (https://www.audiotranskription.de/en/). The coding resulted in more overarching themes such as potential, challenges and students' and librarians' use of AI. The thematic codes were then discussed and decided afterwards by both researchers.

The interview guide included six overarching questions focused on the digital competencies of academic librarians. For the purposes of this study, we specifically analysed responses to open-ended questions about librarians' attitudes towards the use of AI in library services and academia.

The study comprised eight participants, three men and five women, aged 32 to 61. Most held a degree in library and information science, with varying professional experience. To ensure anonymity, participants are referred to as P1-P8 and universities as U1 and U2. Age, gender and education are not factors in the analysis. Ethical approvals were obtained from the Norwegian Agency for Shared Services in Education and Research (Reference number: 151925).

Results

All participants were engaged in knowledge management and customer service roles within their libraries, with common tasks related to information literacy activities and direct patron interaction. Many were also involved in content management, including web and e-resource management, collection development, archives, reading lists and research data. Notably, two participants mentioned having tasks related to AI in their libraries.

We will look into which potential or challenges librarians perceive and how they think AI will impact librarians' roles and tasks in the future.

Potentials of AI use

The participants acknowledged the potential of AI in various fields such as streamlining and simplifying routine tasks like programming (e.g. using AI for XML code), making documents, speeches etc. Two of the participants mentioned the time saving aspects for example when creating instructional videos or covering (reading) more academic literature.

Participants mentioned other potential AI represents, such as aiding in writing processes like summarisations, abstract generation, spelling, grammar, translating Norwegian keywords into Swedish (P8) or language translations, like P5 who used ChatPDF.com for German document translations. This also helped him analyse text and gave him the opportunity to discuss articles: '*I think that using AI tools helps me to get faster into what I am interested in*' (P5). P7 was responsible for the library's social media accounts and uses AI to '*ask if you can help me make this text funnier*' and then rewrite it further. Another participant mentioned how the AI tool Scribe saved time by simplifying the creation of instructional material.

Some participants highlighted the importance of the legal and correct use of AI, and they suggested that it could be beneficial when used appropriately in the right subject areas like medicine. P4 highlighted AI's ability to find patterns in large data sets, like MR images, because AI '*can go through so much in a short time than a human can*'.

Participants saw the potential in the tool, but also acknowledged the challenges, a dilemma several of the informants touched upon.

Challenges of AI use

All participants expressed various concerns regarding the use of AI, such as its lack of transparency, ability to be verified, trustworthiness, absence of institutional or national guidelines for its use, commercial nature, variations in different disciplines, lack of understanding on how to use AI, copyright and intellectual issues, high power consumption and the personification of AI.

Many participants had significant trust issues with AI and voiced concerns about its dependability, citing situations where AI produced inaccurate or non-existent information. P6, who was a student in addition to being an academic librarian, mentioned that she avoided using AI as a student due to these trust issues, stating, '*And it's also a bit because it's such a Blackbox function, and then I don't trust it*'. P2 justified this scepticism and explained the reason, '*you know they can hallucinate*'. She had experienced some students requesting non-existing books and indicated that this is possibly because they use AI tools for information searching instead of library search systems.

The participants indicated that sources AI uses to generate text can greatly differ in reliability and may include biased content from news media or social media. P2 pointed out that the lack of transparency and documentation about the sources used by AI tools could lead to difficulties in verifying the information. P4 also expressed worries:

> *Since we don't know where AI gets information from, or how they are trained, we could end up in a situation where AI is trained on AI. And that you get this type of circular effect where*

> *the content of what is presented becomes more and more watered down and less and less precise.*

Due to AI tools' training on historical data, P4 worried about the potential for bias in AI tools. '*It can be about gender. It could be about age … socio-economic status. It may be about interest groups that do not have good intentions.*'

Potential copyright issues associated with the use of AI tools was mentioned as a concern by some, where users might accidentally contribute to '*building up [AI-] databases with texts and files that you are not allowed to distribute*' (P1). AI tools like Keenious, Raayan, Covidence and Sikt AI-chat are examples of commercial and non-commercial applications used by several participants**.** Cost was perceived as a barrier to testing applications for librarians and evaluating useful tools for students. However, P5 mentioned, '*I use a bit of my own money to learn*'.

Personification of AI tools by asking '*Can you please give me this and that*' (P8), was identified as a potential risk and could create an illusion of a deeper relationship with the tool, impacting how users interpret and rely on the AI's outputs.

Request for institutional or national guidelines

The lack of clear guidelines for AI use in academic settings, both from national, institutional and the library's perspectives, but also from teacher to teacher was mentioned as a challenge. P1 expressed frustration at this deficiency but also shared concerns that librarians could not avoid discussing AI when interacting with students:

> *We have no clear guidelines, or we throw them over to the Citation Compass* [a national guideline for academic writing and citing]. *We throw them over to professional, subject teachers, and there is no one who really takes hold of this here* [at the library]. *But we must say something about it. We can't avoid it.*

Access to commercial AI tools varies between universities, partly because of the costs or lack of trust, such as a subscription to Keenious or Sikt AI-chat. Because lack of access to approved AI tools for students can lead them to use less reliable alternatives where the quality of input data is unknown, some participants argued that the university was best served by offering applications or products where the librarians know the data quality to a greater extent. At U1 the participants pointed out the discrepancies: although tools like Sikt AI-chat were accessible to students and staff not all of them knew about this access. This was perceived by one informant as frustrating because '*it means that students use other AI tools instead of the one that is safe*' (P3). At U2, Keenious and Sikt AI-chat were available for both students and staff.

The participants highlighted the challenge of developing comprehensive AI guidelines due to the variations across different subject areas, for example, in more technically oriented subjects, where having a deep understanding of AI tools is central and teaching good prompts or simplifying programming routines is necessary.

Many emphasised the need to provide good information and agreed-upon guidelines on using AI in academia, and in this way, the academicians could refer to when assigning and assessing student works involving AI. Some of the participants requested clear instructions from the teachers '*so that the students know what they are allowed to* [do with AI tools]. *Firstly, if they are allowed to use it, and secondly, how they are possibly allowed to use it*' (P3).

This ambiguity may deter students from asking questions or seeking clarification. Some participants also highlighted the potential risks with university-approved AI tools like Sikt AI-chat, which might send ambiguous signals to students:

> *I personally feel that the students are a bit misled, it can also get them banned* [from school or study]. *I think it's very dangerous. I'm very careful. I would never recommend anyone to use it, simply because it is difficult to know which use will be taken* (P6).

P3 expressed concern about students becoming '*intellectually lazy*' due to reliance on AI and worry that students might let AI do the work they should be doing themselves. This could lead to lack of critical thinking and reflection, losing context, failing to see connections with other subjects and losing developmental traits. They noted that the use of AI tools can tempt students to take '*shortcuts*' and could potentially compromise their learning process. However, P5, who was very engaged in testing and using and supervising in AI and other digital tools, saw the benefits of using AI tools and was '*not afraid to say that students might benefit from using that type of tool. Just as it's okay to have a dictionary sometimes*'.

Some of the participants highlighted the importance of information literacy to use AI effectively, and they emphasised the role of critical thinking and source criticism, like P3: '*You have to think critically all the time. For AI, as I said, can make up things*'. Two librarians pointed out that the ability to ask intelligent questions or prompts is crucial for utilising AI in a meaningful way. The librarians also highlighted the responsibility of educational institutions to ensure that students acquire the necessary competencies. When guiding, some librarians referred to the rules of the Citation Compass, such as '*students cannot present AI-generated text as their own*' (P6) and encouraged students to show their work both pre- and post-AI use. They also anticipated a larger need to ask students whether they had used AI in their work or assignment and then guide them on critical thinking related to the origin, motive and result of AI outputs. The participants speculated that AI could offer new services and learning opportunities, although they also stressed the importance of ensuring learning has taken place.

AI and the librarian profession

The majority of the interviewed librarians believe that AI can assist librarians, teachers, researchers and students to improve their work and tasks. They noted that academic librarians might feel the need to learn about AI faster than others due to the expectation that they are knowledgeable about it, can answer related questions and teach how to use it.

At both university libraries they had arranged workshops to ensure competency development, discuss '*how they should convey it to the students*' (P7), gain knowledge of which AI tools were available to them and test different AI tools. Although Sikt AI-chat is approved by the universities, one of the participants uncovered that surprisingly many colleagues did not know the tool. Like P2 who noted a significant knowledge gap and feeling of being '*overwhelmed*' when it comes to understanding and using AI.

The interviews uncovered that the library management at the two universities had different approaches to the role libraries should play in AI-related courses for students and staff. Although the library of U1 had working groups, P3 referred to his management's view: '*It should be up to others [at the university]. We don't have the resources to hold AI courses for students*'. P3 then added their own opinion about this: '*That's a bit strange. We take a much smaller role than other higher education institutions in this country*. This participant observed that university libraries and academic librarians often don't spearhead this domain due to resource constraints.

Ambivalent views towards AI

Some participants had a positive approach to AI and others were more sceptical; however, both groups were able to see the potentials, challenges and limitations.

P5 acknowledged the concerns about AI but believed that many people are worried without having deeply explored it.

> *I don't understand the scepticism, you can be sceptical for two reasons. One is if you get into it and understand what AI is, then you can naturally have a concern. But I think many people are worried without having delved deeply into it. Because I personally believe that I can use AI in ways productively for my own part.*

The participant noted that AI, despite its limitations, can be productive given its dependency on input for useful output. They acknowledged technology's vulnerabilities but also its potential opportunities. They advocated for embracing all technologies as part of learning, emphasising the need to maximise advantages rather than focusing on disadvantages.

Another participant, expressed a more negative view, equating the use of AI in their studies to cheating. However, when it came to streamlining her own tasks, she had a more positive view on AI.

The third participant suggested that academic librarians should remain neutral towards AI, neither strongly advocating for nor against it. They noticed two distinct groups within the university library, researchers and students: those with positive attitudes towards AI and those with negative ones. They emphasised that librarians' role should be to facilitate the testing and exploration of AI tools, rather than imposing strict rules on their use.

Despite reservations about AI tools, half of the participants were committed to teaching students their effective use and integrating AI into their instruction. This commitment varied between universities, with three librarians at U2 and only one at U1 teaching AI literacy, possibly reflecting the respective library managements' approach to AI or the lack of staff or relevant competencies.

They anticipated AI will impact on their roles and practices, become integrated into various tools and programs, and possibly will accelerate the information searches of users. At least two of the participants predicted an increased role for librarians in guiding users in source criticism due to the use of AI. '*We can guide them further in relation to critical thinking both in relation to origin, in relation to a possible motive and in relation to a result*' (P4).

The potential for AI integration into cataloguing services at the library was mentioned by one participant with some uncertainty on how it would work without seeing its integration into current cataloguing tools. The participants also predicted that AI could facilitate tasks such as registering research data in data archives like DataverseNO, purchasing books, creating and updating reading lists and suggesting literature, and performing systematic reviews.

They suggested that AI might automate various tasks but insisted that *human oversight* would still be necessary. '*I think that no matter how much you automate, in a way there must be some* "adults at home" *who can watch it*' (P6).

Despite these speculations, the participants acknowledged the difficulty of predicting how AI will develop and what impact it will have on their core areas. They emphasised the need to adapt to whatever changes AI may bring and '*to* "be on the ball" *and hang in there as best we can*' as P7 summarised it.

Discussion

Although the participants in our study were few, they were not a homogeneous group with a one-sided interest in the development and implementation of AI in the university library but represented a broad range of tasks and interests. Our study aimed at two key questions related to the integration of AI into university library services and academia. We discuss the reflections of the academic librarians in our study based on each question as follows.

Potentials and challenges of integrating AI into library services

Like the respondents in Thornes and Mangerøy (2024), most of the academic librarians in our study perceive AI as a useful tool, and a couple had a special responsibility for AI in the university library, but a few had also taken on this responsibility out of personal interest, as Grote et al. (2024) recommend.

As mentioned before, perceived usefulness (PU) and perceived ease of use (PEOU) are among the main factors influencing the adoption of new technologies (Davis, 1989). Specifically, the subjective norms can influence both of these factors (Venkatesh and Davis, 2000; Venkatesh and Bala, 2008). In the context of academic librarians and AI, subjective norms shape their willingness to engage with AI technology. Since academic librarians are expected to understand AI and provide credible advice to students and researchers, they may feel social pressure to adopt AI tools even in the absence of formal guidelines. However, the lack of clear policies and guidelines creates challenges and uncertainty, and these could consequently affect their confidence and motivation to integrate AI in their everyday work. If academic librarians believe AI can improve their ability to support students and researchers, they may perceive it as useful; however, without guidelines, they might struggle to understand how AI aligns with their professional responsibilities, and this could possibly decrease the perceived usefulness of AI for them. Although it seems that AI tools are often easy to use for participants in this study, without proper training or institutional support, AI adoption may seem complex.

The majority of academic librarians in this study are also more concerned with the challenges AI represents in academic libraries and academia than its advantages. Although one of the participants claimed that librarians were either positive or negative, it became clear that most librarians did not entirely align with the positive or entirely negative stance that Gasparini and Kautonen (2022) found. Instead, they positioned themselves on a spectrum where they identified both advantages and challenges posed by AI. Their main concern seems to be the ethical aspects AI raises.

In line with previous researchers (Ali et al., 2020; Ali et al., 2024; Cox and Mazumdar, 2024; De Leon et al., 2024; Grote et al., 2024; Harisanty et al., 2024; Huang, 2024; Thornes and Mangerøy, 2024), the librarians in our study referred to potentials of AI in doing normal routine tasks of librarians such as cataloguing, metadata, creating instructional videos, reading academic literature and assisting in language translation to improve efficiency and assist in the writing process.

Nevertheless, participants revealed challenges related to AI use such as major trust issues with AI-generated texts because AI produced inaccurate or non-existent information, and issues such as AI's blackbox function, plagiarism, biased information, etc. These concerns echoed the majority of librarians in Grote et al. (2024) and Ajani et al. (2022).

This is in accordance with the roles of image and source demonstrability in perceived usefulness in TAM2. Academic librarians are often imaged in academia as credible information agents or sources. Teaching information literacy is a central task for all librarians (Hicks and Lloyd, 2022) and source criticism is particularly relevant when using AI tools (Grote et al., 2024; Andersdotter, 2023). Since the AI tools mentioned in this study did not produce credible information and resulted in weak source demonstrability, this could negatively influence the academic librarians' trust and confidence in the mentioned AI tools. Besides this, the low quality of task performance by the mentioned AI tools could be among the main reasons for the scepticism of several academic librarians as earlier described. Although academic librarians have welcomed new technologies, they cannot risk their image by providing information or advocating for AI tools which are controversial or produce incorrect results.

Furthermore, we would argue that the source criticism skills of academic librarians are intrinsically tied to their education and outlined in professional ethical guidelines.

The academic librarians in our study reflected various views towards students' use of AI tools. Some participants teach students and researchers how to use AI tools in different ways, even encouraging students to use Sikt AI-chat as a discussion partner to improve their thesis. P5 also acknowledged the benefits of using AI tools, comparing it to using a dictionary. But there were also participants who would never guide students in the use of AI because of ethical issues.

P3 expressed concerns about students becoming reliant on AI, potentially leading to '*intellectual laziness*' and a compromised learning process by taking '*shortcuts*'. Participants indicated that it was the responsibility of the universities to ensure that students received both proper training like asking intelligent questions or '*prompts*' to use AI meaningfully and clear guidelines for correct usage.

Guidelines can reduce uncertainty (Gasparini and Kautonen, 2022; Kautonen and Gasparini, 2024; Grote et al., 2024). However, the lack of clear AI usage guidelines across institutions and among teachers and library management led to uncertainty among the participants. The absence of common guidelines resulted in librarians offering guidance and teaching based on their individual interest, knowledge and ethical boundaries.

The lack of national/institutional guidelines has led to different assessments of AI tool usage across the two investigated institutions and illustrates the complexity of establishing standard and inclusive guidelines (Lo, 2023). Despite University Norway (2024) and its Library Committee UHR (2023) emphasising AI in their strategies and action plans, it is surprising that university practices vary. Also unexpected is a study participant's report that library management did not promote librarians' proactive role as AI experts to facilitate knowledge creation and sharing, as recommended in numerous studies (Gasparini and Kautonen, 2022; Grote et al., 2024; Library Committee UHR, 2023; Universities Norway, 2024). Librarians should actively engage in policy discussions, but creating guidelines for effective research practices using AI-based tools lies with library management, not individual librarians (Gasparini and Kautonen, 2022; Grote et al. 2024; Kautonene and Gasparini, 2024; Library Committee UHR, 2023; Lo, 2023). AI competence cannot be '*left to others*,' which one participant perceived was their leader's attitude.

The cross-disciplinary variations of those guidelines are another source of concern for librarians when guiding students regarding AI use. These variations could be a main barrier in developing a standard, national guideline for AI use for all students.

Since AI technology is dynamic and is developing at a high speed, librarians need continuous competency development (Andersdotter, 2024; Grote et al., 2024; Kautonen and Gasparini, 2024). In line with Andersdotter (2023) and Cox (2024) librarians need knowledge in how to include AI literacy aspects in guidance and teaching but also be able to evaluate which AI tools might be relevant for library-specific tasks. Like half of the respondents in Thornes and Mangerøy's (2024) study, half of our participants engaged in workshops and conferences to both learn and facilitate knowledge sharing about AI. Even those without dedicated AI tasks or managerial support expressed a self-driven interest in learning more about AI tools for guidance and task streamlining.

The librarians anticipated a greater need to guide students in critical evaluation of AI outputs, particularly if AI was used in their work. They envisioned AI's potential for new services and learning opportunities, while emphasising the importance of validating actual learning outcomes.

Roles and responsibilities of academic librarians

Numerous studies highlight that librarians have uncertainties regarding the use of AI and what work tasks it can potentially replace (Gasparini and Kautonen, 2022; Kautonen and Gasparini, 2024; Grote et al., 2024). This uncertainty could be why some of our participants displayed a lack of enthusiasm for the technology, or a reluctance to instruct and tutor students on using AI tools.

It should be noted that our questions about the future influence of AI on the academic librarians' roles and tasks were relatively general, and we did not directly ask about the dangers of AI use for the profession and academic librarian role.

Based on the librarians' reflections about the significance of their *guiding* role in the AI era, in line with Cox and Mazumdar (2024), it can be interpreted that they do not see AI as a threat to their primary roles in academia. This contradicts the findings of previous studies on job insecurity in other contexts (Gasparini and Kautonen. 2022; Kautonen and Gasparini, 2024; Grote et al. 2024; Thornes and Mangerøy, 2024). The reflections of the academic librarians in our study showed the anticipated usage approaches of AI in academic libraries mentioned by Cox and Mazumdar (2024), that is, doing routine and clerical tasks, accelerating library services such as research data publishing, cataloguing and metadata production for research data.

Many participants in our study underscored the growing need for AI literacy for appropriate AI usage. This implies that information literacy, complemented by AI literacy, is crucial for both academic librarians and users to effectively leverage AI in today's technological landscape.

As mentioned above, teaching information literacy including guiding students in the ethical use of sources has represented a strong identity for librarians (Hicks and Lloyd, 2022), and experiencing that one is not sufficient, due to lack of competence, but also guidelines, can have a negative effect on professional identity. To counteract this, systematic upskilling is important (cf. Cox, 2023) and requested (Thornes and Mangerøy, 2024).

Furthermore, some librarians, particularly those proactively seeking AI knowledge and skills, did not report the lack of guidelines as a challenge, aligning with Gasparini and Kautonen's (2022) suggestions. The study also highlights the need for education on copyright and ethical data use with AI tools, as participants expressed concerns about potential copyright infringement and data security breaches.

Conclusion

Through the interviews, it became clear that librarians did not entirely align with the positive or entirely negative stance but rather positioned themselves on a continuum where they could see both the benefits and threats or challenges that AI represents. The lack of united guidelines and clear strategies for the introduction of AI was something several of the participants found frustrating. Some reported uncertainty in how much they could help students. Lack of agreed-upon guidelines could also result in frustration among students when something is permitted in one subject or university but not in another. Although it may be challenging to provide clear national guidelines due to the complexity of AI applications, there should probably be regulations on whether students have access to certain tools such as Sikt AI-chat. Access to commercial products like Keenious must, of course, be decided by each institution. Having a relatively high AI competence, achieved through acquired work tasks, but also driven by personal interest, seems to reduce scepticism towards AI. Therefore, we argue that strengthening librarians' AI competence should be a priority for the library management and should not be delegated to individual librarians. Why no one expressed that they were afraid of losing their jobs may say more about Norwegian working life than AI. Another issue raised during the interviews was the ethical dilemmas, which appeared to increase some participants' scepticism and negatively influence their willingness to adopt AI tools. However, this needs to be further investigated in the context of the technology acceptance model.

In this study, the invitation letters submitted to participants focused on various aspects of digital competencies, where AI was one of the six discussion points. However, the participants reflected actively on AI and its relation to academia and their everyday practices. Although the participants

in this study had a diverse range of responsibilities, the limited number of interviews could be considered during interpretation and applying the results in practice.

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Advancing library operations with AI: data-driven insights for academic resource management

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Abstract

Introduction. The rapid evolution of artificial intelligence technologies affords opportunities and challenges for libraries. The study analyses the application of artificial intelligence tools for business intelligence purposes in a university library.

Method. This study used artificial neural networks to extract metadata from a syllabus corpus and then applied a string-matching model to integrate the extracted data with the loan library database. Finally clustering algorithms were employed to analyse the results, providing valuable insights into resource usage patterns. Data was extracted from faculty databases from one university in Colombia.

Results. This study identified the potential of integrating artificial intelligence with business intelligence tools to enhance resource management and optimise university library operations, facilitating a better alignment between academic syllabi and available materials.

Conclusions. The study found that artificial intelligence tools are valuable for university libraries in optimising processes based on data analysis. This suggests that libraries should design and implement business intelligence initiatives to automate manual tasks, providing valuable information to managers and academic directors for decision-making in administrative and academic contexts.

Introduction

Artificial intelligence (AI) has rapidly become an integral part of our digital lives. Its capacity to simulate human intelligence, particularly in pattern recognition and decision-making, has transformed various sectors such as business, management, medicine, military, education, gaming, libraries, etc. The idea of creating AI systems in libraries dates back to 1990. These intelligent library systems provide knowledge-based services to both the library staff and patrons (Asemi and Asemi, 2018). While AI's origins can be traced back to computer science research focused on mimicking human behaviour, its applications have expanded exponentially. Today, AI powers everything from smartphones to complex industrial systems. Libraries, traditionally at the heart of information dissemination, are also undergoing a transformation driven by AI. Library management involves tasks that are often repetitive and time intensive. To enhance efficiency and effectiveness, many libraries are adopting automation for their operations (Dwivedi et al., 2013).

The growing demand for information and the rapid evolution of digital technologies have necessitated a corresponding adaptation in library services. As part of ongoing technological advancements, libraries are continuing to explore AI applications to enhance operations and user experiences, building on a long history of automation in the field. The gap between the vast amount of data and information they manage and their ability to harness it effectively using advanced technologies presents a significant challenge for librarians. Therefore, libraries risk becoming obsolete in this digital era unless they adopt modern technologies and innovate in the delivery of their information and services (Lund et al., 2020). This study is grounded in business intelligence (BI) as a theoretical framework, which conceptualises how data analytics can inform decision-making in organisational contexts (Hamad et al., 2021). BI integrates principles such as data collection, integration, analysis and visualisation to transform raw information into actionable insights. These principles rely on key variables, including data quality, accessibility, analytical models and performance metrics, which enable organisations to optimise operations and strategic planning. In university libraries, applying BI involves leveraging structured and unstructured data – such as circulation records, digital access logs and user preferences – to enhance resource management and align services with academic needs. By harnessing the potential of BI, libraries can enhance their services, optimise resource allocation and demonstrate their value to the academic community (Okunlaya et al., 2022).

There are several reasons why it is relevant to study the support of BI and IA to library services optimisation. In the context of university libraries, the task of classifying and organising bibliographic references is both complex and highly significant within the business intelligence and operational management activities conducted by each institution (Hamad et al., 2021). The demand for data analytics in libraries has increased to support data-driven decision-making processes, such as acquisition, curation and updating of bibliographic resources, budgeting, investments and more (Adetayo et al., 2021). These decisions are correlated with academic management activities, including the design, monitoring, updating and/or evaluation of syllabi.

This study aims to optimise the management of bibliographic resources in university libraries by leveraging AI and BI, ensuring alignment and consistency between course syllabi and available library resources, thereby improving resource and academic management efficiency. However, this relationship is intricated, due to the vast amount of data associated with bibliographic resources (Zhang et al., 2024), and it is hampered by the lack of automation in the process of identifying, extracting and structuring bibliographic references within each syllabus, which are often written in unstructured format and without following a specific format, such as APA, IEEE and others.

To address the above gaps, the present study follows the Cross Industry Standard Process for Data Mining (CRISP-DM) methodology to develop two IA algorithms. One enables the agile and efficient automation of data extraction activities, reducing operational costs and the lag between updating

information in syllabi and decision-making in library operational processes. The other employs a clustering model to categorise bibliographic resources utilised by two faculties of one university based on the library's loan data, aiming at optimising resource allocation and informing effective resource management.

This research examines how AI tools can support education management initiatives, including quality assurance, accreditation processes, curricular innovation and the internationalisation of curricula, among others. But also libraries can also take advantage of this technologies for ensuring the availability of resources for students and professors and for the optimisation of process and services delivered, for instance, in budgeting activities which implies negotiation with suppliers and editorials, or making group purchases for several faculties using the same resources, or maybe for gathering better discounts.

To achieve these objectives, we employ a case study research design focusing on two faculties of one university in Colombia. These faculties were selected due to their high concentration of academic resources and volume of resource loans at the library, making them pivotal hubs of academic activity within the whole institution. By analysing and comparing the characteristics of the two faculties, we can elucidate the specific factors that influence the data-based decision-making processes at the academic and business extent.

The theoretical framework, including previous research findings and theoretical perspectives, is discussed in detail. The methodology employed in this study is described thoroughly for each algorithm. The results and their implications are presented, followed by a critical discussion of the findings and their limitations. Finally, the paper concludes with recommendations for decision makers at library and academic programmes to enhance the education management activities.

Theoretical background

Strategic, tactical and operational use of AI in university libraries

Artificial intelligence refers to the ability of machines to simulate human intelligence, enabling them to perform tasks such as learning, problem-solving, and pattern recognition (Kotu and Deshpande, 2018). Rooted in computational science, AI encompasses a range of techniques, including machine learning, natural language processing (NLP) and computer vision, among others, which collectively empower systems to process complex datasets and make informed decisions. Its applications have permeated industries like healthcare, education and library sciences, where data-centric operations are crucial.

AI is increasingly used in university libraries to support decision-making across strategic, tactical and operational levels (Adetayo et al., 2021; Hamad et al., 2021; Jayavadivel et al., 2024; Okunlaya et al., 2022). The integration of AI into library operations not only enhances resource management but also optimises service delivery, aligning library functions with the broader goals of higher education institutions. The implementation of AI algorithms in libraries has revolutionised decision-making processes, enabling data-driven strategies to enhance both operational efficiency and user experience. These algorithms offer libraries robust tools to address complex challenges and adapt to the evolving demands of academic communities.

At the strategic level, AI can help librarians to support long-term planning and decision-making by analysing vast datasets to identify trends in information consumption, user preferences and research needs (Meesad and Mingkhwan, 2024). Predictive analytics enables libraries to anticipate shifts in academic disciplines and allocate resources accordingly. By identifying patterns in borrowing histories, digital access logs and user demographics, libraries can anticipate future needs and make informed decisions about acquisitions, budget allocations, space utilisation, underused areas and staffing requirements, among others (Pence, 2022). For instance, AI algorithms can forecast demands for specific collections (Barsha and Munshi, 2023), facilitating

data-driven budget allocation and the development of future-oriented digital repositories. Furthermore, AI aids in aligning library goals with institutional priorities, such as enhancing student success (Al Fraidan, 2024). By grouping users with similar behaviours or needs, clustering algorithms help libraries to segment their audience for targeted services (Wang et al., 2011). For example, libraries can identify clusters of undergraduate students who require foundational resources versus faculty members who need specialised materials. Classification algorithms, on the other hand, assist in automated content categorisation, enabling more efficient organisation and retrieval of information (Echedom and Okuonghae, 2021).

On the tactical level, libraries can use AI-driven tools for advanced cataloguing, metadata enrichment and automated indexing, ensuring seamless integration of physical and digital resources (Ahmed et al., 2023; Das and Islam, 2021) and generating more accurate and comprehensive descriptive information, improving discoverability and retrieval (Barsha and Munshi, 2023). These tools enable libraries to optimise workflows, enhance interoperability with other academic systems and improve the discoverability of resources. Additionally, AI systems can analyse user feedback and interaction data to refine service offerings, such as personalised recommendations and adaptive learning platforms tailored to the needs of diverse user groups (Deo et al., 2020).

At the operational level, AI can potentially enhance the day-to-day functioning of library services. Automated systems manage routine tasks such as inventory management, overdue notifications and real-time updates of book availability, thereby reducing the workload on library staff (Jayawardena et al., 2021; Pence, 2022). Chatbots and virtual assistants powered by NLP provide instant support to users, addressing queries related to research assistance, database access or citation guidance (Bagchi, 2020). Furthermore, machine learning models jointly with the Internet of Things (IoT) can be employed to detect patterns of resource misuse or optimise space utilisation within library facilities (Khan et al., 2022).

This multidimensional application of AI highlights its potential to not only modernise but also redefine the role of university libraries in the knowledge economy (Barsha and Munshi, 2023; Das and Islam, 2021; Pence, 2022; Priya and Ramya, 2024). By integrating AI into workflows, libraries can become hubs of innovation, enhancing research capabilities, enabling interdisciplinary collaboration and advancing digital literacy. This requires coordinated efforts among professionals, researchers and policymakers to ensure ethical, equitable and sustainable implementation.

Despite its potential, AI adoption in university libraries presents critical challenges. A key concern is data bias, as AI models rely on datasets that may reinforce inequalities in information access (Khan et al., 2023). Automation also risks diminishing human expertise in collection development and user support, potentially affecting service quality (Pence, 2022). Moreover, AI's predictive capabilities are often overestimated – it can identify trends but lacks contextual understanding of academic needs, limiting its role in decision-making (Harisanty et al., 2023). Ethical concerns around data privacy further complicate its implementation, requiring strict regulatory compliance. These limitations highlight that while AI can optimise processes, it must complement rather than replace human judgement in academic environments.

The value of business intelligence in library operations and services

The evolution of ICT tools and services is reshaping the processes through which organisational decisions are made, significantly enhancing strategic planning capabilities, and improving organisational efficiency (Gauzelin and Bentz, 2017). This transformation also necessitates that libraries and information centres innovate and adapt to align with the dynamic demands of a rapidly evolving digital society. In this context, libraries and information science professionals are embracing change and acquiring new knowledge to maintain their relevance and effectiveness

(Vijayalatha, 2023). The integration of data and analytical methodologies is redefining the roles and functions of libraries in this shifting landscape.

Academic libraries, as the heart of the university and main pillars of educational and research activities, use database technologies to facilitate services (Long and Wu, 2012). The amount of library data is growing exponentially, encompassing structured, semi-structured and unstructured formats. This vast volume exceeds the processing capacity of traditional databases, necessitating innovative approaches. BI has emerged as a critical field, analysing large datasets to uncover hidden patterns, correlations, and insights, transforming raw data into actionable information (Balachandran and Prasad, 2017). Building on the transformative potential of AI in university libraries, BI enacts a complementary framework to enhance data-based decision-making processes across operational and service-oriented domains (Adetayo et al., 2021; Asemi and Asemi, 2018; Hamad et al., 2021).

BI consists of analytics tools and methods that can be applied to any organisational context for gathering and analysing its information to provide support for decision-making processes (Hamad et al., 2021). By leveraging data integration, analytics and visualisation tools, BI provides actionable insights that empower libraries to optimise their operations and deliver superior services tailored to user needs. In operational processes, BI tools enable libraries to manage resources more effectively through the integration and analysis of data from various systems, such as circulation records, digital repositories and user management platforms (Adetayo et al., 2021; Hamad et al., 2022). For instance, when analysing book circulation, data mining can provide scientific and managerial data to enhance the service quality of the library (Long and Wu, 2012). In addition, dashboards and reporting tools provide library staff with real-time metrics on resource utilisation, workflow efficiency and inventory trends (Briggs, 2020). These insights help to streamline activities such as procurement, shelving and space allocation, improving operational efficiency while considering constraints related to data sharing, storage and tracking, which can limit AI's full potential.

The correlation between library operational decisions and academic management activities – such as the design, monitoring, updating and evaluation of curricula – underscores the library's role as a strategic partner in academic governance (Sandhu, 2018; Sant-Geronikolou and Martínez-Ávila, 2019). BI tools enable libraries to provide academic departments with insights into how students and faculty use resources, allowing for data-informed adjustments to curriculum design (Nguyen et al., 2020; Romero and Ventura, 2020). For example, usage patterns of specific resources can highlight emerging fields of interest, prompting updates in course content to align with academic and industry trends. This symbiosis fosters a cohesive approach to academic excellence, where libraries directly influence the relevance and quality of educational programmes.

The use of business intelligence for data-driven insights contributes to understanding the role of libraries in the academic ecosystem. For example, analysing peak service hours and user demographics can help refine staffing schedules or prioritise investment in digital resources that support learning (Khademizadeh et al., 2022). Additionally, BI enables libraries to generate evidence-based reports that display their contributions to student success and faculty productivity, strengthening their position as indispensable academic partners. For instance, BI empowers university libraries to analyse students' reading habits, enabling the development of personalised recommendations that promote engagement with diverse resources (Dogan et al., 2024). These insights can support academic programmes in strengthening students' reading, comprehension and writing skills, thereby enriching their overall learning experience.

The use of data mining techniques in academic libraries helps uncover hidden patterns in users' information-seeking behaviours, enabling collection development that aligns with users' actual informational needs (Ansari et al., 2021). Through the analysis of usage patterns, libraries can

segment their audience based on needs, such as undergraduate students requiring basic research support or faculty members needing access to advanced scholarly databases. This segmentation allows for personalised services, such as targeted resource recommendations, customised training sessions, or tailored communication strategies that improve user satisfaction and engagement (Dogan et al., 2024; Paul, 2022).

Research method

Research approach

In this research, we use the Design Science Research (DSR) approach (Hevner, 2007) to design and evaluate the AI model, aligning with the library's operational needs. DSR is particularly suited for this study because the research problem involves developing and implementing an artefact - a data-driven AI model – to address a practical challenge: automating the extraction and analysis of bibliographic resources. Unlike purely empirical or theoretical approaches, DSR enables iterative testing and refinement of a solution within a real-world context (Gregor and Hevner, 2013). Following Gregor and Hevner's (2014) framework, this study qualifies as '*improvement research*,' addressing a known context where existing solutions are lacking or inefficient. Prior studies have successfully applied DSR in library settings to develop book recommendation systems (Nykänen, 2021) and automated classification frameworks (Kragelj and Kljajić Borštnar, 2021), demonstrating its relevance for designing AI-driven tools in academic environments.

We based our research on a staged process that allowed for multiple iterations between rigour, relevance and design cycles (Hevner, 2007). Rigour cycles involved research about connecting the IA-based solutions design process with literature related to library operational processes. Relevance cycles included a deep exploration of the site investigation, eliciting design requirements and evaluating the prototype. Design cycles involved the core activities of building and evaluating the IA algorithm as well as the design process itself. A prototype of two IA algorithms was designed to assess its value to offer BI in practice. Prototyping reduces cost by addressing technical issues before any instantiation or implementation of the algorithm in the library processes. In the design cycles, the CRISP-DM methodology was applied. This methodology consists of six stages for developing data-driven projects: business understanding, data understanding, data preparation, modelling, evaluation and deployment (Wirth and Hipp, 2000).

Case selection

The Alfonso Borrero Cabal Library at Pontificia Universidad Javeriana is one of Colombia's largest academic libraries, with a collection of over 1,000,000 volumes across diverse disciplines. The library manages an extensive catalogue, including more than 600,000 e-books and access to numerous academic databases, supporting advanced research and education. In addition to traditional library resources, the library oversees the university's course catalogue, which comprises approximately 9,000 courses and grows by about 400 new courses annually. This oversight includes ensuring that curriculum-related resources are accessible within the library's collection. While the library holds valuable databases, BI initiatives remain limited due to challenges in data standardisation and the lack of digital skills among librarians, particularly in the applied use of AI and data science for library services. These limitations hinder the automation and strengthening of internal processes, leaving untapped potential for data-driven enhancements in resource management and service delivery.

Business understanding

The library is facing data challenges due to the lack of standardisation in the way the professors and administrative staff present and consolidate the bibliographic information of the syllabus of each subject. Currently, the university holds around 9,000 subjects. Some subject syllabi can have just five references, but others can hold more than fifty. Each professor designs, builds and registers those references in their own way, and this is because they do not follow a standard such

as APA or IEEE to upload the references. This means that a single cell in an Excel file contains the full list of bibliographic references for a course syllabus in an unstructured format, making the information challenging to process. In 2020, due to the pandemic situation, 25 people conducted a manual extraction process to consolidate a database of more than 25,000 resources identified among the different university programmes. However, this dataset only reflects the state of bibliographic resources up to 2020. Due to the cost and time required, the library lacks an automated method to update this information each semester.

Additionally, having bibliographic references in a structured format only partially addresses the issue, as interoperability problems between the library and university information systems currently prevent this information from being integrated with the library's loan database. This limitation results in minimal business intelligence capabilities, reducing the potential for gaining insights into demand patterns, usage of bibliographic resources, most relevant and popular knowledge areas, collection obsolescence and course internationalisation levels, among others. As a result, challenges remain in optimising collection availability, loan processes, procurement and negotiations with resource suppliers. These limitations also affect strategic actions such as programme accreditation, self-assessment, curriculum updates, disciplinary alignment and curriculum internationalisation.

Data collection and analysis

For this study, we collected data from the library systems. The model training uses a bibliographic resource database manually curated by the library in 2020. An initial review of the data revealed that 43 per cent of titles were duplicates, leaving 4,778 unique titles for the training dataset. We also analysed the library's initial loan database containing 88,480 records, of which 23,819 are unique. These are registered across 18 faculties and 63 departments, covering a total of 250 programmes. As part of the CRISP-DM approach, the research included business understanding, pre-processing, processing, post-processing and deployment. This cycle was executed twice: first, to develop a named entity recognition (NER) algorithm using machine learning techniques to automatically and structurally extract bibliographic data from the syllabus catalogue; and second, to create a clustering model for analysing bibliographic resources with the goal of generating insights that enable efficient management of these resources.

Results

The findings of this study are based on previous research that developed algorithms for the automatic extraction of bibliographic reference texts (Daza and Lopez, 2023) and the clustering of the extracted information (Espinosa and Tapiero, 2024), in the context of the digital transformation of the Alfonso Borrero Cabal Library.

The extraction processes

Pre-processing: to create a dataset suitable for training a NER model, a Python script was developed to generate synthetic citations in the specified order of fields defined in the mapping file and the references style. The AnyStyle dataset (Fenton et al., 2022) was selected to supplement the base dataset, because it provides a labelled dataset with a good diversity of citation styles and fields used. The final dataset contains the original field of bibliographic references in the database and the corresponding synthetic citations as labels.

Processing: to face these issues, authors developed a NER algorithm with supervised machine learning (ML) techniques which allows to extract the bibliographic data from the syllabus in a structured and automatic way. To build the model, authors performed five activities to create the automatic extraction process:

a. The first step was to design and develop a ML model that recognises bibliographic metadata in the corpus. We used Bidirectional Encoder Representations from Transformers – BERT as an NLP model which can be fine-tuned for tasks like recognising named entities. The model was trained with the bibliographic reference dataset manually extracted by the library. The training was based on the DistilBERT-base-multilingual-cased (Sanh, 2019) because it covers up to 104 languages and, with 134 million parameters, is significantly faster than mBERT-base, which has 177 million parameters. Its design distinguishes between uppercase and lowercase characters, which is useful for identifying authors' initials and titles within the text.

Serie	Precision (%)	Recall (%)	F1 (%)	Accuracy (%)
epoch 1 | batch 8	75.9	76.2	76.1	84.2
epoch 2 | batch 16	82.7	83.4	83.0	88.5
epoch 1 | batch 16	55.9	50.3	52.9	71.9
epoch 3 | batch 8	90.9	91.5	91.2	93.5

Table 1. Evaluation of BERT models.

b. The second step was to run and fit the model to identify the metadata of a bibliographic citation: author, title, year, editor and others. In this case, we ran experiments with different epochs and batches as shown in Table 1, so that we found that by running three epochs and eight batches we got a better performance in the extraction in terms of the precision, recall, F1 and accuracy parameters.

Post-processing: the third step was to evaluate the algorithm with the subject catalogue of two faculties: communication and languages, and engineering. Figure 1 presents a proof of concept, where all bibliographic references from the faculty's courses were processed in a structured manner, despite being initially unorganised. The model extracts metadata from these references, assigning each reference's information to the course from which it was sourced. The model successfully identifies metadata such as author, year, title and publisher. It also processes references in multiple languages, regardless of citation style or format.

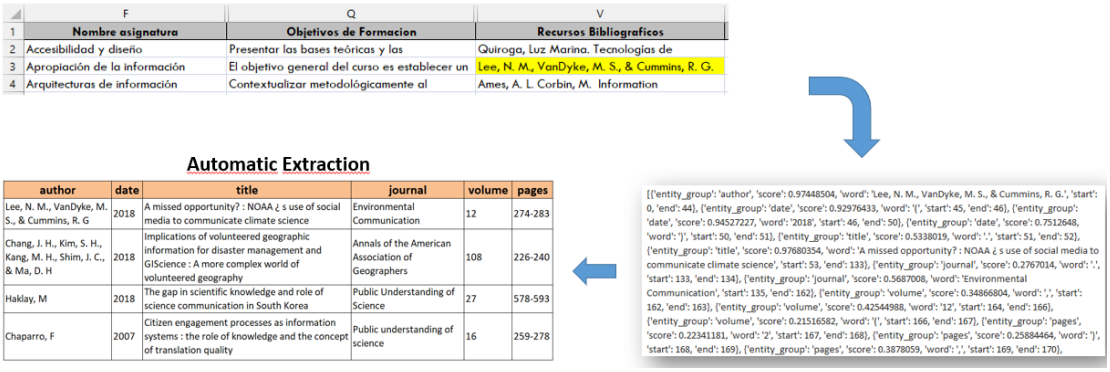

Figure 1. Proof of concept for the extraction process.

The business intelligence process

Pre-processing: this task involved collecting and preparing the bibliographic data required for clustering. This included data cleaning, outlier removal, lemmatisation, variable normalisation and vectorisation. The result was the generation of bag of words and TF-IDF matrices, along with corresponding features for each vectorisation technique, enabling more efficient and meaningful analysis and processing of the data.

Additionally, relevant features for clustering, such as authors, topics and keywords, were selected. Subsequently, the need to integrate fundamental information sources – the library loan database and faculty syllabi – was identified. However, this process was challenging due to the lack of standardisation between the two databases (syllabi and loans) and the absence of a key to link records between the datasets. Therefore, various techniques were explored to create a key that would facilitate the integration of these databases.

Cosine similarity was tested to measure the degree of similarity between two vectors (Kocher and Savoy, 2017), as well as Siamese neural network for evaluating sentence similarity (Chi and Zhang, 2018), and fuzzy string matching, a technique used to find strings that approximately match a specific pattern (Rao et al., 2022). Fuzzy string matching was chosen, as it more effectively captures the semantics of the text and achieves higher similarity scores between features.

Processing: cluster analysis is a common technique in data exploration aimed at discovering hidden patterns and groupings within datasets (Lund and Ma, 2021). This process relies on unsupervised machine learning, meaning it identifies relationships within the data without direct user intervention (Kettenring, 2006). For modelling purposes, the authors used an unsupervised K-means clustering algorithm (Wang et al., 2011), applying clusters to the data in a simple and effective manner by optimising the sum of the distances between each object and the centroid of its cluster. For clustering, a total of eight variables were considered, of which three are numerical and the remaining five are categorical. These variables include the number of occurrences (number of times the book appears in the catalogue of a syllabus), number of times borrowed, loan recency, date, location, publisher, most frequent programme and most frequent profile.

Model	Silhouette coefficient	Davies-Bouldin index
K-means	0.08	2.64
GMM	0.05	2.22
LDA + K-means	0.56	0.86
LDA + GMM	0.67	0.47

Table 2. Evaluation of clustering models.

Four different clustering models were evaluated to identify the most suitable approach for the dataset: K-means, Gaussian Mixture Model (GMM), Latent Dirichlet Allocation (LDA) combined with K-means, and LDA combined with GMM. These models were evaluated through metrics such as the Silhouette coefficient and the Davies-Bouldin index to identify the structure and dispersion of the clusters. Table 2 presents the evaluation results. The K-means model was selected because it allows for more accurate differentiation between clusters (Q=4), avoids cluster overlap and provides greater precision in identifying the distribution of each cluster.

Post-processing: the next step was to identify the characteristics of each cluster (see Table 3).

Cluster	Number of occurrences	Number of times borrowed	Loan recency (months)
1	2.1	2	6
2	1.2	6	5
3	1	2	9
4	1	2	3

Table 3. Cluster parameters for selected variables.

Cluster 1 consists of resources used moderately in the library. They are borrowed regularly and have been utilised by a considerable number of people. However, they are neither the most in-

demand nor the most recent, with a recency of 6 months, possibly indicating use in courses offered annually.

Cluster 2 consists of the most in-demand resources in the library. They are frequently borrowed and have been used by a large number of people. Additionally, these are not the most recently borrowed resources and may refer to subjects taught once a year.

Cluster 3 consists of resources that are used infrequently in the library. Although they have been borrowed a considerable number of times, they are not as in-demand as the resources in cluster 2. Additionally, the most recent loan has an average of 9 months.

Cluster 4 consists of the most recent resources in the library. They are not as in-demand as the resources in cluster 2, but they have been borrowed a considerable number of times recently.

On the other hand, it was observed that there is a number of texts with infrequent queries and high recency, which may indicate that these texts are outdated or have low usage in reference classes, an important aspect to analyse.

The last step was to deploy the model in an information system that could be used by library staff and academic programme directors, to make the necessary administrative, operational and academic decisions to ensure the optimal performance of the library service in terms of bibliographic resource management. This was achieved using a dashboard in Microsoft Power BI (see Figure 2), which enables the visualisation of different layers of the clustering variables for library and academic management.

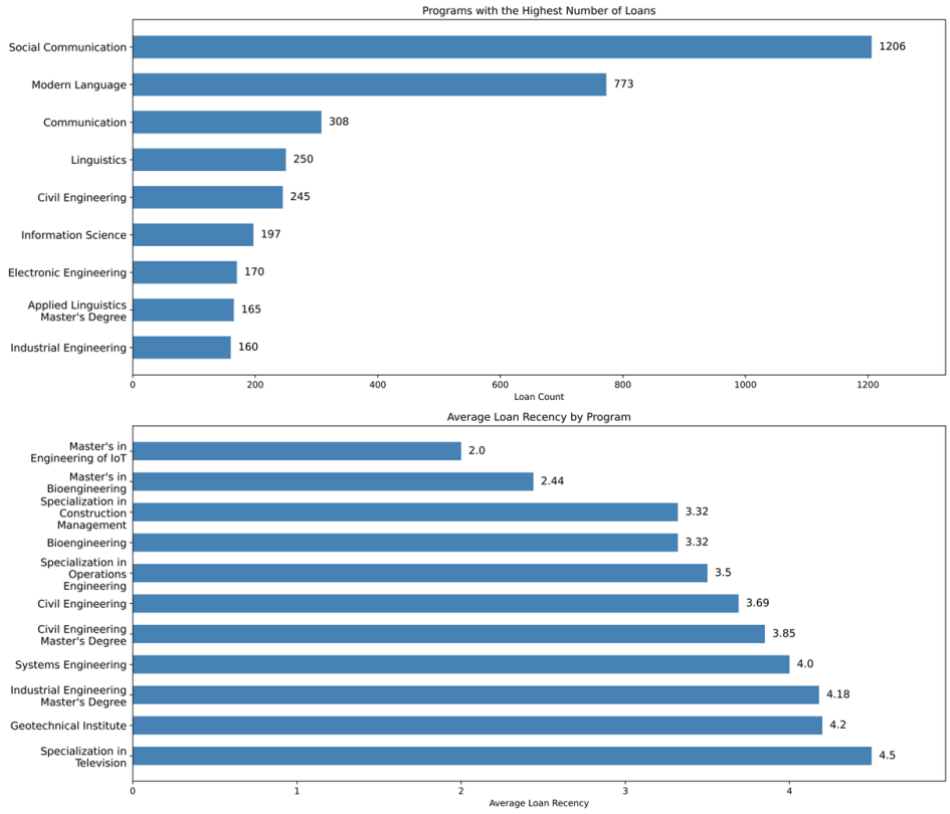

Figure 2. Visualisation of clustering variables.

Discussion and conclusions

The integration of AI into university library resource management offers opportunities to support operational and academic decision-making (Das and Islam, 2021; Harisanty et al., 2023), though efficiency gains depend on how institutions define priorities, allocate resources and address ethical concerns in data governance. By using BI tools supported by AI, this study explored methods to improve bibliographic resource allocation and automate processes such as data extraction from syllabi. These findings align with BI principles, which emphasise data-driven decision-making through integration, analysis and visualisation. By structuring and analysing bibliographic data, the study illustrates how BI can enhance resource distribution and align academic syllabi with available materials (Khan et al., 2023). The BI-driven approach provides a model for more efficient library management, supporting both operational and academic decisions while optimising processes like budgeting and resource acquisition.

This work faced several challenges in achieving its stated aim, including managing and integrating databases, creating clustering models and transforming technical results into valuable information for decision-makers at both administrative and academic levels (Okunlaya et al., 2022). Each of these tasks represents a key process in data science projects, aimed at delivering valuable outcomes that enable end users to achieve tangible benefits, optimise operations and effectively leverage the processed information.

There are several reasons for these challenges: first, libraries possess vast amounts of data, but not all of it is properly structured for processing by AI algorithms. This implies significant effort in data cleaning, normalisation and enrichment to make it suitable for effective analysis and utilisation in AI-driven applications. Second, university libraries typically use a variety of systems and platforms to manage their collections, services and users. Integrating AI into this heterogeneous environment requires substantial development and configuration effort. Third, AI models can be computationally demanding, especially when applied to large datasets. Scalable and efficient technological infrastructures are essential to ensure the performance of AI applications. And fourth, to design and implement AI-based solutions, libraries staff should become digitally savvy in topics such as data management, AI knowledge and technical expertise. Additionally, strong digital leadership skills are crucial to guide the planning process, align stakeholders and ensure successful deployment and integration of these solutions into the organisational systems of libraries (Lund et al., 2020).

This raises the question of whether university libraries have the necessary infrastructure and expertise to effectively implement AI solutions. The integration of AI requires not only technological infrastructure but also specialised skills, strategic planning and organisational commitment to fully capitalise on its benefits (Priya and Ramya, 2024). Therefore, a digital transformation roadmap (Okunlaya et al., 2022) for university libraries could foster the realisation of a value-adding AI ecosystem that facilitates the effective integration of artificial intelligence into library and university activities, aligning with and supporting the institution's mission and vision.

The findings of this study contribute to the understanding of the potential of BI in improving operational and academic management efficiency in universities. In particular, the results suggest that AI techniques can streamline resource allocation, enhance decision-making processes through data-driven insights and optimise the classification and accessibility of bibliographic resources, supporting academic excellence and institutional effectiveness.

While this study demonstrates the effectiveness of AI-driven BI tools in optimising library resource management, further discussion is warranted on the practical consequences of these findings. Our case study provided an ideal environment to explore how AI can enhance decision-making in a

university setting. By automating processes such as syllabus data extraction and bibliographic resource allocation, AI-enhanced BI systems facilitated more informed decision-making in budgeting, acquisitions and resource distribution. For instance, library administrators leveraged these insights to anticipate demand, optimise spending and align collections with evolving academic needs. However, successful implementation requires ongoing evaluation and adaptation to ensure the tool's outputs remain pertinent and actionable. Future studies should explore real-world adoption by library staff at Javeriana and similar institutions, assessing how these tools influence daily workflows and strategic decision-making across different academic disciplines.

The design process and design product test also suggest that IA solutions should be used as an auxiliary tool in conjunction with human BI efforts to ensure the highest level of accuracy and precision. Regular monitoring and evaluation of the models are essential to identify and address potential biases or limitations in the input and output data. These factors should be considered when making decisions about implementing AI-driven solutions in university libraries, ensuring that the necessary technological infrastructure, data readiness, digital capabilities and leadership support are in place to maximise the benefits and address potential challenges effectively.

The study's results should be taken in light of their limitations. Due to the nature of the research and computational infrastructure, the paper is limited to using bibliographic data of two faculties (communication and engineering). Because of the initial state of the datasets, extensive data cleaning, curation and preparation steps were required prior to the modelling and analysis tasks, which consumed a significant percentage of the time allocated for this research.

Future research could test these algorithms in faculties such as medicine or design, where language and citation practices may differ from those previously analysed. Additionally, it could explore deploying extraction and clustering models within existing library information systems, assessing the adoption of this technology by library staff and integrating these data-driven decision models into academic programmes. Such integration would ensure that syllabi remain continuously updated, aligned with institutional goals and supported by library resources.

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(Un)conventional ways of dialogic information retrieval using prompt engineering and the role of AI literacy

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Abstract

Introduction. This study examines students' use of ChatGPT for information retrieval and creative tasks, integrating AI literacy into library and information science (LIS) models and addressing gaps in AI-mediated processes and ethics.

Method. A literature review and case study of 84 Jagiellonian University students, submitting 72 tasks, analysed transcripts, evaluations and authorship attributions.

Analysis. Thematic analysis revealed eleven themes, including motivations, ethical issues, iterative strategies and AI literacy gaps. Strategies aligned with LIS models like berrypicking but exposed training deficiencies.

Results. Most students (78%) claimed sole authorship; 18% cited co-authorship. Key strategies included iterative refinement (69%) and exploratory dialogues (67%). Outputs highlighted usefulness (82%), confidence (54%) and concerns over biases and authorship.

Conclusions. Curricula must incorporate AI-specific competencies, such as prompt engineering, to promote ethical AI engagement. Future research should adapt frameworks like AUTOMAT and assess long-term AI literacy outcomes.

Introduction

Integrating established information behaviour models with prompt engineering represents a convergence of traditional library and information science (LIS) paradigms with emerging AI applications. This article demonstrates how LIS concepts such as dialogical information seeking underpin the development of AI-driven retrieval systems. While often viewed as a novel technique, prompt engineering is an extension of LIS principles established since the 1980s.

Dialogical information seeking is central to LIS, reflecting the complexity of human-system interactions. Foundational models, including Belkin's Anomalous State of Knowledge (ASK) (Belkin, 1980, 2005), Bates's berrypicking model (Bates, 1989; 2002), and Marchionini's exploratory search paradigm (Marchionini, 1995, 2006), highlight the iterative, nonlinear and context-dependent nature of information behaviours. Belkin's ASK framework emphasises dialogue and feedback in addressing knowledge gaps. Bates's model illustrates how users adapt their strategies dynamically as they engage with new contexts and resources. Marchionini further focuses on cognitive learning, serendipitous discovery and evolving queries.

Together with Savolainen's sociocognitive approach (2002) and Ingwersen and Järvelin's Interactive Information Retrieval (IIR) model (2005), these theories form a comprehensive framework for understanding user engagement, emphasising context, intent and iterative dialogue. Prompt engineering in generative AI (GenAI) extends these principles, reflecting the dialogical, adaptive dynamics central to LIS models. Designing prompts for precise, contextually relevant outputs mirrors Bates's and Marchionini's models, where iterative refinement and contextual adaptation are key. Feedback loops between users and AI align with Ingwersen and Järvelin's principles, focusing on user intent and interaction. Frameworks like CLEAR and AUTOMAT formalise this process, integrating theoretical LIS insights with AI's practical demands.

This study explores the integration of LIS frameworks with prompt engineering in education. As conversational AI gains prominence, information professionals, such as librarians and innovation managers, require a strong foundation in LIS principles and advanced AI literacy. The ACRL Framework for Information Literacy provides a solid base but must expand to include AI-specific competencies, such as evaluating AI-generated outputs, identifying biases and optimising queries for dynamic, user-centred environments.

This study challenges the assumption that information management and electronic information processing students have heightened awareness of AI limitations, such as bias, hallucinations and ethical concerns. Many did not demonstrate advanced AI literacy or a critical approach to generative AI, and their familiarity with LIS models did not translate into effective prompt engineering. This reveals gaps in AI-related competencies, even among information science students. To address these deficiencies, the study examined their motivations, dialogue structuring, evaluation methods and ethical reflections. The findings provide insights into how LIS frameworks influence AI use and emphasise the need for targeted educational interventions. Future research should explore factors shaping AI literacy across disciplines and develop strategies to enhance students' critical engagement with AI-driven systems.

Research objectives and questions

This study examines the integration of LIS models and AI systems through four key objectives. First, it demonstrates how foundational LIS frameworks, such as Belkin's Anomalous State of Knowledge (ASK) (1980), Bates's berrypicking (1989), and Ingwersen and Järvelin's Interactive Information Retrieval (IIR) (2005), can enhance dialogical information retrieval in AI-mediated systems. This is achieved through a critical literature review that examines the adaptability and utility of these models in the context of AI technologies.

Secondly, it investigates the correlations between traditional LIS frameworks and prompt engineering practices. Using case studies, it analyses students' prompt-writing strategies and compares these with established LIS typologies. This analysis explores whether students with prior training in LIS principles recognise parallels between these frameworks and prompt engineering, particularly in iterative feedback and adaptation processes.

Thirdly, the study proposes integrating prompt engineering into AI literacy education, aligned with the ACRL Framework for Information Literacy in Higher Education (2016). The proposal focuses on key competencies such as source evaluation, ethical awareness and authorship considerations, highlighting the need to extend traditional information literacy (IL) practices to encompass skills for engaging effectively with AI systems.

Finally, it contributes to the broader discourse on human-computer interaction by addressing ethical challenges, including bias, reliability and the implications of AI-generated content. The study evaluates how students assess the outputs of both AI systems and their own interactions, emphasising the critical and technical skills required for responsible engagement with these technologies.

The research is guided by the following questions:

RQ1. To what extent can established LIS models of dialogical information seeking be applied to AI-mediated information retrieval processes?

RQ2. Are there identifiable correlations between LIS frameworks and prompt engineering, particularly in iterative feedback and adaptation?

RQ3. How do students' strategies for writing and evaluating prompts align with information literacy competencies as defined by the ACRL Framework?

RQ4. What ethical considerations arise in the application of AI to information-seeking tasks, and how do students address these in their interactions with AI systems?

Conceptual background

This article examines the integration of LIS models of information-seeking behaviour with prompt engineering in generative AI (GenAI), exploring their alignment in dialogical and AI-mediated retrieval. While often seen as novel, prompt engineering extends established LIS frameworks. Information-seeking research has evolved alongside technological advancements and theoretical shifts, influenced by disciplinary perspectives, researcher generations and geographical differences. Recent studies highlight the asynchronous development of LIS models shaped by cognitive and practical changes (Wang and Zhu, 2025; Onyancha, 2025). Emerging technologies, including digital libraries and intelligent search systems, continue to reshape LIS theory, requiring ongoing adaptation. LIS research identifies three core processes – seeking, searching and retrieving – as the foundation for AI integration. Since the 1980s, dialogical information seeking has been central to LIS, providing a theoretical basis for AI-driven systems and reaffirming the relevance of LIS principles in modern technological developments.

Information seeking, searching and retrieving

The processes of information seeking, searching and retrieval are fundamental to understanding human interactions with information systems. These interconnected activities address the dynamic nature of information needs, forming a spectrum of behaviours that encompass recording, seeking, interpreting, and utilising information (Fidel, 2011; Ford, 2015). Information seeking is a cognitive, iterative effort to bridge knowledge gaps, often defined as an anomalous state of knowledge (ASK) (Belkin, 1980). Case and Given (2016) describe seeking as deliberate and intuitive, aligning information pragmatically and semantically with user needs. Bates's berrypicking

model (1989) further illustrates how users adapt queries dynamically, making seeking a dialogical activity shaped by contexts, interfaces, and social structures (Savolainen, 2017; Krakowska, 2022).

Information searching is a subset of seeking, involving systematic, targeted activities like query formulation and strategy refinement based on feedback (Bawden and Robinson, 2011). Marchionini's (1995) eight-stage search cycle highlights collaboration between human cognition and system design in refining search trajectories.

Information retrieval, distinct from seeking and searching, focuses on algorithmic data extraction. Lin (2017) characterises retrieval as query matching with system representations, often lacking user-specific context. However, Próchnicka (2004) offers a more dialogical view, framing retrieval as iterative exchanges that transform raw data into actionable insights. Ingwersen's (1992) interactive retrieval frameworks underscore the value of such human-system interactions, demonstrating their critical role in adaptive information processes.

Dialogic and conversational information-seeking schemes in LIS

The concept of dialogical and conversational information seeking has been a cornerstone of LIS since the 1980s, emphasising the interactive and iterative nature of human-system interactions. Belkin's Anomalous State of Knowledge (ASK) model highlights information seeking as arising from knowledge gaps, resolved through iterative dialogue with systems (Belkin, 1980). This framework underscores the dynamic interplay between user intent and system feedback, defining information-seeking behaviour as problem-solving and exploratory. Marchionini's exploratory information-seeking framework (1995) extends this perspective, outlining iterative stages of search, discovery and sensemaking. Driven by a desire to learn, users refine queries and explore iteratively to navigate complex information landscapes. Bates's berrypicking model (1989) complements this by illustrating the nonlinear, adaptive nature of seeking, where users dynamically modify queries across diverse sources. These models challenge linear retrieval assumptions and reflect the fragmented nature of real-world seeking behaviour.

Other LIS models further enrich this dialogical understanding. Krikelas (1983) emphasises the influence of context, motivation and user intent in shaping behaviours within personal and organisational settings. Ingwersen and Järvelin's (2005) interactive retrieval framework integrates cognitive and system-oriented perspectives, focusing on feedback loops mediating user-system exchanges. McKenzie (2003) highlights user-centred practices, underscoring the active role individuals play in shaping search strategies, while Savolainen's sociocognitive approach situates information-seeking behaviours within cultural and habitual contexts (Savolainen, 1995; 2016).

Dialogical approaches to information seeking are central to LIS, with established models providing structured frameworks for understanding diverse information behaviours. These models describe both observable actions and cognitive processes, which can be algorithmic and logical but also creative and emotionally driven (O'Brien, 2011). These information behaviour models, which serve as simplified representations of reality and are used to describe and interpret user interactions (Niedźwiedzka, 2003; Saracevic, 2016, p. 32), traditionally focus on structured systems where queries are refined in deterministic environments. However, generative AI tools like ChatGPT introduce interactive, nondeterministic elements into search processes, requiring a reassessment of LIS frameworks (Tibau et al., 2024). The methodological challenges posed by AI-driven search, where responses evolve iteratively rather than within stable information landscapes, raise concerns about the applicability of existing LIS models (Roy and Mukhopadhyay, 2023).

The unpredictability of generative AI prompts questions about whether LIS models can fully account for these dynamic interactions (Maurya and Sinha, 2024). Addressing these challenges requires methodological adaptations, integrating system modelling approaches to analyse and refine complex user-system interactions (Aldoihi et al., 2023). A shift from model-centric to data-

centric AI methodologies could further enhance understanding of LIS frameworks in evolving digital environments (Majeed and Hwang, 2024).

Rather than validating or revising LIS models, this study examines whether LIS students exhibit behaviours consistent with classical frameworks. By identifying user interaction patterns with GenAI, it provides an initial assessment of LIS model relevance in AI-mediated environments, supporting future research on adapting or developing frameworks for generative AI interactions. While the study does not address broader regulatory or technological aspects of the GenAI market, its findings contribute to discussions on ethical and responsible AI engagement in LIS education.

Human information seeking and prompt engineering (or Large Language Models)

The growing prevalence of prompt engineering in GenAI systems underscores the lasting influence of LIS principles in human-computer interaction. This paper argues that prompt engineering extends dialogic information-seeking traditions, with its iterative design process reflecting established principles of interactive and exploratory information retrieval.

Prompt engineering frameworks like CLEAR and AUTOMAT, crucial for systems such as ChatGPT, emphasise clarity, adaptability and user intent, aligning with LIS principles of feedback, contextuality and iterative refinement. Dialogical AI interactions resemble anthropomorphic systems, embodying principles of serendipitous seeking and intuitive exploration, as seen in Ingwersen's IIR framework.

LLMs like ChatGPT shift user engagement by enabling dialogues that integrate Bates' berrypicking and Belkin's ASK frameworks. Prompt engineering optimises AI interactions through linguistic precision, task specificity and contextual adaptability (Mudadla, 2024; Srinivasan, 2024). Structured prompts, guided by frameworks like AUTOMAT or CO-STAR, enhance clarity, context and intent, improving AI accuracy and responsiveness (Vogel, 2024).

AI literacy and ethical considerations and the ACRL Framework

The convergence of information literacy and AI literacy marks a critical evolution in the roles of information professionals, educators and users navigating modern information landscapes. The ACRL Framework for Information Literacy provides a foundation for critical evaluation, ethical use, and strategic engagement with information systems (Case and Given, 2016; ACRL, 2016). AI literacy extends these principles, addressing generative AI (GenAI) systems, challenges like AI hallucinations and optimising the accuracy of AI-generated outputs (Ruksha, 2024; Srinivasan, 2024).

However, while these principles influence AI interactions, research suggests that even those trained in information disciplines may lack critical AI literacy skills (Nicholas et al., 2024). This raises questions about the effectiveness of LIS frameworks in preparing users for AI-driven search environments and highlights the need for further exploration of AI-specific information behaviours. Recent studies show that LIS students struggle to use AI-powered systems efficiently, pointing to deficiencies in current educational approaches to AI literacy (Petrović et al., 2024).

Ethical considerations are central to integrating AI literacy, especially for roles such as prompt engineers and information scientists, who must ensure query structures and prompts do not perpetuate biases or stereotypes (Hall and McKee, 2024; Bates, 2024). This aligns with the ACRL Framework's emphasis on contextual authority, which promotes interrogation of information sources, including AI systems. Transparency about algorithmic processes and biases within training data is essential, resonating with the framework's '*information has value*' principle, which advocates equitable and ethical access to information.

Prompt engineering's iterative process – refining queries, interpreting feedback and adjusting interactions – mirrors the ACRL Framework's recursive '*research as inquiry*' approach, emphasising

critical thinking and adaptability. Ethical AI use requires addressing biases and algorithmic transparency, equipping users to interact responsibly with GenAI systems (Lund, 2023). By embedding the ethical dimensions of the ACRL Framework into AI literacy education, information professionals can bridge traditional LIS competencies with AI-driven demands, shaping user-centred, ethical AI systems and ensuring technology aligns with societal values.

Methods

Procedures

The literature review analysed sources from Semantic Scholar, Medium, and the LISTA database to explore prompt engineering (PE) and information behaviour. Conducted in September 2024, the search yielded 59 publications (40 from LISTA and 19 from Medium, post-duplicates). Keywords included '*information-seeking behaviour*', '*information needs*', '*prompt engineering*', and related terms, focusing on PE definitions, principles, competencies and applications. Additional literature was gathered through ResearchGate topic alerts.

The case study analysed how participants used ChatGPT in problem-solving and evaluated their outcomes. Data was collected from 18 November to 1 December 2024, involving students from the Information Management and Electronic Information Processing programmes at Jagiellonian University. The tasks aimed to explore real-world interactions with GenAI. Participants received three tasks (see Figure 1), each containing an implicit ethical dimension to observe whether they addressed it independently. They were not required to complete tasks solely with ChatGPT but chose which subtasks to handle using AI. To reduce academic pressure, tasks included background stories – short narratives providing fictional users' context and motivation (Bailey et al., 2015, p. 3). Allowing participants to adopt a fictional persona aimed to encourage engagement and facilitate demonstrating ChatGPT communication skills.

This study focused on predefined assignments rather than real-world AI use. While structured tasks enable controlled analysis, they may not reflect natural interactions. Future research should consider longitudinal or ethnographic approaches to examine spontaneous AI engagement. Additionally, as an exploratory study, it identifies patterns and behaviours rather than causal relationships. Findings should be interpreted cautiously, and future studies should employ diverse methodologies to validate results across different user groups and settings.

introduction to the exercise	This exercise provides an introduction to selected elements in the application of artificial intelligence in information retrieval and AI literacy. Some of you will complete the assignment during class and then the initial results will be discussed in subsequent meetings. For others of you, this will be an additional assignment to complete and submit to the designated course on the Pegasus platform.
main instructions in points	A. Download the task file to your computer. B. Use this template for your work. C. Choose one of the three tasks below. Briefly explain why you are choosing this task (1,2 or 3). All tasks are linked to ChatGPT. However, you do not need to create an account with OpenAI. You can use the version that is available without logging in at https://chatgpt.com/. D. Once you have completed the conversation, select the entire conversation (both the answers given by the AI and your messages), copy and paste into this file. You have space prepared for this in the template. E. Then evaluate the resulting work with AI. You can complete the task individually or in a group of up to three people. F. When you have finished, upload the assignment to the Pegasus platform.
scheme of tasks to be selected (not available to participants)	**User Persona:** You are... **Task:** You are interested in... Your task is to... You want to do... **Output:** You want to obtain information from sources.... and develop a short note with a synthesis of the most important information (1 page A4). **Final instruction:** Think about what specifically you might use ChatGPT for in this situation. Then conduct a conversation with ChatGPT, submit a transcript of this conversation and evaluate the result you have obtained.

task 1.	**task 2.**	**task 3.**
You are a writer of science fiction novels. You need to gather material and ideas for a new book. You are interested in scientific concepts in the field of the possibility of transferring human consciousness to a computer. You were inspired to this topic by information about a recent new radio interview with Wisława Szymborska, which was generated using artificial intelligence. You want to obtain information from valuable scientific sources and develop a short note with a synthesis of the most important information (for 1 page of A4). Think about what specifically ChatGPT could be useful for in this situation. Then carry out a conversation with ChatGPT, submit a transcript of this conversation and evaluate the result you have obtained.	You are an infobroker, a specialist in obtaining information and presenting it in a way that is relevant to a specific problem situation. Your friend asked you to help him with such a case: he/she is a student at the Academy of Fine Arts and wants to go to Portugal as part of the Erasmus programme. It's just a loose idea, but your friend wants to do some research and find out what conditions he/she has to meet, what the procedure is, what the deadlines are and where he/she can go. Your task is to get information from valuable, up-to-date sources and produce a short note with a synthesis of the most important information (1 page of A4). Think about what specifically ChatGPT could be useful for in this situation. Then carry out a conversation with ChatGPT, submit a transcript of this conversation and evaluate the result you have obtained.	You are a podcast creator. You are developing an episode about the use of AI in computer games. You are interested in the practical, technological and legal considerations and the impact of the possible use of AI on the quality of designed games. You want to develop a script for the episode with a synthesis of the most important information (for 1 page of A4) based on your discernment of the topic from reliable and up-to-date sources. Think about what specifically ChatGPT could be useful for in this situation. Then carry out a conversation with ChatGPT, submit a transcript of this conversation and evaluate the result you have obtained.

Figure 1. Outline of the procedure used in the case study.

The tasks aimed to assess students' AI literacy and promote responsible use of tools like ChatGPT. While some had used GenAI informally, this study provided official academic guidance and feedback on proper use. The didactic goal was to highlight both opportunities and risks, improving competencies in ethical and legal prompt engineering. Assignments were completed in AI literacy-related classes, with instructions given via email or in person. Students worked individually or in teams of up to three, with voluntary participation with no consequences for opting out. A total of 112 students consented, resulting in 72 completed papers.

The papers followed a template consisting of five elements: (1) selected task, (2) justification for the selection, (3) full transcription of the ChatGPT conversation, (4) evaluation of outcomes, and (5) authorship identification. The task instructions, work template, study information and consent form were provided in Polish, the language of the classes.

The study employed an inductive-deductive thematic analysis with the following stages: 1) exploration to familiarise the researchers with the material; 2) development of a preliminary code book aligned with research objectives and questions; 3) independent coding by two researchers, allowing for new codes; 4) merging coded material into a cohesive unit; and 5) verifying and standardising the code book. MAXQDA software was used for analysis, with Excel assisting in code book development. The final code book contained eleven top-level codes with subcodes (see Fig. 2).

No	Codes	Subcodes
1	TLDR	-
2	Authorship	Co-authorship, ChatGPT, Student/s
3	Template elements	Task selection, Justification of task selection, Conversation record, Outcome evaluation, Authorship declaration, Additional elements: Link to the conversation - Personal remarks - Notes
4	Ethics	Role of reliability, Absence
5	Evaluation of results	Starting point for further research, Useful, Criticism of results: Worthless – Biased - Unreliable, Evaluation criteria, Assessment of response style, Confidence in the response
6	Conversation Language	English, Polish
7	AI literacy	Awareness of hallucinations
8	Motivation for Task Selection	Knowledge of the topic, Personal experiences, Probability of the situation, Lack of trust, Ease of the task, Similarity to other tasks, Practical dimension, Similarity to other tasks, Practical dimension, Social dimension, Interests, Curiosity about AI-generated results
9	Information seeking & retrieval method	Content copying: uploading files with tasks, Iterative approach: asking questions, Correlation with information S&R models, Task execution methods: monitoring ChatGPT's actions - in-depth searching: requesting extended responses - requesting concise responses, single response - exploration, Prompt engineering methods: step-by-step approach - providing/uploading specific sources - using a defined prompt structure
10	Perception of ChatGPT	Anthropomorphisation,Tool
11	Tasks	1 writer, 2 Erasmus, 3 podcast

Figure 2. Code book.

Participants

The study analysed 72 works from 84 students who gave informed consent, including 61 individual submissions. Participants comprised 34 first-degree and 19 second-degree information management students, and 31 from electronic information processing. Ethics followed Jagiellonian

University's procedures, ensuring voluntary participation, informed consent, anonymisation and feedback on AI literacy and responsible ChatGPT use.

Findings and analysis

This section examines task selection, information-seeking methods, result evaluation, AI literacy, ethics, reliability, hallucination awareness, authorship and perceptions of ChatGPT. Numbers in parentheses indicate student papers with applied codes or subcodes, while the S&R methods section includes coded segments to illustrate dynamic ChatGPT-based retrieval processes.

Tasks

As part of the study, students selected one of three thematic tasks involving generative AI, revealing their preferences and perceptions of educational challenges. The most popular task, '1 *Writer*', chosen by 28 students, required using ChatGPT creatively to explore an ethical dilemma inspired by a fictional AI-generated interview with Nobel laureate Wisława Szymborska (PolskieRadio.pl, 2024), addressing ethical issues in information sourcing.

The second task, '2 Erasmus', chosen by 22 students, involved analysing the Erasmus programme using ChatGPT, emphasising organised, analytical approaches. It also tested students' ability to identify ethical and quality issues in AI-assisted information brokering, aligned with established ethical standards (e.g., Waligórska-Kotfas, 2019).

The third task, '3 Podcast', also selected by 22 students, required creating scripts or inspiration for audio content with ChatGPT, blending creativity with media adaptation. Ethical challenges included AI's effects on game creators (job displacement, reduced creative autonomy) and players (behaviour manipulation, data protection), alongside ensuring oversight to prevent harmful content.

Motivation for task selection

The analysis of motivation for task selection revealed a multitude of factors that influence students' decisions, as illustrated in Figure 3. The number of subcodes and assignments indicates the complexity of the decision-making process, in which students were guided by personal preferences as well as practical and cognitive aspects of the tasks. The analysis of these data permits the formulation of conclusions regarding the principal motivations.

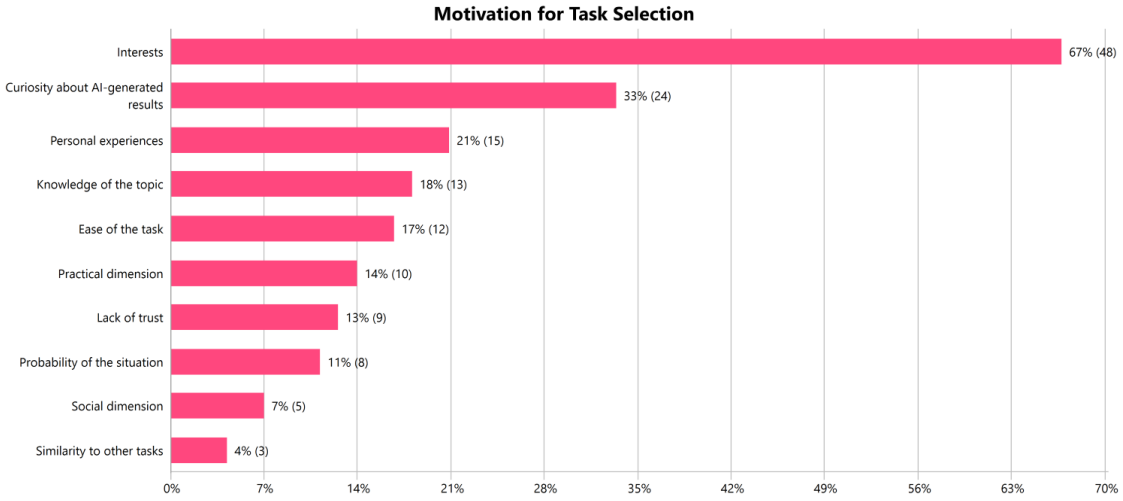

Figure 3. Motivations for task selection (n = 72 papers, it was possible to indicate more than one category per paper).

The most frequently cited motivation for task selection was personal interest, significantly influencing students' choices. Students preferred topics aligning with their interests and passions, such as science fiction, Erasmus aspirations, or other personally resonant themes (e.g., ZI1st3_1: 19; ZI1st1_16: 18). This highlights the value of engaging students through interest-driven tasks.

Curiosity about ChatGPT's outputs was the second most frequent motivation, appearing in 24 cases. Students were eager to explore how generative AI handled complex questions, reflecting a cognitive desire to understand its potential and limitations. For instance, one student noted their interest in how AI could support podcast preparation (ZI1st1_6: 18).

Personal experiences influenced task selection in fifteen cases, enhancing identification with the problem and contextual understanding. Familiarity with a topic increased confidence and reduced challenges. Pragmatic motivations, noted in twelve cases, led students to choose easier tasks to save time or effort. Practical outcomes motivated students in ten cases, especially those working on real-world applications like Erasmus+ analysis or creative writing.

Scepticism about ChatGPT's reliability influenced task avoidance in nine cases, with students expressing concerns over errors or ethical issues. Real-life relevance motivated eight subcodes, underlining the practical applicability of tasks. Social motivations, linked to five subcodes, indicated interest in themes with societal or collaborative implications.

The least cited motivation, similarity to previous tasks, appeared in only three cases, suggesting a limited preference for predictable or familiar tasks. These findings demonstrate diverse motivational factors shaping student engagement with ChatGPT-based assignments.

Information seeking and retrieval method

A study of students' information-seeking methods and prompt engineering strategies with ChatGPT revealed diverse practices in dialogic information retrieval. An iterative approach was most common, with students refining queries and asking follow-up questions (169 segments in 47 documents) to clarify responses, reflecting Bates's berrypicking model's dynamic and flexible nature, albeit unconsciously. Students emphasised monitoring and evaluating ChatGPT's outputs to ensure relevance and quality.

Exploration, noted in 114 segments across 45 documents, emerged as a key strategy, with ChatGPT results often serving as starting points for further research. A smaller group used a single-response strategy (46 segments in 20 documents), prioritising efficiency or reflecting limited AI literacy. Additional methods included response expansion (50 segments in 26 documents) and condensation (thirteen segments in twelve documents). Expansion sought detailed answers for complex tasks, while condensation aimed to simplify responses, reducing cognitive load (e.g., Bawden and Robinson, 2009; Zhou and Li, 2024).

The step-by-step strategy dominated prompt engineering (118 segments in 47 documents), with students breaking queries into smaller, precise steps to improve accuracy and detail. Advanced practices like incorporating specific sources (ten segments in eight instances) were less common, requiring sophisticated integration techniques.

Predefined prompt structures, such as defining personas, tasks or output parameters, appeared only in seven cases across five documents. These incomplete frameworks highlight students' developing skills in advanced query formulation. Structured strategies like AUTOMAT or CLEAR could enhance precision and efficiency in generating outputs, suggesting a need for stronger integration of theoretical frameworks into curricula.

Evaluation of results

The assessment of ChatGPT's outputs was a key focus of the study, enabling an analysis of students' methods for evaluating generative AI content. Various evaluation strategies were identified, offering insights into the tool's practical applications and its limitations. Quantitative and qualitative analysis of the subcodes in the Evaluation of Results category (see Fig. 4) highlights the complexity of students' approaches to content evaluation.

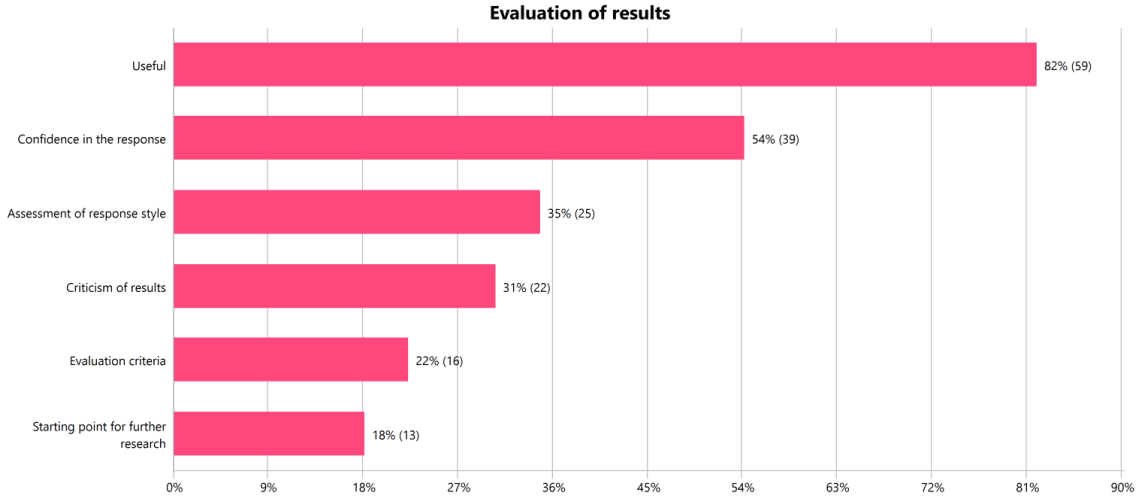

Figure 4. Respondents' evaluation of the work results achieved using ChatGPT (n = 72 papers, it was possible to indicate more than one category per paper).

The most frequently assigned subcode in the analysis was usefulness, appearing 59 times. Students generally evaluated ChatGPT's content as practical and immediately applicable, viewing it as a tool to facilitate task completion by tailoring responses to their needs. Many also regarded ChatGPT as a source of inspiration for further research or deeper exploration, highlighting its role in guiding information-seeking pathways. The subcode critical analysis of results reflected students' reflexivity in evaluating content, with three sub-subcodes identified: a) worthless (five), for responses deemed irrelevant or lacking value; b) biased (four), indicating student recognition of potential model biases; and c) unreliable (twelve), the most frequent, where students noted inaccuracies or factual errors, emphasising the importance of critical verification of generated content.

Some students applied clear criteria to evaluate ChatGPT's outputs, focusing on precision, relevance, completeness and task utility, reflecting growing critical assessment skills. The subcode for stylistic assessment indicates they also considered presentation, noting clarity, errors, hallucinations and the role of structure and language in their evaluations.

The role of credibility

The study among students at the Jagiellonian University's Institute of Information Studies explored their perceptions of the credibility of information generated by ChatGPT during dialogic information retrieval. Students highlighted the benefits of ChatGPT's flexibility, coherence, linguistic fluency and ability to maintain awareness of preceding dialogue. Thematic divisions were noted as effective (ZI1st1_9, Pos. 182). However, limitations arose when questions lacked detail, occasionally leading to irrelevant content. Despite these shortcomings, the information was generally regarded as valuable and useful for the broader research process.

It is worth emphasising that ChatGPT enabled students to reduce the time required for gathering basic information:

> *It allowed me to skip the tedious process of reading through numerous lengthy articles, instead providing me with a handful of necessary information and inspiration on which I could begin my own research.* (ZI2st1_3, Pos. 379)

At the same time, students recognised limitations in the provision of complete sources of information, necessitating additional refinements to queries to obtain more comprehensive results.

Awareness of hallucinations

Hallucinations, or the perception of erroneous or fabricated information as credible, pose a significant challenge in using generative language models like ChatGPT for dialogic information retrieval. The study among students at the Jagiellonian University's Institute of Information Studies explored their experiences with ChatGPT and perceptions of the credibility of its generated content.

A key issue identified was the verbosity and repetitiveness of ChatGPT's responses. Students noted that initial outputs were often overly lengthy, lacking concision and focus, with repetitive and sometimes non-objective or low-value information (EPI1st2_2). Despite these shortcomings, some content was beneficial for users less familiar with a subject. Another significant issue was the generation of erroneous or non-existent links and references, with ChatGPT frequently providing outdated or inaccurate citations:

> *The chat did not assist in locating any particular studies; the links were either non-functional or directed to erroneous websites. In some cases, the studies themselves were flawed, with incorrect authors being provided or studies that did not exist at all.* (EPI1st3_6)

Such instances have an adverse effect on the evaluation of ChatGPT as a reliable source of academic information.

Hallucinations in ChatGPT responses often took the form of fabricated or outdated data, with sources that were obsolete or inconsistent with reality, limiting the usefulness of its outputs (EPI1st2_4). Some participants also noted that prior interactions influenced responses, leading to erroneous assumptions and complicating the achievement of precise results (EPI1st2_2).

Despite these challenges, ChatGPT was widely regarded as both inspiring and helpful. Many students appreciated its ability to offer insights and inspire further investigation:

> *Even in instances where the responses were not entirely precise, ChatGPT was regarded as an inspiring tool that prompted further searches.* (ZI2st2_5)

Students valued its educational role, particularly as a catalyst for deeper research:

> *I believe that ChatGPT provided sufficient information to stimulate further research and investigation into the suggested topics.* (EPI1st2_8)

The content often served as a starting point for more comprehensive inquiries, guiding users in their subsequent searches:

> *Such sources would likely not be regarded as 100% verified information, but they would undoubtedly serve as a guide on where and how to search for such information.* (EPI1st3_2)

Additionally, the tool's capacity for iterative refinement enabled users to adapt results effectively to their specific needs.

Ethical considerations in the use of ChatGPT

The utilisation of generative AI has prompted ethical concerns among students and has demonstrated the practical limitations of such technology. The key issues that emerged included the necessity of attributing authorship to AI-generated responses and ensuring their compliance with current academic standards. As one student observed,

> *For those unacquainted with the process, this information may provide insight into what to look for and what might be important in the application process. However, it would be erroneous to follow the steps offered by ChatGPT without first verifying the accuracy of this information.* (EPI1st3_5, Pos. 262)

Considerations were made regarding AI's limitations in handling morally ambiguous or outdated data. Students noted that using ChatGPT for tasks requiring meticulous verification, such as legal analysis or academic writing, poses risks and demands advanced critical skills (EPI1st3_6, Pos. 18-20). Despite these concerns, assessing AI-generated content was thought-provoking and underscored the need for AI literacy education. While most respondents found the outputs useful and expressed high confidence in them, this raises questions about their ability to reliably assess content, particularly in task 1. This highlights the necessity of equipping users with critical competencies to effectively evaluate AI-generated information.

Authorship

The use of generative language models like ChatGPT in creative processes raises questions about authorship and the user-technology relationship. Analysis of 72 student responses reveals that 78 per cent (56 responses) attributed authorship solely to the students, suggesting AI was viewed as a supplementary tool rather than a substitute for intellectual input. Students commonly used AI-generated content as inspiration or a starting point, subjecting it to refinement and verification.

Co-authorship, identified in 18 per cent (13 responses), involved integrating AI outputs into student work, tailoring content to task-specific requirements. This collaborative approach highlights students' growing awareness of responsible AI use and their ability to merge generative tools with creative efforts. Sole attribution to ChatGPT was rare, occurring in just 4 per cent (3 responses), reflecting students' critical perspective towards AI outputs, often requiring verification for accuracy and relevance.

The findings underscore students' discernment and responsibility in the creative process. The dominance of student-authored responses and the significant co-authorship proportion suggest a reflective approach to AI integration. The low rate of sole attribution to ChatGPT further indicates an understanding of its limitations, such as hallucinations, factual inaccuracies and contextual deficiencies. Students appear to regard AI as a supplementary aid rather than a central element in their creative efforts.

Discussion

As AI-driven tools shape information retrieval, this study examines how students' search strategies align with core LIS principles. While students grasp iterative search concepts, their interactions remain largely superficial, with minimal verification, revealing a gap between LIS curricula and practical AI-driven search strategies (Petrović et al., 2024). Limited critical analysis of AI-generated results highlights the need for stronger AI literacy in education. Integrating exploratory search strategies, prompt engineering and critical evaluation is crucial. Students' reliance on default AI

outputs suggests traditional LIS models may not fully address modern information environments (Nicholas et al., 2024). This study contributes to discussions on adapting LIS curricula, emphasising structured pedagogical interventions to enhance students' critical engagement with AI and equip them to use it responsibly.

The iterative, feedback-driven processes in prompt engineering closely align with LIS frameworks, highlighting AI-mediated systems' potential to enhance information retrieval. This section examines iterative refinement, information literacy competencies and ethical considerations, exploring their implications for adapting educational strategies to the challenges and opportunities of generative AI. To contextualise the findings within the research questions, the main results are presented below.

The iterative and exploratory approaches align with foundational LIS models like Bates's berrypicking and Ingwersen's interactive retrieval (RQ1). Frameworks such as AUTOMAT structure user-system interactions, clarify needs and improve retrieval. While traditional LIS models help explain AI-mediated retrieval, their applicability to generative AI is uncertain. Models like Bates's berrypicking and Belkin's ASK were designed for structured environments, whereas AI-driven retrieval relies on probabilistic responses rather than explicit query refinement. These broad models are difficult to falsify, as nearly any search behaviour can be retroactively fitted into an LIS framework. Future research should develop AI-specific models incorporating machine learning dynamics to better understand user-AI interactions. The gap between awareness and application underscores the need for training, as even LIS experts struggle in AI search environments, often relying on surface-level interactions without iterative refinement (Petrović et al., 2024). While LIS models offer conceptual clarity, their effective use in AI systems requires structured teaching to strengthen user competency.

The iterative, feedback-driven nature of prompt engineering closely aligns with LIS principles (RQ2). Techniques like AUTOMAT and CoT reflect similarities in iterative refinement, reasoning clarification and managing complex information needs. Students demonstrated an emerging ability to intuitively adopt these strategies. Case studies highlight the potential for integrating LIS frameworks with prompt engineering to enhance users' ability to regulate and refine AI interactions. Explicit training in these strategies could address gaps in user competency.

Students demonstrated proficiency in core information literacy (IL) competencies, including source evaluation, ethical awareness and query refinement. However, deficiencies in advanced query formulation and reliance on surface-level outputs suggest opportunities for integrating AI literacy into IL curricula (RQ3). Incorporating ACRL Framework competencies – such as ethical information use and iterative inquiry – alongside AI-specific skills would better equip students to engage responsibly with generative AI. Nicholas et al. (2024) similarly note that while iterative query clarification aligns with IL practices, structured pedagogical interventions are needed to strengthen critical analysis and ethical AI application.

Ethical challenges, including hallucinations, biases and authorship attribution, emerged as significant concerns (RQ4). Students' reluctance to attribute full authorship to AI suggests a mature understanding of accountability. However, beyond authorship, AI systems pose broader ethical dilemmas, such as reinforcing biases, opaque decision-making and challenges in evaluating AI-generated content. While students recognised some risks, their reliance on AI outputs without thorough verification underscores the need for further instruction in ethical AI literacy and critical evaluation (Nicholas et al., 2024). The iterative refinement of queries and awareness of limitations, such as outdated or fabricated data, further highlight the importance of fostering ethical practices. Other studies corroborate these concerns, emphasising the risks of over-reliance on AI without rigorous assessment. Integrating discussions on these challenges into educational frameworks

could better equip students to identify biases, critically engage with AI-generated content and use AI responsibly and ethically.

Research limitations

This study offers insights into students' AI-driven searches but has limitations. First, the sample – Information Management and Electronic Information Processing students – may not represent broader users due to their LIS and digital tool familiarity. Their background likely shaped their structured search strategies, differing from general AI users. Future research should include diverse disciplines or nonacademic users to examine AI literacy and retrieval variations.

Second, this study does not assess LIS models in the AI context but examines student behaviours aligned with traditional frameworks. Traditional LIS models assume structured environments, while generative AI is dynamic and probabilistic, posing methodological challenges. Future research should explore adapting LIS models for AI-driven retrieval.

Another limitation concerns self-reported data. While structured tasks captured AI interactions, students' reflections on search strategies and ethics were subjective. Future studies should use longitudinal observations or real-world scenarios to better understand AI interactions. Additionally, this study does not examine external factors such as institutional policies, prior AI training or AI ethics education. Investigating these influences would offer a more comprehensive perspective on AI literacy and information-seeking strategies.

Conclusions

This study examines the evolving relationship between traditional LIS models, contemporary AI frameworks and pedagogical strategies, offering insights into students' interactions with generative AI in information retrieval and creative tasks. Key themes include iterative refinement, ethical awareness, AI literacy integration and collaborative AI engagement. While students showed a natural affinity for iterative strategies similar to LIS models like berrypicking, their applicability in AI-driven environments remains uncertain. Traditional LIS frameworks, designed for structured, deterministic spaces, may not fully capture the probabilistic nature of AI-mediated retrieval (Roy and Mukhopadhyay, 2023). This highlights the need for further research into AI-specific models of information behaviour and retrieval.

Beyond this study's findings, broader socioeconomic and ethical concerns surrounding AI require further exploration. The monopolisation of AI-driven knowledge production raises issues of user autonomy and equitable access (Verdegem, 2022). Similarly, the environmental impact, including high energy consumption, warrants investigation (Wang et al., 2024). Though not the focus of this study or noted by students, these remain critical considerations for LIS researchers as AI continues to shape information behaviours and retrieval practices.

To address these challenges, the ACRL Framework should expand to include AI-specific competencies such as prompt engineering, iterative query refinement and critical assessment of AI-generated content. While AI enhances efficiency and creativity, structured educational interventions are essential to foster responsible AI use, ensuring ethical oversight and accountability. Future research should further refine the integration of LIS principles and AI literacy, equipping students with the skills needed to critically navigate the evolving landscape of generative AI technologies.

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Life pours back: exploring hiking, wellbeing and information behaviour on the West Highland Way

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Abstract

Introduction. This study explores wellbeing benefits on the West Highland Way (WHW) long-distance hiking route in Scotland and how they connect with concepts in information behaviour, using the NEF/NHS Five Ways to Wellbeing framework.

Method. Using ethnographic methods, WHW participants were recruited and interviewed in situ as they walked. We used reflexive thematic analysis and the Five Ways to Wellbeing (connect, be active, take notice, learn, give) to code interview data.

Findings. Wellbeing benefits were attributed to social connections along the route; accomplishment in meeting a physical challenge; positive mental mindset from being present in nature; learning through cultural heritage; giving and receiving support from fellow walkers.

Discussion. Findings link with concepts from information behaviour in a number of ways: the social sharing of information enriches the experience; low information needs and embodied sensory information were central to the positive mental wellbeing benefits; walking the WHW is a higher thing, a memorable experience set against everyday life.

Conclusion. Future information behaviour research will benefit from exploring similar activities and their connections to wellbeing benefits, from social sharing of information, low information needs and embodied information. These wellbeing benefits may also be relevant to promoting the WHW.

Introduction

Walking is one of the most basic human activities, it was our first mode of transport and over time has evolved in myriad ways. It is a means of getting from point to point, and a culturally significant endeavour reflected through writings and musings from the times of Ancient Greek philosophy through to the present day. Walking has encompassed pilgrimage (Egan, 2010), hiking (Mueser, 1997), political protest (Solnit, 2001), inspiration for poetry (Coverley, 2012), a form of tribute (Herzog, 2014), a method of creating art (Pujol, 2018) and a means of reflecting on life (Shepherd, 2008).

In seeking to further develop knowledge of walking from an information science viewpoint, this paper explores the connections between long-distance hikers' information behaviour and their wellbeing through the lens of the NEF/NHS Five Ways to Wellbeing (Aked and Thompson, 2011; New Economics Foundation, 2008). This work is part of a broader research project looking at the information behaviour of hikers on the West Highland Way, a long-distance walking route in Scotland, UK.

Literature review

Hiking, wellbeing and information behaviour

From a serious leisure perspective (Stebbins, 1982), walking offers opportunities to gain fitness, appreciate nature, learn self-directed skills and experience a flow state (Davidson and Stebbins, 2011). Walking, in the form of rambling, hiking, mountaineering and long-distance walking has also evolved into a popular leisure pursuit (Davidson and Stebbins, 2011) and is one of the most popular activities in the UK (Scottish Natural Heritage, 2018). In recent years there has been research conducted from an information behaviour and human computer interaction perspective on long-distance hiking (Asimakopoulos and Dix, 2017; Hyatt, 2017; Hyatt et al., 2021; Innocenti et al., 2022; McCrickard et al., 2018) and long-distance walking pilgrimages (Innocenti, 2023).

In religious and pilgrimage studies long-distance walking has been linked to a flow state. Descriptions of a meditative mindset are discussed by walkers on the long-distance pilgrimage routes of the Camino de Santiago (Slavin, 2003) and on St. Olav's Way (Jørgensen et al., 2020). Walking as meditation is also extolled by former monk Ernesto Pujol, who incorporates it into his artistic practice (Pujol, 2018), as well as Scottish nature writer Nan Shepherd (2008). However, in information science, wellbeing has been so far insufficiently explored in terms of information behaviour. Except for the initial work of Dewitz (2022), wellbeing appears to be yet uncharted *health information behaviour* research (which encompasses the full spectrum of one's active or passive interactions regarding health information - Kelly et al, 2014) and *health information seeking behaviour* (which typically investigates people's online health information behaviour - Johnson and Case, 2012).

The World Health Organization (WHO) states that '*Health is a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity*' (WHO, 1946). In recent years wellbeing has been further conceptualised '*in two dimensions, subjective and objective. It comprises an individual's experience of their life as well as a comparison of life circumstances with social norms and values*' (World Health Organization. Regional Office for Europe, 2013).

The British think tank New Economics Foundation (NEF) defines wellbeing as comprising two main elements: feeling good and functioning well (New Economics Foundation, 2008). Feeling good can involve feelings of happiness, contentment, enjoyment, curiosity and engagement; functioning well is informed by positive relationships, agency over one's actions and a sense of self-worth. The NEF has produced an established wellbeing framework entitled *Five Ways to Wellbeing*, including five dimensions: connect, be active, take notice, keep learning and give (New Economics Foundation, 2008). This framework was further developed in a 2011 report, *Five ways to wellbeing: new*

applications, *new ways of thinking*, produced by the NEF in conjunction with the NHS Confederation (Aked and Thompson, 2011) and promoted through policies as a means to develop positive mental wellbeing. *Five Ways to Wellbeing* has been cited in a number of studies looking at a wide range of topics and fields: public health benefits of creative arts (Clift, 2012); environmental decision making (Fish, 2011); links between childhood experience and adult mental health (Hughes et al., 2016); green exercise (Barton et al., 2016) and urban design (Anderson et al., 2017).

There are clear links between the NEF/NHS *Five Ways to Wellbeing*, elements of long-distance hiking and information science; however these have not yet been explicitly investigated from this disciplinary viewpoint. A positive sense of connection with fellow walkers, and with family and friends away from the route has been noted amongst pilgrims on the Camino de Santiago (Innocenti, 2023; Slavin, 2003). Being active is central to long-distance hiking, as seen in the physical challenge of the TGO long-distance hiking event, where participants embark on a two-week journey through the Scottish Highlands (Hyatt et al., 2021; Innocenti et al., 2022). The benefits of being active on a long-distance hiking route include increased physical fitness and flow, taking notice as the pace of travel fosters an awareness of your surroundings (Innocenti, 2023; Slavin, 2003). A long-distance hike also represents an opportunity to learn a new skill or to develop an existing one. Lastly, long-distance hiking and long-distance pilgrimage routes offer the chance to give in several ways, from simply having positive interactions with fellow walkers to helping out people in need (Innocenti, 2023; Jørgensen et al., 2020).

In the study presented here the NEF/NHS framework has been used as one of the lenses through which to explore the information behaviour of hikers on the West Highland Way.

The West Highland Way

The West Highland Way (WHW) has previously been studied from the perspective of tourism management (den Breejen, 2007), sports medicine (Ellis et al., 2009), natural history (McWaters and Murphy, 2016) and geography (Dickinson, 1982). This information science research investigates the WHW from an information behaviour and serious leisure perspective.

The West Highland Way is Scotland's oldest official long-distance walking route, first recognised in 1980 (West Highland Way, 2021). The route (Figure 1) is 96 miles long, starting in Milngavie to the north of Glasgow and finishing in Fort William, next to the UK's highest mountain. It is the most popular long-distance walking route in the country, with more than 36,000 people walking it every year (Scottish Natural Heritage, 2018).

Figure 1. *Route (in red) of the West Highland Way* © OpenStreetMap - the map data is available under the Open Database License.

For some, walking the WHW is a long-standing ambition (Hanley, 2020). Some guides have also likened walking the WHW to a pilgrimage (Loram and Newton, 2019). The path passes through, or next to, some of Scotland's notable natural heritage sites, including Loch Lomond, Rannoch Moor and Ben Nevis (Loram and Newton, 2019). That the route goes through such a wide range of landscapes and heritage (Figure 2) is key to its appeal as a long-distance walking route, offering an opportunity for walkers to connect with Scotland's natural environments and lived history.

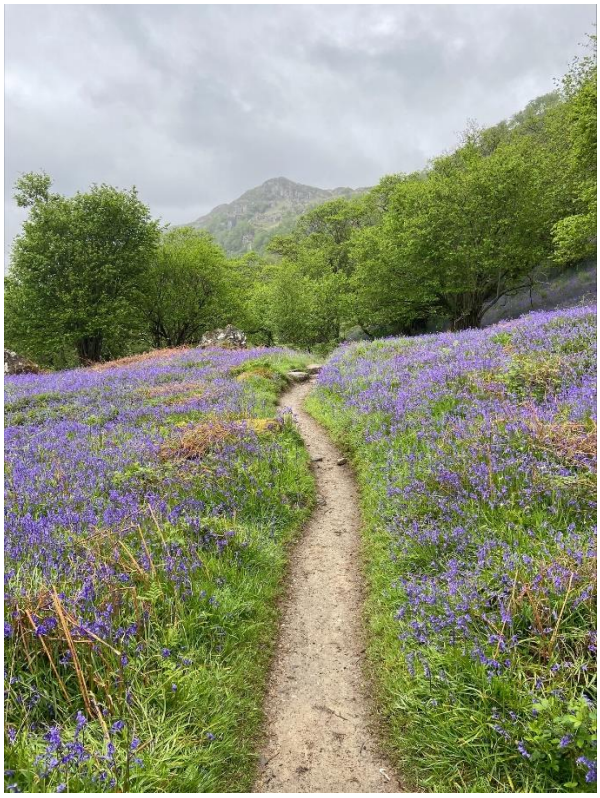

Figure 2. *An image of the WHW as it passes through a field of bluebells next to Loch Lomond (Munro).*

Methods

This study is part of a broader doctoral research designed and supervised by the second and third author. Ethical approval was granted by the Department of Computer Sciences (CIS) at the University of Strathclyde, and the overall data gathering was conducted in situ on the WHW in May 2022. Adopting ethnographic approaches (Hammersley and Atkinson, 1995; Innocenti, 2023), participants were recruited and interviewed as they walked the route. Interviews were conducted by the first author (at the time a PhD student in CIS), who was walking the route concurrently. This helped to create an informal rapport with hikers, before supplying project information sheets and asking for informed consent to take part in the study. Interview questions and transcripts can be found with the associated dataset for this doctoral research (Munro et al., 2024).

Interviews were recorded with a Tascam dr-100mkiii portable recording device and took place in the following locations: at the side or close to the path; at a train station near the path; in eating establishments; and in locations in and around accommodation on the WHW.

In total, twenty-five participants agreed to take part in the study, from which fifteen separate interviews were conducted, typically lasting between fifteen and twenty minutes each. The interviewees were a combination of individuals, groups and dyads. Interviews began with a set of basic demographic questions, then proceeded to fifteen semi-structured questions.

The demographic data recorded included age and gender (Figure 3), nationality and previous hiking experience.

Figure 3. *Pie charts for age and gender of participants (Munro).*

German, American, Canadian, French, Dutch, Belgian and UK citizens joined this study. Only one participant had previously walked the WHW before, while thirteen of the twenty-five had previously done some other form of long-distance walking versus twelve who had not done so. Other long-distance hiking routes undertaken by participants included all, or part of: Coast to Coast, Hadrian's Wall, Rob Roy Way, Southern Upland Way, Appalachian Trail, Northville Placid Trail, Dales Way, Cumbrian Way, North Norfolk Coastal Path, Camino de Santiago and the Pennine Way.

Qualitative data from the semi-structured interviews was processed using reflexive thematic analysis (Braun and Clarke, 2006, 2019; Byrne, 2022). Transcription was conducted by the first author using the Nvivo data analysis software and formed an early iteration of analysis, where themes were initially noted. Following iterations discussed with the second and first authors were conducted on printed copies of the transcripts, using colour coding for broader macro themes, with annotations made of key words or instances relating to micro themes. Illuminating quotes that demonstrated examples of these themes were also underlined. During this process, the NEF/NHS *Five Ways to Wellbeing* (connect, be active, take notice, learn and give) were initially used as a macro code to identify parts of the transcripts related to wellbeing, with each individual way being used as micro codes in the next stage of coding. Through these iterations, the themes, key words, examples and quotes were extracted from the transcript into a code book. Once completed, the code book was used to structure the writing up of findings and discussion, according to the themes related to the *Five Ways to Wellbeing*.

While the themes based around the *Five Ways to Wellbeing* were documented using deductive thematic analysis, one theme emerged inductively outside of this, that of low information needs. This was observed in participants' descriptions of not needing a great deal of information day to day, or that the information required had been easy to find. Use of both deductive and inductive methods is considered by Braun and Clarke to be a fruitful way to conduct thematic analysis (2019) and using them in conjunction is common (Byrne, 2022).

Findings and discussion

The *Five Ways to Wellbeing* (New Economics Foundation, 2008) are used to structure findings from this study (Table 1), which are presented alongside discussion of their connections to information behaviour literature. Key insights include the social exchange of information while walking, the immersion in embodied information from the environment and the low information needs (a sort of information holiday) of the activity, which led to commonly stated wellbeing benefits.

NEF/NHS Five Ways to Wellbeing				
Connect	**Be active**	**Take notice**	**Learn**	**Give**
• Strong social connections amongst walkers on the route and with family and friends away it. • Social connections strengthened through the sharing of information during journey.	• Being active is central to the activity and the physical challenge is key to making journey memorable and classifiable as a higher thing (Kari and Hartel, 2007).	• All participants reported that journey had a positive effect on their mental wellbeing. • Low information needs and immersion in embodied information were key to wellbeing benefits.	• Walking the WHW was a learning experience for beginners and experienced long-distance hikers alike. • Participants learned about the cultural and natural heritage of the route as they walked.	• Social connections on the WHW developed to the point where mutual support was given between hikers.

Table 1. Research data mapped against the NEF/NHS Five Ways to Wellbeing (Munro, Innocenti).

Connect

Within the *Five Ways to Wellbeing* (New Economics Foundation, 2008), to connect is to make connections with people around you in your life: family, friends, colleagues and neighbours. (Aked and Thompson, 2011; New Economics Foundation, 2008). Amongst walkers on the WHW there was evidence of strong social connections, both on the route between walkers, and away from the route with family and friends. These connections primarily developed during the walk, but also occurred before it.

Before the journey, the sharing of interpersonal information motivated people to walk the route, hearing positive descriptions of the WHW from a family member (P16) and work colleagues (P1 & P13). Beyond personal social networks, some were recommended it from fellow walkers on other long-distance walks;

> *I think we knew from other long-distance walking routes, people will tell you what they have done and the West Highland Way was one of the ones that always comes up, so you just think well, you've just got to do it.* (P15)

While walking the WHW, participants noted a variety of social connections: interpersonal sharing of information; a deepening sense of connection due to repeated interactions along the route; social connections despite introversion; social connections amongst groups and dyads on the WHW; and social connections away from the WHW.

The interpersonal sharing, or exchanging, of information about their journeys amongst fellow walkers was commonplace. Regular, repeat interactions were described to help foster enquiring about others' journeys:

> *I think you're seeing the same people on the journey, so when you get to the end of the day you ask them 'How's your day been? How's your journey gone?'* (P15)

In conversation with other walkers, people would share personal information about their lives, especially where they were from (P5, P6, P18, P19, P20 & P25). Although some personal information was shared, this was noted to be a pleasant interaction to have and was not too intrusive, described as:

> *It's very supportive and it's mostly people talking about the experience of being here, it's not a lot of talk about what you do and do you have any kids or anything like that. It's more like, 'how did you like the loch side today?'* (P6)

Regular interactions amongst walkers created a shared experience which deepened the social connection over the course of the journey. The sense of a shared activity strengthening social connections was commonplace:

> *The trail kind of connects everybody, I feel like there's already this shared background, so it's easy to strike up conversations with people.* (P11)

Introversion was not a barrier to strong social connections on the WHW. Some participants described how they were normally introverted or shy in their everyday life, but felt emboldened to be sociable due to these connections (P10, P13).

Social connections were also strengthened amongst dyads while walking the WHW. This was observed amongst participants who were part of a couple walking the route (P6 & P25), who were grateful to be with their partners. Connections amongst family members, dyads of a father and two sons (P16), as well as a group of three sisters (P18, P19 & P20), were also described as personally meaningful and a big positive benefit of the experience.

Social information about the journey was shared with family and friends away from the WHW. This was predominantly photos and videos that participants took as they walked the route and was shared privately through direct communication such as email or text message, or publicly through social media or fitness applications. Sharing with family and friends away from the route was also a way to demonstrate they were safe and well, '*my partner, I check in with him every day*' (P17).

For those that shared information publicly, this took the form of sharing photos and videos using social media, participants discussed using Facebook (P2, P20) and Instagram (P7, P10, P12, P13, P15, P16 , P17). For one interviewee, sharing on Instagram was a means of memory making, '*I've been doing an Instagram post every day because I think it's a nice way to show people but also, it's nice for me to revisit*' (P10).

The sharing of information during the walk along the WHW can be considered a sharing of journey by proxy: '*we've been using Discord for our friends and family to interact and they can send us their comments in real time*' (P3). Some hikers also used data from fitness applications to let family members follow their journey: data from a smart watch allowed a family not just to see where they were but to interact and ask them questions about the landscape around them (P23).

One of the strongest themes to emerge during the analysis stage was that of social connections fostered through the interpersonal sharing of information while walking the WHW. For many in this study, these social connections were a highlight of their journey and created strong positive associations with the activity. This also chimes with descriptions of positive interactions with fellow walkers on Camino de Santiago and St. Olav's Way fostering connections (Innocenti, 2023; Jørgensen et al., 2020; Slavin, 2003).

Social connections that develop over the course of the journey are clear evidence of wellbeing as described in the *Five Ways* (Aked and Thompson, 2011; New Economics Foundation, 2008). This

demonstrates that there was a direct link from participants' information behaviour, the exchange and sharing of information, and their sense of wellbeing while walking the WHW. These findings also help to situate the activity as a higher thing (Kari and Hartel, 2007), demonstrating that for many this type of camaraderie and shared communal experience run counter to everyday interactions and information behaviour.

The positive wellbeing benefits resulting from social connections along and away from the WHW may be usefully included in the promotion of the WHW and similar routes, highlighting to potential walkers that positive and memorable social interactions are regularly encountered and they add greatly to the richness of the experience of walking the WHW.

Be active

To be active within the *Five Ways to Wellbeing* (New Economics Foundation, 2008) is to engage in physical activities such as walking, running, cycling, gardening, dancing and other forms of exercise, often practised outside. The central theme identified here was that of the WHW representing a physical challenge to be overcome. Participants considered walking the WHW to be a '*challenge*' (P1, P5, P9, P17, P23, P24, P25) or adventure (P16, P17, P19), with one questioning '*what have we done?*' (P12). One of the sections of the WHW alongside Loch Lomond was likened to an '*assault course*' (P21). However, the physical challenge of walking the route was not always perceived negatively, it was '*fun, but difficult*' (P23).

From the physical challenge of the activity came a number of strongly positive associations, including '*increased fitness*' (P19). There was also a deep sense of fulfilment from walking the route, described as '*pride*' (P17), '*achievement*' (P21), '*satisfaction*' (P21) and '*accomplishment*' (P24). This strong sense of gratification also '*makes you want to do it again*' (P6).

The centrality of walking itself to the activity was observed to be a key component of what made the WHW memorable. This was described as, '*it's the journey, not the destination*' (P16) and '*it's better to travel hopefully than to arrive*' (P21).

These are similar benefits to ones noted in a report on long-distance walking routes in Scotland (Scottish Natural Heritage, 2010). This level of activity clearly links the wellbeing benefits of walking the WHW in relation to the *Five Ways* (Aked and Thompson, 2011; New Economics Foundation, 2008). A physical challenge being key to the appeal of an activity was also present in information science studies on hikers on other long-distance walks (Hyatt, 2017; Hyatt et al., 2021; Innocenti, 2023; Innocenti et al., 2022). Again, this links with the concept of higher things (Kari and Hartel, 2007) in creating a memorable lived experience for participants from which they take a sense of achievement.

Take notice

Within the *Five Ways to Wellbeing* (New Economics Foundation, 2008), to take notice is to retain curiosity in your surroundings and be receptive to moments of beauty and points of difference in your surroundings that occur in the moment.

An emergent theme from the interviews was that of positive mental wellbeing benefits from walking the WHW. Participants were asked if they had felt any positive or negative effects on their state of mind since starting their journey: all 25 participants stated that they had encountered positive effects from their experience. These effects were described in the following effusive terms: '*positive effects only*' (P1), '*absolutely positive*' (P3), '*very positive*' (P12), that it was like a '*mental holiday*' (P9), '*mentally it's fantastic*' (P15) and '*I haven't been this content consistently in a while*' (P17). Participants had a wide range of descriptions of these positive mental wellbeing benefits: of feeling '*at peace*' (P3), '*calm*' (P3 & P16), '*present*' (P5), '*relaxed*' (P9), '*chill*' (P10) and '*zen*' (P12). Further description of these positive effects included that the activity was '*meditative*' (P5), akin to a

'*walking meditation*' (P17), that they had an '*ease of mind*' (P16) and they felt that they were '*clearing the head*' (P4 & P15).

One participant eloquently summed up the positive effects as follows:

> *I've been very, very present with what's going on in the moment, and when my thoughts do meander, I've had a few thoughts where I'll drift back to my work or things like that, but they're very, very light. They're not really going into that … if they just kind of … they'll pop down like a cloud and float away very quickly. Yeah, it's being here.* (P5)

It is worth considering that two of the participants (P2, P5) experienced positive benefits, but pointed out that they were in a good place with their mental health before starting the journey. The positive effects on participants' state of mind were also described to run counter to, or alongside, negative physical effects associated with tiredness or bodily pain (P4, P9, P10, P21, P23 & P25), described as '*my body's in pain but my mind is clear*' (P4).

Central to these positive mental wellbeing benefits was a theme of what we suggest calling *low information needs*, leading to simplified thought processes that were key to the stated positive mental effects of walking the WHW (P1, P4, P5, P6, P7, P8, P10, P12, P13, P14, P15, P16, P23, P24, P25). Low information needs are defined here as occurring during an activity or experience where the information needed to take part is easily accessible and simple to comprehend. This runs counter to everyday life, where work or stressful life events can create large volumes of information, which can be overwhelming and difficult to understand. Low information needs create the conditions where cognitive load is reduced and more pleasant thought processes, such as entering a flow state or being present in your surroundings, can occur during the activity. Low information needs do not occur where there is no information required, merely that the information is readily available and easy to understand. Low information needs in an activity or experience can enhance a serious or project-based leisure pursuit, where information is key, and are not necessarily indicative of them being considered casual leisure due to a lack of information required.

Low information needs on the WHW resulted from participants stating how easy navigation was due to the route being well-signposted (Figure 4) meaning more complex forms of navigation were not necessary. These low, or simple, information needs were summed up in the following terms:

> *To have this activity where you get up and the only thing you have to do is get to where you're going to be that night, what could be better than that?* (P14)

Figure 4. *A waymarker at the side of the WHW as it winds towards the Devil's Staircase (Munro).*

These low information needs led to a number of simple thought processes that participants described to have a positive effect on their mindset: '*It's nice, from like a psychological perspective, you're just so focused on the things you need to do*' (P23).

Many participants talked of how the benefits from these low information needs and simplified thought processes were an antidote to stress and anxiety experienced in their everyday work lives (P1, P6, P8, P9, P12, P14, P15, P16, P24, P25), '*to fight against stress and against burnout*' (P1). Others talked of how walking the WHW helped combat work related stress:

> *I have a very busy job, not classic nine to five, but longer hours and when you come here you forget it. Every minute you're not thinking about work.* (P16)

These positive effects were corroborated by other participants who were in groups or dyads, P5 and P15 stated they had noted improvements in P6 and P14's mindset. Beyond work stresses, some other participants felt the activity to be an antidote to everyday stresses more broadly (P4, P6, P12).

Further to the description of low information needs and simplified thought processes leading to positive mental wellbeing benefits were description of how immersion in the natural environment resulted in these positive effects. Taking in the sensory information of the WHW was described as, '*I think being in nature this much really helps calm my mind*' (P3). Also commented on by a number of participants was how concentrating on the going, the terrain underfoot, helped to foster a positive mindset (P6, P13, P15, P20, P24).

The *take notice* findings demonstrate strong evidence of participants reporting positive mental wellbeing benefits from walking the WHW and that these were linked to their information behaviour. Noticeably, all participants noted the experience as having had a positive effect on their state of mind, and how low information needs during their journey had a key role in the reported

wellbeing benefits. This is a development of the concept of information needs (Savolainen, 2012) into a novel area, a serious leisure activity that runs counter to everyday activities, where low information needs provide respite from high information environments and are linked to positive mental wellbeing benefits, a form of information holiday.

An information holiday can be defined as an activity, associated with travel, leisure or an activity distinct from everyday life, where low information needs are encountered. The information holiday may require information to plan, but any information required during it is minimal, easy to follow and simple to understand. This can provide relief from the cognitive load of dealing with large volumes of information in work or online, allowing for clearer mental processes and positive mental wellbeing benefits to present themselves.

Connections with nature help to place embodied information in a new context, where taking in sensory information from the natural environment of the WHW links to positive mental wellbeing benefits. This takes the call to look at physical activities as a source of embodied information (Cox et al., 2017) and offers the opportunity to consider that such information is not just functional, but central to making an activity a higher thing (Kari and Hartel, 2007), a memorable lived experience set in nature that runs counter to everyday life (Stebbins, 2009). This is also observed in pilgrimage on the Camino de Santiago (Innocenti, 2023), suggesting embodied information can be key to activities that encourage positive mental wellbeing.

These social and natural connections link with reporting of positive mindsets and thought processes in an initial study on the WHW (Munro et al., 2022) and in previous studies on the Camino de Santiago (Innocenti, 2023; Slavin, 2003) and the St. Olav's Way (Jørgensen et al., 2020), as well as in broader literature around walking (Davidson and Stebbins, 2011; Pujol, 2018; Shepherd, 2008).

Findings from this study clearly demonstrate that walking the WHW has positive mental wellbeing benefits that can be linked to the NEF/NHS *Five Ways to Wellbeing* (Aked and Thompson, 2011; New Economics Foundation, 2008), of being present in the moment, meaningfully engaging with the environment around them and being receptive to profound experiences. These wellbeing benefits stem from information behaviour displayed by participants along the route, encountering low information needs, and experiencing an information holiday.

Learn

Within the *Five Ways to Wellbeing* (New Economics Foundation, 2008), to keep learning is engage in new activities or rekindle an interest in an old hobby, such as cooking, exercise or a creative activity and to continue personal development through formal and informal education (Aked and Thompson, 2011; New Economics Foundation, 2008). The activity of walking the WHW itself represents an opportunity to learn. For thirteen participants this was an extension of long-distance walking as a pursuit; for the other twelve hikers it was their first experience of the activity.

Of those who had done some other long-distance walking only one (P2) had previously walked the WHW before, meaning that, for the rest who were developing long-distance walking as a hobby, the route offered an opportunity to deepen their knowledge of the activity. Amongst those who were developing their practice of long-distance walking were dyads who had previously done the activity together on different routes, including three couples (P5 & P6, P7 & P8, and P10 & P11), as well as a pair of work colleagues (P14 & P15).

For those undertaking a long-distance walk for the first time there was an intention that this was a stepping stone before attempting other walks (P23, P24). Among some dyads there was a mixture of experienced long-distance walkers and first timers; a group of three siblings (P18, P19, & P20) and a married couple (P21 & P22). This demonstrates how one member of a group with greater experience was able to share knowledge of the activity with inexperienced walkers.

Another opportunity to learn while walking the WHW came from experiencing the cultural and natural heritage present along the route, to '*see Scotland through hiking*' (P9), another spoke of being drawn to walk the WHW as they, '*enjoy the people, the culture*' of Scotland (P4).

The food and drink of Scotland was part of the local culture that walkers on the WHW experienced positively: '*the food has been great*' (P5), '*we've had a lot of really good food*' (P11), with the '*Scottish breakfast*' (P2) '*haggis*' (P8) and '*beers*' (P2) said to have been highlights.

Historical heritage was reflected on as walkers walked the route, described as:

> *I guess maybe because I'm a history person, I think a lot about the long journeys that people have historically taken by foot and this … this feeling that if they can do it, and they don't have you know nice hiking shoes and hiking gear, and I'm out here and there's nothing to complain about and people did these kinds of journeys, you know … with a purpose.*' (P11)

The natural heritage of the WHW was central to walker's experiences. Participants spoke of '*nature*' (P2, P12), '*the space, the countryside*' (P4) and '*the ruggedness of Scotland*' (P19) being what had drawn them to walk the route.

Descriptions of what had been memorable about their journey so far featured their interaction with the natural environment. Participants said: '*the most memorable thing about this journey is how lovely it is and how easy the scenery makes it to walk*' (P12). Specific points along the WHW were also cited as providing memorable experiences; Loch Lomond (P1, P3, P4, P15, P21), Conic Hill (P7), Loch Tulla (P12, P13) and Rannoch Moor (P17).

Thematic analysis showed there were a number of ways in which participants were learning from the experience, and this was linked to their information behaviour. Some were developing a pre-existing hobby or interest in long-distance hiking and for others this was their first experience of the activity. Both are relevant to the concept of serious leisure (Stebbins, 1982), as they represent the development of a skills in a Nature Challenge Activity (NCA) (Davidson and Stebbins, 2011), or a possible entry point for a new pursuit. This links with findings of a report by Scottish Natural Heritage on the benefits of long-distance walking routes, that they represent an opportunity for life-long learning (Scottish Natural Heritage, 2010).

Walking the WHW also represents an opportunity for participants to immerse themselves in the cultural and natural heritage of the route, something that is seen on cultural heritage routes with a history of religious pilgrimage like the Camino de Santiago (Innocenti, 2023; Slavin, 2003), the Fife Pilgrim Way (Bowman, 2020) and St. Olav's Way (Jørgensen et al., 2020). This also demonstrates how sensory embodied information from the natural environment of the WHW provides wellbeing benefits and links to memory making.

Give

To give in the *Five Ways to Wellbeing* (New Economics Foundation, 2008) is to engage in a positive action for someone other than yourself, either known or unknown, through simple interactions such as a gesture, or more committed activities like volunteering.

Evidence of giving can be seen alongside some of the social connections reported in the connect stage of the *Five Ways to Wellbeing*. For example, strengthening social connections over the course of the route resulted in concern for fellow walkers' welfare. This was described by one as;

> *Like a lot of long-distance walks, you keep bumping into people along the way and then you find you've invested a bit of emotion if you like into that and I keep wondering how people, if I haven't seen people, well how are they getting on?* (P14)

Another participant also showed concern for the physical condition of fellow walkers, *'I stopped and asked if they were alright and if they needed any blister plasters'* (P22).

Concern for others was balanced with '*support*' (P6) and '*encouragement*' (P22) from and to fellow walkers as the journey progressed. There was discussion of '*inspirational people*' (P6) helping to create an uplifting experience along the route.

Giving amongst hikers on the WHW was another way of demonstrating the wellbeing benefits of the activity and how they are linked to the information behaviour of social interactions. Participants described situations where help was given to fellow walkers and this elevated the experience. Giving is linked to the social connections evident in the connect stage, but developed into mutual support. This dimension further contributes to situate the activity of hiking the WHW as a higher thing (Kari and Hartel, 2007).

Conclusion

The findings in this study clearly point at significant wellbeing benefits from walking long-distance hiking routes, and that they are directly linked to information behaviour. Walking the WHW offers the opportunity to encourage positive wellbeing and mental health benefits to those who walk it: through immersion in environmental embodied information; through social connections from the sharing and exchange of information; and through experiencing low information needs, akin to an information holiday. Wellbeing benefits may be usefully highlighted in the dissemination of information about the WHW, and other routes, to the public; their promotion could also be encouraged by public bodies with a broader remit for promoting public health.

There are interesting implications for the field of information and library science arising from this study, suggesting that providing, seeking and experiencing information can positively affect an individual's personal wellbeing. Future studies are encouraged to delve into the relationship between the concepts of embodied information, social sharing of information and low information needs to wellbeing benefits in other similar embodied and outdoor activities. Also, while the findings and wellbeing benefits of this activity were positive, activities and areas of life where information behaviour can negatively affect personal wellbeing may be explored, so that the provision of information may address and mitigate this impact.

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Reciprocity in information exchange: how social exchange enriches collaborative research partnerships

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Abstract

Introduction. This paper explores the information behaviour of researchers engaging with industry, community and government stakeholders. It examines the interplay between information sharing, seeking, encountering and use, and the role of reciprocity in social exchange.

Research design. This qualitative study involved semi-structured interviews with 27 academics in Australia using a constructivist grounded theory methodology, and Molm's reciprocity theory of social exchange as a framework for analysis

Theoretical framework. Savolainen's characterisation of information exchange as the intersection of seeking and sharing (2019) and Molm's (2010) reciprocity theory of social exchange.

Findings. The findings indicate that researchers' information behaviour in relationships with stakeholders involved information reciprocity in the interaction of information seeking, sharing, encountering and use. Researchers engaged in interactive and interwoven processes of seeking, sharing, encountering and using information that involved mutual benefits for each party.

Conclusion. The paper presents a Model of Information Reciprocity for Social Exchange that identifies the information behaviours and modes of reciprocity that underpin researcher-stakeholder relationships. Information sharing, seeking, encountering and use are the mechanisms enabling reciprocity and occur interactively and iteratively.

Introduction

While information sharing is an integral element of information behaviour for individuals and groups, it is an underexplored area in information behaviour research (Savolainen, 2017; Wilson, 2010a). Models of information behaviour tend to focus on the components of information exchange processes, without addressing the interactions or nexus of activities (Savolainen, 2019; Huvila, 2022). For example, Wilson's (1999) model identifies information exchange and interaction with other people as a source of information but does not represent the dynamics involved. To develop a more holistic representation of information behaviour it is important to look at the '*transitions or trading zones between different types of information activities*' (Huvila, 2022, p. 529). The exploration of mutual exchange activities and interactions between information sharing and seeking is one of these zones (Savolainen, 2017, 2019).

Studies of information behaviours between individuals, particularly in collaborative environments, indicate that information sharing involves mutual exchange and reciprocity (Du and Chu, 2022; Given and Kelly, 2016). Social capital and social exchange theories have influenced the examination of information interactions (Wilson, 2010b), providing ways of exploring the patterns involved in information exchange. For example, Huvila et al., (2014) explored social capital and information sharing in virtual worlds and identified that emotional intelligence influenced the success of social interactions and information exchange. Earlier, Totterman and Widén-Wulff (2007) used a social capital framework to explore information sharing within a university. Across the literature the concept of information sharing is used to '*house*' exchange and reciprocity (Pilerot, 2012, p. 568); however there have been limited studies exploring these nuances.

This paper explores the nexus of sharing, seeking, encountering and using information, through findings from a study of researchers engaging with industry, community and government stakeholders. This study explores the experiences and information behaviours of academic and professional staff undertaking the work involved in enabling societal impact of research (referred to as impact work). This paper reports on findings relating to one of the study's research questions: What are the information behaviours associated with impact work for academics? The results extend understanding of mutuality and reciprocity in information sharing by applying social exchange theory to Savolainen's (2019) modelling of the interplay of seeking and sharing, which identified interactive seeking and sharing as an area for further exploration.

Literature and context

Information behaviour exploring information exchange

Information behaviour is represented in numerous models that seek to simplify the complexities of how people engage with information across diverse contexts (Wilson, 2010b; Given et al., 2023). While most information behaviour research focuses on individual elements of these models, such as information seeking, there has been increasing attention paid to the interplay between elements. Savolainen's (2019, p. 522) exploration of the links between seeking and sharing of information identified three main approaches to representing how these elements connect: indirectly, sequentially and interactively. Similarly, Huvila (2022) looked at the nexus of information making and taking as a '*conceptual apparatus*' (p. 533) to address the underexplored '*junctures between behaviours that account for the manipulation of information, for instance, by creation, organizing and managing, and its use*' (p. 528). Ruthven (2024) proposed information shaping to extend understanding of making and using information.

Studies of collaborative information behaviours in groups or communities have also identified practices that integrate information behaviours. In these studies, the importance of reciprocity in information exchange is identified as an important aspect of information seeking and sharing. For example, Du and Chu (2022) identified that the principle of reciprocity enables researchers and communities to negotiate shared understanding and trust. Given and Kelly (2016, p. 1) found

'*Interdependency and reciprocity are shown to play key roles in motivating individual group members to share information with their peers*'. Goh et al (2019, p. 1139) looked at exchange of news on social media and found people consider both the '*instrumental and symbolic value of sharing*'. These studies indicate that exchange of information and a measure of reciprocity supports access to information and the sustaining of relationships over time. Huotari and Chatman (2001) identified the importance of reciprocity and trust in effective information sharing and value creation within an organisation. Reciprocal exchange of information also appears in Wilson's (1999) model of information behaviour as a variable in relationships affecting the activities of sharing, such as risk, reward and trust. However, the role of reciprocity is not explored in depth in these works and remains an underexplored aspect of information behaviour models and interactions between seeking and sharing.

Social exchange theory

Social exchange theory provides a range of approaches for exploring exchanges within social and organisational groups (Davlembayeva and Alamanos, 2023). However, it tends to overlook the importance of reciprocal exchange, positioning this as less important than contractual or negotiated relationships (Ahmad et al., 2023; Molm, 2010). Reciprocity has been considered part of the rules and principles of exchange and is characterised as a folk belief, a social norm, or an individual orientation (Cropanzano and Mitchell, 2005; Ahmad et al., 2023). There is evidence that social cohesion, interpersonal bonds and positive feelings generated by reciprocity are more important than the tangible economic benefits (Molm, 2010).

Collaborative research practices

Researchers are increasingly encouraged to engage in collaborative relationships with stakeholders outside universities to develop and conduct research to generate positive societal impact. It is widely accepted that building trusting and engaged relationships supports societal impact of research (Aiello et. al, 2021) by facilitating exchange of ideas, knowledge and perspectives (Morton, 2015; Spaapen and van Drooge, 2011). This involves researchers accessing information about stakeholders' needs, interests and practices, as well as researchers informing stakeholders about their own practices, expertise and findings. Relationships between researchers and stakeholders provide rich information environments where the iterative exchange of information builds mutual understanding and trust (see Cattlin and Given, 2024). One element of these relationships is the reciprocal exchange of information, which provides mutual benefits and rewards to all parties and underpins the effectiveness of collaborative relationships. However, there is limited research on the specific mechanisms, behaviours and outcomes of this information exchange and how it contributes to societal impact of research.

The activities researchers undertake in collaboration with external stakeholders provides a context for exploring the interplay of information seeking and sharing. The literature exploring collaborative research practices indicates that regular interactions that facilitate exchange of ideas and development of shared understandings are critical to partnership success (e.g., Boaz et al., 2021; Morton, 2015). This includes practices of coproduction, research partnerships and boundary spanning (Clark et al., 2017), as well as engaged scholarship, knowledge translation and participatory research practices (Collie et al., 2016; Kelly, 2019; Higginbottom and Liamputtong, 2015). The exchange of both explicit and tacit information (Knight and Mitchell, 2022) plays a key role in both the development of these relationships and the work conducted within them. This work can include, for example, creating targeted information resources (O'Connell, 2019), regular meetings (Rybnicek and Konigsgruber, 2019), informal interactions (Dewaele et al., 2021), public engagement activities (Watermeyer, 2012), and social media (Jordan, 2023). While information exchange is implied in interactions, it is seldom the focus of discussion in exploring how effective collaboration happens and contributors to societal impact of research.

Some studies have also identified that researchers face challenges in accessing information to support research activities involving engagement with stakeholders (Miller, 2015; Steinerová, 2019; Willson, 2018; Willson and Given, 2020). A few studies have identified the importance of interactions with colleagues and the development of relationships with stakeholders as providing access to information that informs both their research practice and the generation of new knowledge (Kelly, 2019; Miller, 2015; Willson, 2022). Zheng and Pee (2022) identified the importance of social context and dialogue in providing access to information within organisations.

A more holistic model of information behaviour that explores the nexus between sharing, seeking, encountering and use, and represents the role of reciprocity would provide a mechanism for exploring complex interactions such as researcher collaborations with stakeholders.

Theoretical framework

This paper brings together Savolainen's characterisation of information exchange as the intersection of seeking and sharing (2019) and Molm's (2010) reciprocity theory of social exchange. The information behaviours involved in sharing, seeking, encountering and using information were analysed as mechanisms for development and sharing of social capital.

The interplay between seeking and sharing has been represented in information behaviour research in three ways:

- Seeking and sharing as discrete activities connected by intermediary factors (e.g., information use);
- Sequential seeking followed by sharing;
- Interactive connections, where seeking and sharing affect each other, while simultaneously seeing these as distinct activities (Savolainen 2019, p. 522).

Savolainen (2019) indicates that further research is needed to explore how interaction between seeking and sharing occurs in different contexts.

Molm (2010) differentiates between negotiated exchange and reciprocal exchange where individuals give to others, through acts of service or advice, without formal negotiation and without knowing if a benefit will be provided in return. Her work identifies the importance of reciprocal exchange in building trust and affective bonds without the need for close or formalised relationships. She found that '*social support, information about opportunities, informal kinds of assistance-are most typically acquired, in natural settings, through reciprocal or generalised forms of exchange, not negotiated exchange*' (Molm, 2010, p. 126).

Molm's (2010) model of reciprocity theory of social exchange identifies a structure of reciprocity, causal mechanisms and integrative bonds (p. 124). The key elements of the model are:

- Structure of Reciprocity where benefits are exchanged:
    - Unilaterally or bilaterally
    - Indirectly or directly
- Causal mechanisms that influence the outcomes
    - Risk of non-reciprocity in an exchange
    - Expressive value of an exchange
    - Presence of conflict in exchanges
- Resulting integrative bonds enabled by reciprocity
    - Trust
    - Affective regard
    - Solidarity (Molm, 2010, p. 124).

Reciprocity is a form of social capital that involves an exchange for mutual benefit between parties (Stevenson, 2010). This can include the give and take of objects or services to build and confirm social relationships (Vivanco, 2018) or a benefit or harm received from another person (Blackburn, 2016). Sahlins (1972) differentiated types of reciprocity as generalised, balanced and negative, in the context of social boundaries. Social network analysis uses reciprocity as a measure of strength of relationships and information exchange as a commodity (Granovetter, 1973; Haythornthwaite, 1996). Theoretical explorations and empirical investigations of reciprocity have either focused on strategic, transactional behaviour (Perugini, 2003), or generalised exchanges (Molm, 2010, 2012; Torche and Valenzuela, 2011).

Following from the analysis, the paper presents a model of information reciprocity that illustrates how researchers use generalised and direct information sharing, seeking, encountering and use as integrated information behaviours when engaging in impact work.

Research design

This paper reports on one aspect of a larger, exploratory study involving semi-structured interviews with 27 research active academics in Australian universities, from social sciences, sciences, humanities and creative arts, at different career stages. Constructivist grounded theory was used to guide research design, data collection and analysis (Charmaz, 2014), with interview questions piloted at the start of the project. Following institutional ethics approval, participants were recruited through personal and professional networks, via advertising on social media, and using snowball sampling. This provided a maximum variation sample reflecting a diversity of career stage, gender and location. Interviews were conducted using Microsoft Teams (24) and in person (3) with audio recording and full transcription. Initial analysis commenced following each interview to identify potential codes and themes, which guided subsequent interviews and participant recruitment (Charmaz, 2014). All participants were assigned pseudonyms for use in reporting.

Initial coding to identify researchers' information behaviours demonstrated the significance of relationships to information environments. Focused coding identified relationships as sites of information exchange and specific elements that facilitated this (Cattlin and Given, 2024). One of these elements was the nature of the reciprocity inherent in the sharing and receiving of information between researchers and stakeholders. Using Savolainen's characterisation of information exchange as a starting point, Molm's model (2010) was used as a lens for analysing researchers' activities. This paper addresses 20 of the 27 interviews where information reciprocity was identified as an important aspect of information behaviour, where researchers shared, sought and encountered information in their interactions with stakeholders.

Findings and discussion

The findings indicate that researchers' information behaviours in relationships with stakeholders involved information reciprocity. Information reciprocity is defined as the intentional sharing of information with anticipated receipt of information in exchange. Information reciprocity brings mutual benefit or value to both parties in an iterative and interwoven process where seeking, sharing, encountering and using information occur in close proximity. Information reciprocity is an intentional activity where sharing information facilitates access to information in return. The findings show that information reciprocity intentions occurred on a spectrum, from altruistic to meeting formalised obligations, as follows:

1. Information reciprocity for social good
2. Information reciprocity for relationship development
3. Information reciprocity for speculative reward
4. Information reciprocity for mutual understanding
5. Information reciprocity for mutual reward

6. Information reciprocity for negotiated obligations.

Researchers engaged in interactive and interwoven processes of seeking, sharing, encountering and using information, with mutual benefits for each party. Information reciprocity involved exchanges of knowledge through affective experiences, tacit sharing, networked information and documented knowledge pathways. Researchers conceived of reciprocity in interactions where the other party may or may not have been aware of returned reward, including those where reciprocity emerged over time, and those where reciprocity was codified in partnership agreements.

Information reciprocity for social good

The majority of researchers shared information with the aim of providing broad social benefit, such as raising awareness of a problem and potential solutions, educating the public, or providing expert commentary to a group with a special interest. The mechanisms for sharing this information included mainstream or social media, such as radio interviews, social media, blogs and in-person events such as non-academic conferences or art gallery talks. Interviewees shared this information through a sense of intellectual and public generosity, fulfilling what they believed was their responsibility as an academic to provide social good. They were also aware of the information needs of others and the barriers to accessing academic expertise and research knowledge.

While motivated by altruism, researchers identified that they accrued reciprocal benefits through sharing information for public good. Some of these benefits were immediate and purely affective, while others were serendipitous, with various benefits accrued over time. Interviewees acknowledged their own pleasure in these interactions, providing a sense of purpose and validation. Angela (Associate Professor, art) expressed their '*love*' for giving presentations in galleries because '*you can get feedback … you can read the room, see how people have responded to something. There's a genuine interest … and often leads to very stimulating conversation.*'

Others recognised that sharing for social good over time accumulated value in providing them with a network of contacts, which increased opportunities for serendipity. Shannon (Senior lecturer, humanities) was comfortable with the intangible quality of '*passive networking in ways that can't be quantified*' and recognised that '*people know me because of the blog, and they wouldn't have known me otherwise*'. Sharing information also established researchers' credibility with different groups, through giving them '*visibility*' as an expert in their field. For example, Kate's (Full Professor, cultural studies) sharing of a '*report and the public speaking*' provided evidence of her expertise so that stakeholders '*knew that [she] could work in that kind of space*'. This visibility resulted in further opportunities to present in public and in the media, as well as such tangible benefits as new research partnerships, consulting opportunities and government advisory roles.

Information sharing for social good reflects Savolainen's (2019) integrated sharing and seeking, where the practice of sharing results in realisation of information needs, active seeking and serendipitous encountering of information. This realisation of the value of generalised reciprocity is central to Molm's theory that '*acts of indirect reciprocity convey even greater expressive value, because they benefit another to whom the giver owes no direct debt and at the same time contribute to maintaining a collective enterprise that benefits the network as a whole*' (2010, p. 124). In sharing information for social good researchers are developing their own and stakeholders' social capital through mutually beneficial networking.

Information reciprocity for relationship development

Researchers shared information within the context of both nascent and established relationships, with individuals, communities and networks, in anticipation of receiving unspecified benefits through creating or maintaining connections. The sharing of information provided a means of establishing or maintaining open communication channels over time, ensuring that stakeholders knew they could engage, and seek or share information, despite there being no formal project

activity or joint enterprise. The anticipated reciprocal benefit could be affective, where the act of sharing, or the reaction from stakeholders provides validation and enjoyment, or tangible, such as access to knowledge on an issue or development of a collaborative project.

As with sharing for social good, information sharing for relationship development was motivated by a researcher's sense of responsibility to provide benefit to others. However, there was also the addition of a sense of generalised or specific obligation to share information to maintain access to networks and contacts. For example, the act of sharing a paper or providing an introduction to another researcher was altruistic in one sense, but researchers were also mindful of the value in maintaining connections by sharing this information. Bridget (Senior lecturer, education) reflected on the experiences of several others where she '*shared a paper*' or gave a '*free workshop*' with stakeholders she had previously collaborated with as a way of sustaining relationships by '*keeping those people on the boil and offering them things for free*'. Molm characterises these as '*mixed motive*' exchanges, involving both indirect and direct reciprocity to strengthen relationships (2010, p. 124).

Information reciprocity was closely associated with building and maintaining trust. As Melanie (Full Professor, design) found, exchanging information informally by text with a research partner helped '*build that personal relationship where you can complain about things*'. Laura (Associate Professor, information science) reflected on being '*invited to give a talk*' to a community group, which enabled her to build a research partnership because they '*knew my work and [they] trusted me*'. There was also an understanding that a return benefit may not materialise or may be delayed. Wendy (Full Professor, business) recognised, in hindsight, how sharing information had resulted in a collaborative research project with a stakeholder, because she had '*made time, over years to be available and answer his phone calls and … didn't get paid for any of that stuff*'. Molm identifies that the presence of risk in indirect reciprocity, where the giver may not receive any benefit, creates a greater '*trust and affective regard*' between parties (2010, p. 125). Trust is also an important factor in enabling information sharing, generally (Chatman, 1987; Wilson, 2010a).

The value of sharing was also realised in reflexive practices that benefited the researcher and enabled future interactions by improving sharing practices. For example, researchers received direct responses and feedback to some information sharing, such as when writing blog posts or giving public presentations. Olivia (Senior Research Fellow, cultural studies) valued the feedback and validation she received from writing blog posts about her research because it '*taught [her] to write and it gave [her] the opportunity to try things out, to slowly connect with community, to make mistakes too*'. Similarly, Erin (Research Fellow, biology) used the feedback on her public presentations to community groups to develop her own skills and approach by '*realising how they respond to that and going back the next time … slightly tweaking it*'.

This form of information reciprocity illustrates Molm's finding that the '*act of reciprocity itself has value*' (2010, p. 129) and provides benefit even when no direct benefit is received. This confirms findings in other projects relating to the importance of building trust in collaborative research relationships (Du and Chu, 2022) and relationships between people within organisations (Miller, 2015).

Information reciprocity for speculative reward

Researchers shared information that they hoped would be of interest or of use to others in anticipation of receiving rewards, but they understood there was a risk and unpredictability in the form, timing and value of the return. Researchers accepted and calculated both the opportunity of serendipity and the risk of limited returns when deciding to spend time and resources to share information. This approach extends on the concept of information reciprocity for relationship development, with a more focused expectation of reciprocal value. Yet, speculative reward also includes the underlying motivations of information reciprocity for social good, such as acceptance

that being accessible and visible is part of a researcher's role. Talja (2002) identifies this form of strategic information sharing among academics and development of peer relationships.

Keith (Full Professor, design) accepted that he was expected in his role to spend time engaging with stakeholders and developing proposals, but then not '*hear[ing] anything [immediately, as] that's how I get projects. It's being visible and always being out there*'. Other researchers were also aware that some opportunities for sharing information may appear, at first to be altruistic, such as giving public presentations, but that these could also offer tangible benefits. Angela (Associate Professor, art), for example, approached public presentations with awareness that '*there's probably some funders in there … [and] potentially some buyers*'. Similarly, Paul (Full professor, political science) had learnt the value of giving regular media interviews; these could result '*by chance*' in later being '*invited to join an expert working group*' because someone saw the media engagement.

The concept of value also varied, with some researchers sharing information designed to provoke or challenge widely held views; they received negative reactions and hostility, as well as positive value. The reward in this case was to advance activist perspectives, such as advancing feminism or challenging entrenched power structures. Olivia (Senior Research Fellow, cultural studies) saw '*mak[ing] yourself vulnerable to attack*' through sharing information in public forums at events and online as part of her role as a researcher in her field. The negative responses sat alongside evidence of positive change, where information shared by Olivia was a '*really big influence*' on community members and '*really changed*' how they thought about an issue.

One researcher, Cameron (Full Professor, design) had refined their approach to information sharing into a specific strategy of creating a '*gift*' for a stakeholder, such as an interpretation of their data, at no costs to them, to demonstrate what was possible. This researcher built on the concept of a pitch, by creating something bespoke and tangible that demonstrated how the stakeholder might benefit from a collaboration. The interaction of sharing and receiving information in this example shows how intertwined the activities are, where the sharing and receiving is iterative and elaborative:

> *So there's a thing … a protocol that is sometimes called the gift … it started with something completely speculative, but basically coming out of my motivation that I want to do work in this area. So I … cold called the person who was working in that area, and it turned out that that she was willing to engage. I can produce these outcomes that are … real. They're digital outcomes, where people can see it's not only hearing about the possibilities it's seeing and experiencing the possibilities.*

Researchers in this study often took calculated risks in sharing information where returns were ill-defined or delayed. Yet, Molm (2010, p. 128) identifies that '*risk avoidance dominates behaviour in reciprocal exchange*,' where individuals typically give to those who provide something in return. While these findings indicate that many researchers are willing to accept a level of unreciprocated activity, by averaging gains over time, this may depend on individual circumstances; researchers in full-time, continuing employment, particularly in later stages of their career, may be more willing to take risks than those in precarious employment or who must rely on reciprocal exchange to develop their careers.

Information reciprocity for mutual understanding

Researchers often exchanged information with stakeholders to develop mutual and shared understandings within a collaborative project or long-term partnership, such as a funded research project. Sharing and receiving information was established as a practice and expectation, but not formalised in the sense of contractual obligations. Instead, researchers instigated routines of information exchange that aimed to create bonds, trust and a sense of shared endeavour between the researcher and their partner(s). This was often an incremental process developed from the

beginning of a relationship, where the researcher established sharing practices, similar to those found when sharing information for relationship development. However, when sharing for mutual understanding, researchers were more focused on establishing patterns of mutual exchange to underpin collaboration. This approach recognises the importance of establishing patterns of information reciprocity within a relationship through deliberate activities of information sharing, seeking, encountering and use.

Most researchers recognised the need to gain information about their partners to develop mutual understanding. For example Baden, (Full Professor, environmental science) approached interactions with '*a genuine interest in understanding other people and what their needs are*'. Researchers also expected their partners to reciprocate this consideration and interest by showing an equal interest in the researchers' expertise. As Keith (Full Professor, design) explained that businesses felt '*this guy knows what we've got. Now let's listen.*' Keith approached building trust and understanding through the collaborative process of information exchange that integrates seeking, sharing, encountering and using. In this way, partners are '*not just surprised when we deliver something at the end of it. They actually feel quite genuinely proud, because they know they've had a major say in how that product has come to life.*' This meant having partners '*involved all the way along*' through regular interactions, such as an 'ongoing feedback cycle throughout' (Bridget), a genuine collaboration '*to build ideas together*' (Carrie, Associate Professor, education), and allowing ideas to be '*teased out and understood*' (Heather, Research Fellow, sociology).

Some researchers acknowledged the challenges of this level of engagement, but found that the regularity of interactions and building of trust meant that agreement on differences was possible. While these researchers may have been in a partnership involving contractual obligations, they felt that information exchange created a deeper relationship where reciprocity was organic, rather than contractually required. Renee (Full Professor, biology) reflected on the processes of information exchange as: '*We just went back and forth … organically, we never said "ohh, you're my partner. You have to do this, this, this*".'

Sometimes finding mutual understandings was unexpected, but demonstrated that reciprocal exchange of information could foster trust and relationships, even when unintended. For example, Curtis (Lecturer, art) built a relationship with a local community through a gallery exhibition where the experience of participating in portrait creation involved an exchange between the artist, the sitter and the community. In the exchange of tangible and intangible information in the act of sitting for a portrait, the interpretation by the artist, the sharing of the finished painting, and the public response Curtis explained that '*everyone had buy-in*' *and the resulting relationship fuelled a productive collaboration*'.

This approach to reciprocity reflects the integrative bonds produced by generalised reciprocity in Molm's (2010) model. In creating activities, purposefully, that encourage the exchange of information, researchers are drawing on the benefits of reciprocal exchange Molm (2010) identified. This extends existing understandings of the exact mechanisms that support effective research collaborations (Dewaele et al., 2021).

Information reciprocity for negotiated obligations

Information exchange forms part of obligations negotiated in contracts with funders and research partners. This requires a clear understanding for both parties of mutual expectations and obligations. The agreed terms of exchange provide a baseline of information exchange, including the format, regularity, and type of information shared. Researchers were conscious of providing the information that was stipulated in contractual agreements with partners, which was often expressed as an obligation or something to complete, such as a written report or presentation at a meeting. Researchers drew on their practices in information sharing for mutual understanding to meet formalised requirements. It is notable that information reciprocity related to negotiated

obligations was the least mentioned experience by researchers; those who did raise it, often did so as an aside when discussing information sharing to support relationship development or mutual understanding.

Researchers acknowledged that while collaborations worked best when founded on trust, generosity of spirit and informality, they also needed to '*dance with the one who brung you*' (Melanie, Full Professor, design) by addressing the formal requirements in ways that met partners' needs. In the early stages of a partnership Melanie explained this involved '*list[ing] [deliverables] for them so they know what they're going to get*'. In later stages, sharing tangible information sources, such as reports, was used to evidence '*goals that need to be ticked off*' and to make visible the '*value proposition*' or return on the partner's investment in explicit ways.

Meeting a negotiated obligation also involved conducting research in ways that met partners' needs, such as working with an Indigenous community where researchers '*engaged with [the community] on a daily basis [as] it is demand led*' (Ryan, Full Professor, international development). The reciprocal exchange of information relied on trust built with the community through adhering to negotiated requirements.

The dominance of forms of information reciprocity beyond those involved in formalised partner agreements affirms Molm's (2010) theory that social capital and resources within networks and relationships are accessed primarily through generalised forms of reciprocity, rather than negotiated exchanges.

Model for information reciprocity for social exchange

These findings informed the development of the Model of Information Reciprocity for Social Exchange (Figure 1). This model elaborates Savolainen's (2019) framing of the interplay between seeking and sharing by documenting, in detail, the ways that intentions of reciprocity are interwoven with researchers' information behaviours when engaging with stakeholders. Using Molm's (2010) framing of reciprocity theory of social exchange as a sensitising lens for analysis, specific patterns of reciprocity are illuminated that relied on information exchange.

The model identifies the five types of information reciprocity, which occur on a spectrum of intentionality from altruism to obligation. This spectrum is not linear, and modes are inter-related and can occur simultaneously or evolve overtime. Researchers engaged in some or all of the five modes of reciprocity in their interactions with stakeholders to use, develop and extend their social capital as part of their research practice. This model represents the connections between intentionality, information behaviours and reciprocity in developing and extending social capital. It provides an explication of the mechanisms that enable trust, mutual understanding and navigation of risk when researchers engage with stakeholders for impact work.

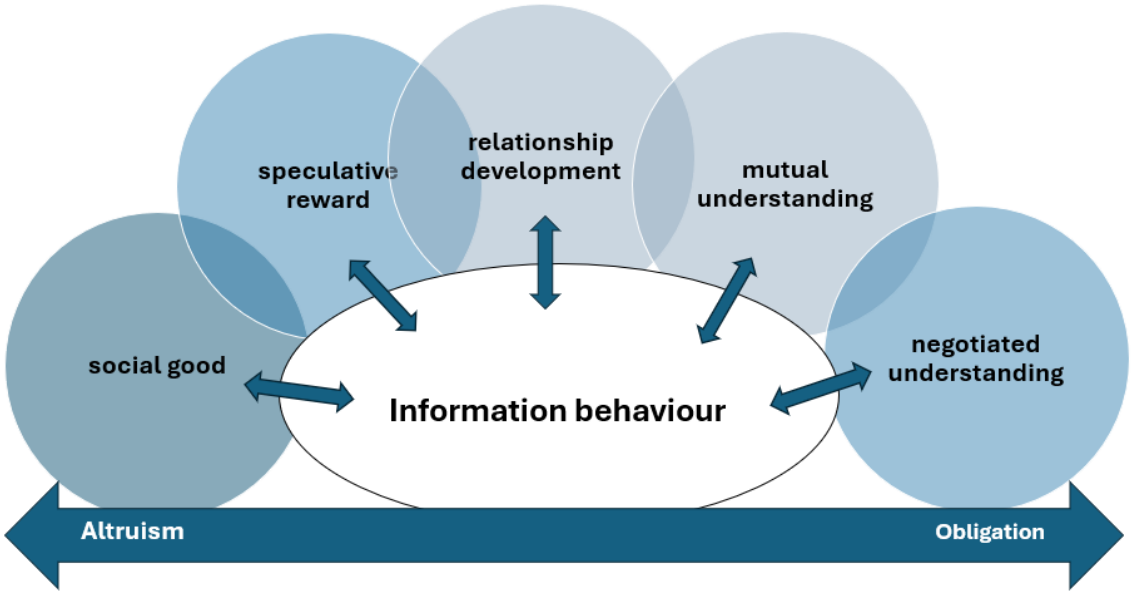

Figure 1. Model of Information Reciprocity for Social Exchange.

Conclusion

This study's findings demonstrate that the information behaviours of academics associated with impact work involve reciprocal information exchange in building and sustaining collaborative research relationships. The study explicates the dynamics of interactive information seeking and sharing (Savolainen, 2019) by identifying a spectrum of information reciprocity intentions, extending Molm's (2010) earlier model. The importance of reciprocity, trust and information exchange in establishing and maintaining relationships has been noted by studies in information behaviour (Du and Chu, 2022), and collaborative research practices (Morton 2015; Spaapen and van Drooge, 2011). However, the findings reported here show that information reciprocity is also a key component of social exchange and social network analysis, aspects that are rarely the focus of theoretical or empirical studies. This paper draws these elements together by documenting how information reciprocity underpins collaborative relationships between researchers and stakeholders engaged in impact work, showing that the information behaviours involved are interwoven and iterative.

Our findings show how researchers develop and maintain social capital through information reciprocity. The importance of information reciprocity in the development and maintenance of effective research collaborations contributes new insights on research practice. Guidance and supports provided to researchers in universities often represent research collaborations as transactional and primarily negotiated arrangements. Our model provides a way of approaching research collaborations from the perspective of social exchange that prioritises reciprocity and illuminates intentionality as a critical driver in researchers' decisions to share information with stakeholders.

This study explored the information behaviours of researchers undertaking collaborative research activities in universities, with the findings and model limited to understanding the research and community-engagement aspects of their work. Further research could explore the role of academics holistically to identify the interplay of information behaviours across other job requirements, such as teaching and administrative roles. This study is also limited to researchers'

perspectives on engagement with their stakeholders. There is potential to explore stakeholders' perspectives of information reciprocity to understand their views on this type of research engagement. This research provides a valuable perspective on research collaboration practices and social exchange, with great potential to inform policy and practice within universities.

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Geographical information ranges: conceptualising holistic information landscapes

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Abstract

Introduction. As unsheltered homelessness is growing in the United States (US), the habitation of vehicles as an affordable housing option is increasing. Policies continue to criminalise and marginalise vehicle residents, pushing them farther away from essential information resources. This study investigates vehicle residency from an information access perspective.

Method. Based on six months of ethnographic fieldwork using various methods, this study explores vehicle residents' information practices, seeking to understand the relationship among vehicle residents, their most utilised resources and the ways that their environments impact their information access.

Analysis. Fieldnotes and interview transcripts were analysed using abductive analysis to identify themes and quotations. Visual analysis was used to examine photographs and information horizon maps.

Results. Analysis of information horizon maps offer preliminary findings about the ways vehicle residents incorporate their immediate environments and geographical location in their conceptualisations of information and barriers to information access by illustrating natural elements in their information horizon mapping exercises.

Conclusion. Geographical location and immediate information environments impact how vehicle residents conceptualise barriers to information access. Gaining a deeper understanding of these understandings and information practices provides theoretical implications for information behaviour research and practical implications for resource development.

Introduction

As living costs have surged in the US (Mueller et al., 2022), unsheltered homelessness has steadily increased (Giamarino et al., 2022) and habitation of vehicles as an affordable housing option has become more appealing. However, local governments continue to rely on punitive measures to control vehicle residency's burgeoning growth (Pruss and Cheng, 2020). Policies criminalise and marginalise this population, pushing them farther away from important social service and information resources (Montague, 2023). While vehicle residents are often dependent on availability and accuracy of information to maintain their daily lives, they experience barriers to access. Therefore, exploring vehicle residency from an information access perspective is critical. Building from theories of information horizons (Sonnenwald, 1999) and information landscapes (Lloyd, 2006), this study highlights the importance both of social aspects of information needs, seeking and use, and of understanding how environments impact information practices. Information horizon interview (IHI) map analyses (Sonnenwald et al., 2001) indicate that vehicle residents consider their immediate environments when contemplating their information horizons. Understanding vehicle residents' conceptualisations of information horizons can offer both theoretical implications for the library and information science (LIS) field and practical implications for the betterment and development of information resources and services.

Background

Physical space, or geography, has been considered as the context or setting for information practices research (Agarwal, 2017). It has been seen as constraints or limitations, for instance, such the impact of distance on information access (Gibson and Kaplan, 2017). However, a recent turn has highlighted alternative perspectives that recognise how meanings attached to particular spaces, when they are experienced as places, are actively constructed within social practices including the information behaviours that are woven through those practices (Cox and Fulton, 2021). Some strands of thought do exist, suggesting that characteristics and features of a places as context can shape information behaviours. Sonnenwald (1999) posits that places and information are both influenced by and influence human behaviour. Therefore, places and human behaviour have a mutual relationship through human impact on a place. Meaning is shaped by the ways we attribute sentimental significance to specific places through meaning making (for example, being in nature with loved ones).

The following LIS frameworks: Sonnenwald (1999), Savolanien and Kari (2004), and Gibson and Kaplan (2017) redirect current perspectives about the environment's impact on information practices. Sonnenwald (1999) conceptualised information horizons, which are indicative of all potential resources and available information in a given context, to understand which resources a person utilises and why. Participants' information horizons are representative of their information landscapes (Lloyd, 2006), which is the space that reflects socially and communally agreed upon modalities and information sources. Woven together, the concepts are positioned at the forefront of this study, placing emphasis on vehicle residents' conceptualisations of information.

Research questions

The succeeding research questions guided my study:

RQ1. How are vehicle residents' information practices (in)formed by societal constrains?
RQ2. How does place and mobility impact vehicle residents' information access?

Methods

Field sites

Fieldwork took place in two rounds: 1) June-October 2024 in Santa Cruz, California and 2) January 2024-February 2024 along the Arizona/California border. For the duration of round two, I lived in my vehicle and attended four free events open to the vehicle resident community: the Women's

Rubber Tramp Rendezvous (WRTR), the Rubber Tramp Rendezvous (RTR), Skooliepalooza and Van Aid. While attending the events, I worked as a volunteer with the National Vehicle Residency Collective (NVRC), a human rights advocacy organisation that centres the needs of people living in vehicles and works to advocate and decriminalise vehicle residency.

Data collection

This multi-method ethnographic study utilised participant observation, IHIs (Sonnenwald et al., 2001), guided tours of participants' vehicles (Thomson, 2018) and photographs of participants' immediate information spaces and environments (Hartel and Thomson, 2011). IHIs were conducted with the goal of encouraging participants to describe their information seeking processes, their information resources and the utility of those resources. Interview questions were followed by a drawing element where participants hand-drew a map of themselves surrounded by their most frequently used information sources, while justifying their information source preferences aloud. During the guided tour, participants led me through their vehicle while describing and explaining its features, thinking aloud (e.g., how they built different parts of the interior, which areas felt like home). All interviews and guided tours were audio recorded. Lastly, during the tours, I took photos of participants' immediate information spaces.

Data analysis

The IHI and guided tour audio recordings were sent out for human transcription. I analysed the transcripts using abductive analysis to identify themes and illuminating quotations (Tavory and Timmermans, 2014). During data analysis, I used abduction to conduct parallel and equal engagement with empirical data and extant theoretical understanding (Thompson, 2022) while using visual analysis for photographs and information horizon maps (Rose, 2012).

Information horizon maps

This study is comprised of various data collection methods. For the purposes of this paper, the findings emphasise the initial IHI map analysis in tandem with participants' thinking aloud transcripts as they drew their maps. There are no true parameters for the IHI aside from the questions and probes offered by the researcher. This method is a creative practice for researchers to understand information behaviour and practices among participants who likely do not recognise their own information behaviours. The maps themselves, and how participants envision their information resources, are left to their own interpretation.

Preliminary findings and discussion

Analysis of 25 IHI maps indicate vehicle residents' considerations of their immediate environments when contemplating their information horizons, revealing participants' holistic conceptualisation of information resources and access. Most participants not only shared the importance of their surrounding environments when dictating their thoughts during the drawing component but also illustrated elements of their environments and landscapes in their IHI maps, expounding upon their meaning and importance. Participants referred to tangible information resources and systems *about* the places they traverse (e.g.., iOverlander, Alltrails, weather apps), but more importantly, they also addressed the physical environment's role in their information practices using symbols.

Symbolism in IHI maps

Participants talked about and illustrated symbols such as suns, clouds, mountains, trees and rivers to support how they conceptualise themselves within their environment in addition to how elements like the sun, for instance, provide energy for participants. Gabi, a 35-year-old female spiritual coach, drew a large sun on her map: '*We get all our information powered from sun. Everything in the bus is powered from solar energy. Nature tells us stuff. The birds tell us about the weather.*' Gabi's examples of the sun and birds highlight how vehicle residents obtain information

from their natural surroundings, while other participants' maps indicate how they conceptualise their environment as part of their information practices.

The following section includes selected examples of participants' IHI maps conveying holistic interpretations of their environments. Maps are accompanied by verbatim, concurrent quotations about each respective illustration process from the interviews.

Conceptualising geographical information landscapes

Much Bureau of Land Management (BLM) land in the Western US sits near Indigenous reservation lands (Bureau of Land Management, n.d.). As vehicle residents frequent these areas, many are no stranger to developing meaning with the lands on which they park. For instance, all four of the vehicle resident community events I attended congregated near the borders of Indigenous reservation lands. Moonbeam, a 36-year-old non-binary basket weaver, explains how she conceptualises information as it relates to her environment:

> *I feel like there's also a lot of information that comes out of the relationship that I build with the land that I'm on. Yeah, in a less colonial kind of framework. So, I think I also have a sense of belonging and even spiritual support just from being with the land that I'm parked on for a long time. I'm drawing some sparkles and they're going to be deep in the earth. And plants. Yeah, when we're in places long enough—and certainly Indigenous peoples that have lived here for thousands of years know this—our landscapes have a lot to teach us … I'm not really a desert person. I really like being around moisture. But I've learned to appreciate the desert, I think, a lot because of the people. And connecting with the geographic landscape has come kind of slower for me, but the people have helped me appreciate it more and how this place holds us.*

Figure 1 depicts Moonbean's IHI map. During this portion of the interview, they illustrated a variety of information resources they access and use regularly to support their nomadic lifestyle. They use images of desert sand, a cactus, plants, mountains and a river to explicate how they consume and make use of their environments as information resources. Moonbeam's inclusion of elements of their geographical landscape suggests that they consider the geographical environment in which they are surrounded by when imagining their information horizon. While the IHI has been used as a method in a variety of studies, I have not seen participants include aspects of their environments in their maps (Hartel, 2017; Sinn et al., 2019; Tsai, 2010; Zimmerman, 2021).

Figure 1. Moonbeam's IHI map.

In a similar way, Brian, a 50-year-old male camp host and Home on Wheels Alliance Board member, discussed how he absorbs his surroundings, both socially and environmentally. As he drew, Brian shared about his environments and the different ways they impacts him: '*That [landscape, location] is the most important thing to me as well, and what gives me joy and gives me happiness is being out in nature, being surrounded by good people or nature*'.

Figure 2. Brian's IHI map.

In Figure 2, Brian's use of arrows depicts information flow between people, technologies and institutions. He depicts the library as an important access point using arrows to and from his cell phone, laptop and library resources. In addition, the binary numbers between the lake and his cell phone represent GPS data used to find directions to new locations, especially beautiful locations. While these are all important points in his IHI, Brian drew the mountain landscape as the focal point of the image. He explained:

> *I want to be in beautiful places … to me, being in nature is just the biggest part of my journey. It's not about just being on the road. It's about being in beautiful places and seeing amazing sights, and watching the full moon rise last night. And so, these magical moments, for me, is why I'm out here. Letting all of this impact me (Brian opened his arms to the desert mountains to our right).*

Bernice, a 43-year-old female editor, referred to the desert's beauty in multiple instances throughout her interview; however, Bernice situated herself within the actual landscape, surrounded by natural elements also representative of various information resources. Figure 3 illustrates a landscape inspired by *Middle Earth* in The *Lord of the rings*. As she drew, Bernice explained:

> *Let's do some Purple Mountains Majesty … I'm just going to represent this as an actual mountain range, which is just the, 'Where do I go?' So I mean, I've always been a map nerd. Then this is going to be my geographic information range over here. This is the highest peak. We're just going to say that here's Mount iOverlander over here. Here's my Gaia GPS, Free Campsites. And sort of the shale underneath, kind of the substrate of the bedrock of this whole mountain range is the fact that I do have paper. It's a paper map orogeny that's underlying the range. So, I have paper maps. They're always there for me. They're bedrock.*

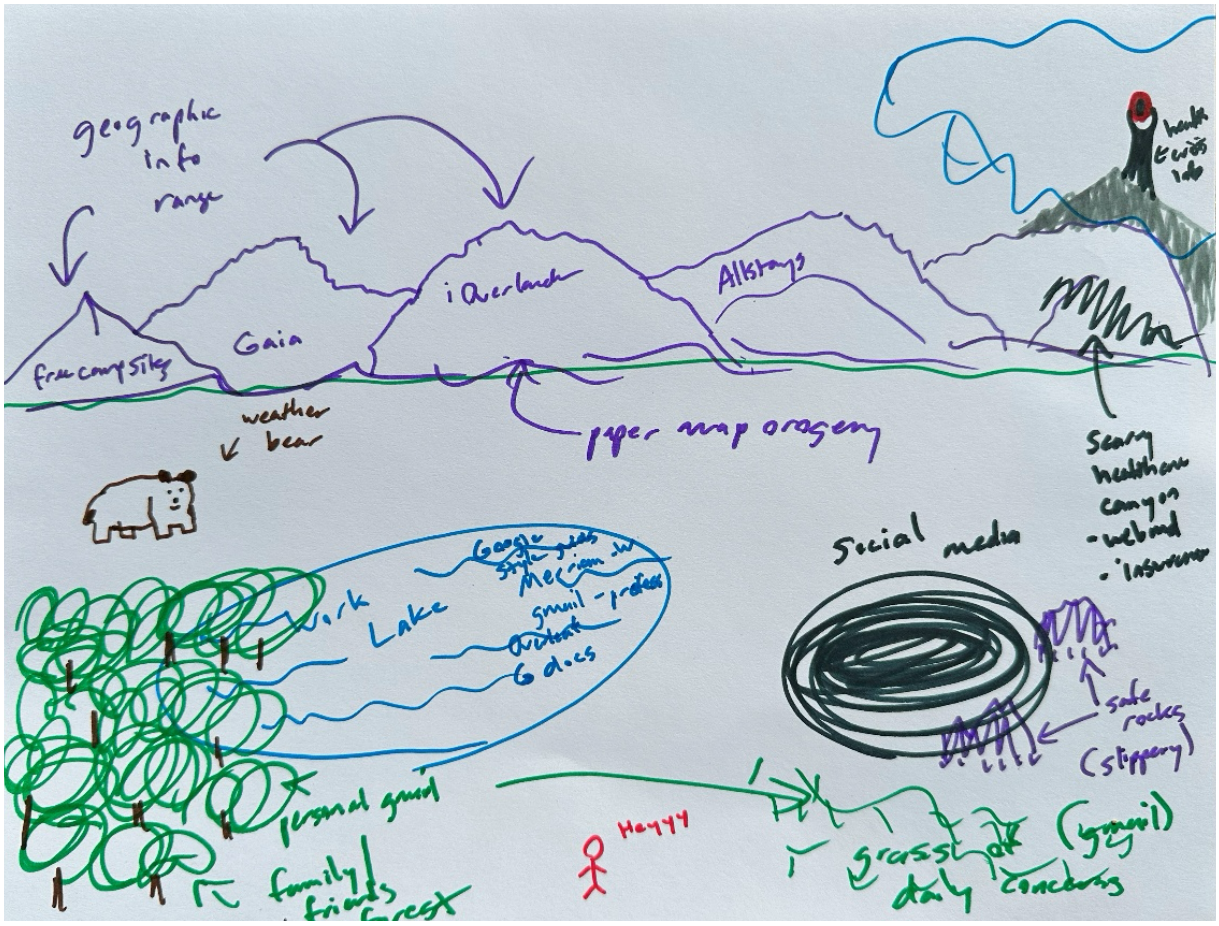

Figure 3. Bernice's IHI map.

In Figure 3, Bernice illustrates the mountain range representing both information resources about safe parking places, marking iOverlander as the highest peak and most valuable resource, and drawing out the foundations of information access in paper form. Bernice spoke of barriers to information access in remote areas, explaining why she keeps paper maps in her vehicle at all times.

The above IHI maps are only a few of many examples where participants emphasised their environments in detail via illustration and explanation. This study offers preliminary findings about how vehicle residents incorporate their immediate environments and geographical location in their conceptualisations of information and barriers to information access, urging researchers to create a deeper and more nuanced understanding of environmental influences on information practices.

Conclusion and future directions

Geographical location and immediate information environments impact how vehicle residents conceptualise information and information access. Additionally, geographical location is a critical component of vehicle residency and shapes and how and why vehicle residents search for information in any given situation. Participants' environments not only shaped their information needs but also hindered and facilitated information access (e.g., loss of cellular connection in the desert), impacting and influencing information and resources available in their environments. Cultivating a deeper understanding of these considerations and information practices provides theoretical implications for information behaviour researchers to further interrogate environments beyond contextual applications. Additionally, practical implications have the

potential to inform resource and service development and information systems design and implementation.

Future directions will expand on this present work to interrogate how environments impact information horizons. Specifically, forthcoming work will dissect themes that comprise vehicle residents' environments: geographical landscapes and their communities. Both a person's physical, geographical landscape and the community that surrounds them are imperative elements that shape their environments. In turn, community also impacts and influences available information and resources in those environments, influencing vehicle residents' information horizons.

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Exploring agency with and in participatory research on artificial intelligence in everyday information practices

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Abstract

Introduction. Artificial intelligence (AI) tools are increasingly integral to the everyday information practices of young people in digitalised societies. These tools are suggested to shape human agency; that is, human capacity to act in meaningful ways.

Method. We applied participatory research methods to study how young people construct their agency in relation to AI systems as part of everyday information practices and in their participation in the research process. The data were collected with fourteen young people (fifteen-seventeen years old) and consisted of autoethnographic notes, video recordings and feedback forms.

Analysis. We focused on the linguistic features of the descriptions of agency applying Jyrkämä's (2009) modalities of agency (*be able*, *must*, *can*, *feel*, *want* and *know-how*) as an analytical framework.

Results and discussion. The results show that the young participants were able, could and knew how to exercise their agency in various ways both when engaging with AI technologies and when participating in a research process. However, their agency was also restricted in many ways. The modalities were interpreted to characterise the ways technologies and the research setting shape possibilities for agency and, as such, are helpful in identifying ways to develop agential practices.

Introduction

Artificial intelligence (AI) systems are already an integral, but often unnoticed, part of the everyday lives of young people in digitalised societies. They are included in, for example, contemporary search engines, social media platforms, navigation and translation tools and recommender systems. Moreover, the text, video and audio content we encounter is increasingly AI-generated (see Hirvonen et al., 2023). As such, AI systems are integrated in many, if not most, of our everyday digital platforms. The use of such tools shape the practices of information seeking as they enable new ways of multimodal, quick search, encourage active scanning instead of searching and restrict access to certain content (see Hirvonen et al., 2023). As such, AI systems included in different applications and platforms enable information to be shaped to meet the anticipated needs of individual users, often in ways that do not require or enable active user participation (Haider and Sundin, 2019), potentially inviting engagement in increasingly passive practices in comparison to active search and evaluation (Jylhä et al., 2024). Overall, the increased use of AI in different sectors of society has been seen to threaten human agency (Sundar, 2020) as they can reduce human control and oversight (Pop Stefanija, 2023).

This study aims to increase our understanding of the agency of young people when engaging with AI systems and in a research process. We approach agency from a constructionist perspective, referring to it as the capacity of people to choose meaningful ways of acting rather than passively repeating existing social and cultural orders (Giddens, 1984) and ask: how do young people construct their agency 1) in relation to AI systems as part of everyday information practices and 2) as participants in a research process? We address these questions by analysing the modalities of agency (Jyrkämä, 2009), which characterise agency as a dynamic interaction produced by structures and individual factors. We focus on the ways these modalities manifest themselves in the texts and speech of the young people who participated in our study.

Research method

Previous scholarly work has highlighted the need to include the perspectives of the youth themselves in research on youth information practices (Agusto, 2019; Jylhä et al., 2024) as well as their experiences with AI (Council of Europe, 2019). We applied participatory research methods (Groundwater-Smith et al., 2015) with the aim to support young people's engagement in research and sharing their own perceptions (Meyers et al., 2007). We focused on task-centred activities (Barriage, 2018) that allow participants to communicate their ideas and opinions (James, 2001), supporting discussion on complex and abstract issues (O'Kane and Panicker, 2018).

Our research is based on data created with young people who participated in an AI Youth Ambassadors programme in the summer of 2024. Fourteen people aged fifteen-seventeen participated in the programme, working on AI-related topics at the University of Oulu, Finland. Central to data creation was notes produced by the participants following an autoethnography toolkit form (Durall, 2021) in which they examined an AI-powered application of their choice from the perspectives of mapping, describing and envisioning (see Durall, 2021). In *mapping*, they familiarised themselves with the functions of the chosen application and drew a map to illustrate their own activities and those of the application, and their relationship to each other. In *describing*, they repeated the task, describing their thoughts and feelings when using the app, and by doing so, reflected on how technologies can affect them and how they can affect technologies. In *envisioning*, they imagined a future app designed to do similar tasks that the participants experienced in mapping and describing and to reflect on the developments and consequences for individuals, communities and society. Following these steps, the participants worked in groups to compare their notes and to prepare a presentation on their key findings. Groups were able to freely choose an application they were familiar with and wanted to focus on. In addition, the groups created a research plan for studying a topic related to AI and young people. Finally, the groups presented both tasks to all the programme participants.

Analysis

We analysed the notes (n=14, a total of 98 pages) produced by the young people; the video-recorded situations in which groups presented the implementation and results of their tasks (5 h, 39 min, 12 s) and feedback forms the participants filled in (n=14, a total of 28 pages).

As our focus was on constructing agency, we analysed the linguistic features of the descriptions of agency in the data. We used the analytical framework developed by Jyrkämä (2009) as it enables analysis of the modalities of agency based on language use. This framework describes expressions of situational, contextual and experienced agency and address action and social practices (Jyrkämä, 2009), and as such was found relevant in terms of our research questions. Moreover, the framework was created in the context of elderly care, and for this reason, it fits the analysis of the agency of young people in situations when they may have limited possibilities to act. The expressions of modalities of *be able*, *must*, *can*, *feel*, *want* and *know-how* (Jyrkämä, 2009) were identified and used as main categories of our analysis. *Must* and *can* are linked to the possibilities or limitations of a system or structure that individuals are unable to influence through their actions (Jyrkämä, 2009; Kosonen et al., 2021). *Know-how* is referred to as skills and competences, whereas *be able* is related to a situational capacity and self-efficacy in a certain time and place (Keurulainen et al., 2022). *Want* is linked to the motivation of doing something; *want* and *know-how* reflect a person's autonomy and resources (Keurulainen et al., 2022). *Feel* encompasses the capacity to judge, evaluate and associate emotions with encountered things (Keurulainen et el., 2022).

Results

All six modalities of agency were identified both in terms of young people using AI systems as integrated in different applications and platforms and in relation to the research process they took part in. These modalities were interpreted to characterise the ways technologies and the research setting shape possibilities for agency (Table 1).

	Be able	Must	Can	Feel	Want	Know-how
In relation to AI technologies	I use it pretty often because with it I **can** find more similar things I have searched before, and it can recommend things I can find interesting. (ID 9)	Users **can** submit their own bots that **must** be approved by moderators. (ID 14)	You **can** add music as well, viewers **can** interact, **can** choose any others, you **can** highlight it. (ID 5)	It generally **felt** like we got even more information that we even **wanted** or expected [from ChatGPT]. (video)	You first type what you **want to** search. (ID 10)	This is **how we use** Instagram and we use Instagram to chat with others, share interest and find inspiration. (video)
In relation to doing research	My team created a really cool research plan. (Feedback)	We worked on this auto-ethnography toolkit where **we had to** pick an app and **we chose** Pinterest (Feedback)	I liked how freely we **could** work on our toolkits. (Feedback)	The process was **interesting** and **entertaining**. (Feedback)	The hardest part was choosing the topic that **we wanted to** base the questions upon. (Feedback)	I didn't learn that much today but it was more of **your own knowledge**. (Feedback)

Table 1. Examples of the modalities of agency in the participants' texts and talk.

The modalities *must* and *can* express factors that limit agency, and this is shown in instances where participants reflected on how they had to act in a certain way while using technology to achieve a desired outcome, such as seeking information, or could choose between certain predefined functions and features when using an application but could not add or remove any of its features. Similarly, in the research process, the participants had to follow instructions, but they were able to make decisions within the limits defined by the researchers. On the other hand, the conditions set by the researchers were not always met and young people chose to act in ways that were more meaningful for them.

In the data, *want* occurred in situations in which an application allowed the user to proceed as they wished, thus supporting agency (Table 1). In doing research, the note-making task was scripted by the university researchers but the young people had a say in what application they wanted to look at and how. Similarly, the research topics could be freely chosen but, the feedback indicated that the young people had difficulties in choosing a research topic for their research plan.

Know-how was not directly visible in the participants' notes. The young people did not highlight their skills or competencies when exploring the applications of their choice, likely because this know-how appeared self-evident to them. Instead, they reflected on the challenges and lack of experienced competence while doing tasks, thus demonstrating their ability to assess their skills and knowledge at different stages of the research (Table 1).

Be able was understood as self-efficacy in relation to using technology and taking part in research. In terms of technology, participants' agency was reflected in instances where they expressed what

they were able to do with the application they chose and why they used it the way they did. Being able was also evident in the feedback, where one participant wrote that '*[m]y team created a really cool research plan*' which showed enthusiasm for the research and well-deserved pride in their ability to complete their task according to instructions (Table 1).

In the note-making task, the young participants clearly expressed the kind of feelings the use of different applications had aroused in them (Table 1). This was not surprising due to the nature of the toolkit, in which they were asked to describe their feelings (e.g. make notes about your thoughts and feelings) while using a certain application. In relation to doing the research, however, the *feel* modality was more implicit than other modalities.

Discussion

The analysis of the modalities of agency expressed in the research material indicated that the young participants were able, could and knew how to exercise their agency in various ways both when engaging with AI systems and when participating in a research process. Yet, the ways their agency was being restricted by the tools that they used and by the research setting offered as the most interesting insights. While our aim was to support our participants' agency through the use of participatory methods, the analysis of the modalities of agency allowed us to notice ways in which we, often unintentionally, restricted the participants' agency. The modalities were interpreted to characterise the ways technologies and the research setting shape possibilities for agency and, as such, are helpful in identifying ways to develop practices that support agency. In relation to AI systems, this can mean awareness of the role of AI in applications and platforms and adapting own actions in meaningful ways. In relation to research, this can include implementing methods that allow young people to genuinely have an impact to the whole research process from planning to reporting.

We will continue the initial analysis presented in this short paper to categorise the identified modalities as enablers and barriers to better understand the relational affordances for agency in the examined settings (see also Keurulainen et al., 2022). Moreover, we are currently experimenting with a co-research approach in which participants are seen as equal partners in the research process (Kulmala et al., 2023) and will be involved in longer-term work with the possibility to carry out different stages of research, including creating research ideas, data collection and analysis and writing, without the work being pre-determined by professional researchers. This process will allow us a way to explore how we can better support young people's agency in research.

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Information sources of emergency physicians in the Covid-19 crisis

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Abstract

Introduction. Our research is set in the context of the second and third waves of the Covid-19 pandemic within the emergency medical aid service of Paris. It examines how emergency physicians seek and find information during a health crisis, which is crucial for their decision-making and ensuring effective patient care. In this paper, we study the information sources used by emergency physicians and the factors that affect their use.

Method. This qualitative study employs methodological triangulation to enhance the validity and depth of our findings. Using the sensemaking methodology and grounded theory, our data was collected through 24 hours of in situ observation and 19 interviews (totalling over 13 hours of recordings).

Analysis. The collected data was assembled and analysed using the NVivo qualitative data analysis software. The content analyses were theory-driven, according to emerging concepts relative to information behaviour.

Results. We show that, during a public health crisis, emergency physicians from our study rely chiefly on professional medical information from official sources. We also identify the various ways physicians acquire information. Trust appears to be a major factor affecting the choice of sources of information, especially in times of crisis.

Conclusion. Our study underscores the difficulties encountered in managing information redundancy, quality and sharing during crises. The results could be employed to improve information management strategies among health institutions and the provision of information sources necessary for effective health care.

Introduction

A crisis can be defined as a situation that is abnormal or unusual and one which occurs in all sorts of different contexts. Various entities and organisations are required to manage it (Avanzi et al., 2017). With the global health crisis caused by Covid-19, institutions have been compelled to rethink their methods and strategies when managing public health crises. The health systems and services of many countries were faced with an unprecedented situation and were overburdened for months. Informational obstacles (lack of knowledge and data on the disease and high levels of misinformation) were added to the already existing challenges linked to poor material, human and organisational means.

In France, the Covid-19 pandemic led to over eight months of restrictions and sanitary measures such as *non-essential* establishments closing down, curfews, limited travel, mandatory mask wearing and physical distancing, among other policies. These rules were meant to regulate the population's behaviour and to limit the spread of the virus (Sanchez, 2021). Paris's emergency medical aid services (SAMU) found themselves on the front line responding to the health crisis. National health authorities tasked them with the screening of potential Covid-19 patients over the phone (Vivien, 2020). The coordination of the flow of Covid-19 patients happened alongside everyday medical emergencies (such as cerebrovascular incidents, etc.), which overwhelmed SAMU personnel (Telion et al., 2020). The SAMU emergency service's all-time peak of activity in the Paris region was reached on 13 March 2020, with a total of 26,000 calls, 8,400 of which occurred in the Paris SAMU service alone. This number represents over four times the maximum activity observed before the Covid-19 crisis (Telion et al., 2020).

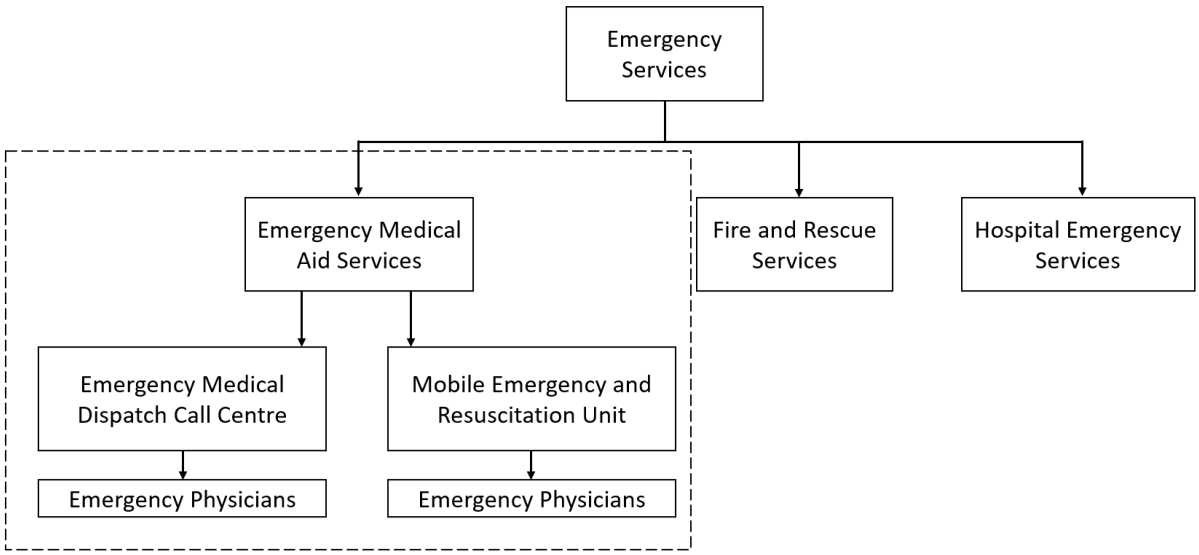

Figure 1. Medical emergency entities in France

Emergency services are paramount when organising and managing health crises. In the French health system, two public services are responsible for pre-hospital rescue and emergency care: the emergency medical aid services (SAMU), administered by the Ministry of Health (Figure 1), and the fire and rescue services, administered by the Ministry of the Interior (DDSC and DHOS, 2008). The fire and rescue services operate as a complement to the emergency medical aid services to ensure optimal coverage of territories in matters of public health and emergencies. Rescuing

people is one of the firefighters' missions. This encompasses victim rescue services, roadside rescue and human assistance. Victim rescue alone amounts to 82 per cent of their assignments (BSPP, 2022). In addition to these two types of emergency entities, hospital emergency departments are also involved in urgent medical aid.

The object of the emergency medical aid service is to provide '*emergency care that is appropriate to the condition of the sick, injured or parturient, wherever they may be*' (DDSC and DHOS, 2008, p. 13). This service responds to unscheduled care needs in emergency situations with means that are exclusively medical. Each branch is equipped with a dispatch call centre (CRRA) and mobile hospital units (means of transportation), also known as the mobile emergency and resuscitation unit (SMUR) (Figure 1).

Whether during a dispatch call or in a mobile unit, the emergency physician confirms or decides on the medical response one must give to a patient. That said, the emergency physician assesses the situation based on the information they have obtained and sets in motion the response best suited to a patient's condition. This medical decision is supported by a set of elements (information, knowledge, available means) which the physician accesses with the purpose of providing the patient with *appropriate care* (Hamelin and Arzalier, 2018; HAS, 2011). Appropriate care means that a balance must be found between *individual interests* (systematically sending a SMUR mobile emergency unit) and *collective interests* (cost-saving measures) (Hamelin and Arzalier, 2018).

Due to the complexity of crisis situations, the amount of produced and shared information significantly increases (Hagar, 2012). Information management and the ways in which institutions operate are, as a result, greatly disrupted. Managing a crisis therefore means deciding which information sources and providers should be trusted (Hagar, 2012). In times of crisis, which are characterised by uncertainty, organisations can pursue their mission and continue to make decisions when they have access to information. Information and its sources are some of the most important resources for physicians, '*essential to … providing quality care to patients*' (Letang and Espitia, 2019, p. 13).

Considering the aforementioned elements, we chose to focus on the information behaviour of emergency physicians, seeking to answer the following questions: How do emergency physicians access information, and which information sources do they rely on in crisis situations? In addition, what factors impact the use of those sources? To answer these questions, we conducted an empirical study at the Paris SAMU. The results of this qualitative study expand the scope of knowledge on the information sources physicians need to perform their duties as well as the factors influencing how those sources are utilised. By revealing difficulties related to information, our findings can be employed to enhance professional medical information management strategies and facilitate information sharing among health professionals.

Information behaviour of emergency physicians

Many researchers have been interested in the information behaviour of health professionals. While general practitioners have been closely observed, studies focusing on the information behaviour of other specialists, such as emergency physicians, are less common. Our work focuses on information sources used by emergency physicians and the factors influencing their use within the constraints of their professional space-time. In France, emergency physicians are trained as general practitioners and subsequently specialise in emergency medicine. This speciality was officially recognised in 2015 (Riou, 2017). We have therefore chosen to concern ourselves with existing studies related to this specific population.

In the 1990s, one literature review demonstrated that physicians prefer written sources of information such as journals and books, but that they also turn to their colleagues when searching for answers to their clinical questions (Haug, 1997). With the advent of digital technologies, the

scope of works includes the Internet and digital devices and sources. Numerous studies focus on the search for online medical information (Foubert, 2014) and use of social media (Farsi, 2021).

More recent studies identify colleagues, guidelines and online platforms as commonly used information sources (Lee et al., 2024; Daei et al., 2024). Some conclude that emergency healthcare professionals rely primarily on human information sources, particularly colleagues and peers (Ayatollahi et al., 2013; Scott et al., 2018). Digital resources appear as key information sources, including specialised health websites, internal information systems, databases and general Internet searches. Paper-based sources are mentioned in both of the cited studies: ambulance sheets, patients' hospital medical records, guidelines and protocols, professional and academic journals. Ayatollahi et al. (2013) observe that verbal communication is the primary channel used to access information, followed by digital systems (such as databases) and visual devices (such as whiteboards). Moreover, verbal communication increases during intense periods of activity, when healthcare professionals do not have the time to search for information. Scott et al. (2018) conclude that the participants in their study prioritised evidence-based sources, such as protocols and clinical practice guidelines, in critical situations (e.g., paediatric care). The authors note that physicians rely heavily on colleagues to obtain new information. Conversely, academic and professional journals are at the bottom of their ranking.

Trust is identified as one of the main factors residents and general practitioners in France prioritise when choosing their sources (Foubert, 2014). The greater trust is placed in institutional sources of information: benchmark sites, institutional sites, or major (scientific) journals. Likewise, Letang and Espitia (2019) observe a link between an information source's perceived reliability and its authority. The authors note that general practitioners are especially reassured when information comes from health organisations or from recognised agencies (such as, for example, the national health authority, a university hospital or academic professors). Letang and Espitia conclude that general practitioners favour credible sources but that they do not always take the time to verify their quality. The credibility of the source, relevance, unlimited access, speed, and ease of use figure among other critical factors influencing information-seeking behaviours of physicians (Bennett et al., 2004).

The extent of the Covid-19 pandemic presented an opportunity to study information-related aspects of crises, including information management in crisis contexts and information behaviour within healthcare institutions. One German study shows that the most important sources of information of Germain physicians were official websites, newsletters and professional journals (Holzmann-Littig et al., 2023). Physicians trusted professional societies and evidence-based medicine organisations. They also preferred concise, user-friendly information formats. Lack of time and information access issues are identified as the main barriers for interviewed physicians. Furthermore, information overload represents a significant constraint identified in studies involving health professionals, especially during crises (Majid and Rahmat, 2013; WHO, 2024).

Regarding information sources used by medical students and physicians in India, Datta et al. (2020) identify two major categories: formal sources (including, in descending order, official government websites, health education, peers/physicians, scientific literature / journals) and informal sources (including, in descending order, online news, television, social media, friends and family, print media). To share precise and correct medical information and to mitigate the spread of disinformation, Datta et al. (2020) highlight a need to develop informational ethics as well as standards and regulations for crisis situations. Raynaud et al. (2021) conclude in their literature review that most early Covid-19 studies lacked original data and present a high risk of bias, highlighting the need to balance research speed with the quality of findings during crises.

In France, medical ethics texts (article R. 4127-32 of the Public Health Code) require physicians to be committed to providing patients with care '*based on data acquired through science*' (Legifrance,

2022). Therefore, medical research and scientific publications should be a major source of information for these practitioners. Moreover, the work resources of emergency physicians and their teams are described in detail in professional literature. Most notably, the types of information and data that must be included in patient medical files are well-specified (SUdF and SFMU, 2013). However, these materials do not delineate any specific sources of information or how sources can be used. The following question necessarily arises: which sources of information do emergency physicians rely on for their daily activities, especially during crises? The literature presented in this section constitute a theoretical foundation upon which we build our study.

Methodology and participants

Our study took place from 15 September to 20 October 2020, and from 19 January to 8 February 2021, at the Paris emergency medical aid service (SAMU 75), one of the four services of Paris and its neighbouring administrative departments. This data collection period corresponded to the second and third waves of the Covid-19 pandemic in France.

In the context of the emergency medical aid service, physicians work with patients who are in a '*state that requires urgent medical expertise and emergency or resuscitation care and their transfer*' (SUdF and SFMU, 2013, p. 4). With that in mind, emergency physicians treat a wide array of illnesses and injuries. They take care of people who are injured or who experience acute pain, the latter of which can quickly devolve into the impairment of an essential function or to death (FHF, 2015). They work directly on the ground or by regulating calls at the emergency medical dispatch centre. When a physician dispatches calls, they assess the patient's condition and make an appropriate medical decision in accordance with the patient. The physician can send a team on the premises, provide advice or direct the patient towards an alternative solution. When an emergency physician is sent on site, they coordinate the work of the mobile emergency and resuscitation team and ensure that the patient receives the right form of care. There are two types of field operations: primary missions, in which patients are cared for away from a health facility and in an emergency situation, and secondary missions, or transfers, which involve caring for a patient in a health facility, often in order to transfer the patient to another establishment (FHF, 2015). These health professionals care mainly for patients with serious clinical signs that fall under the category of urgent medical aid.

Emergency physicians in the SAMU emergency medical aid service do not have control over their place of work. They can be called to intervene on public thoroughfares, at the home of patients or in at-risk areas. They constantly face new environments and must therefore adapt to achieve their main mission: keeping the patient alive until they can reach a hospital. Essential aspects of the profession revolve around respecting protocols and complying with medical instructions and recommendations.

With the help of grounded theory and sense-making methodology (Dervin et al., 2003; Guillemette and Luckerhoff, 2012; Glaser and Strauss, 1967), we used the following methods to collect data: we examined reference materials pertaining to emergency medical aid services and emergency management, we made in situ observation, and we conducted interviews. Several professional medical resources (such as websites, videos and reference materials) were examined during the study's preparatory phase. Such preliminary work was done to understand the structure and workings of French emergency services. It also allowed us to grasp the specific vocabulary used by our interlocutors when structuring our investigation and preparing our discussions with physicians. We also completed the investigation by attending two guided tours (separately for two researchers) of the Paris SAMU emergency medical aid service. One of the physicians in the service provided information on the various people involved, their missions, the service's organisation, the facilities and the available work resources.

Twenty-four hours of in situ observation, over the course of eight days, took place at the medical dispatch centre of the SAMU 75 with the emergency physicians who dispatched calls. We focused particularly on the information behaviour of physicians when regulating calls as well as on the interviews they conducted with patients. We also took note of the exchanges among the different professionals regulating the calls (physicians and dispatch assistants) and we examined the informational work devices in use (computerised systems and business tools). The collected information was primarily used for a more detailed understanding of physicians' activities and subsequent interview responses. Due to its sensitive nature, this data cannot be directly cited or presented in our publications.

Interviews with physicians were coordinated in conjunction with our observations, either before the physician left for a mission with the SMUR mobile unit or upon their return. Since such emergency work cannot be predicted, we had to be flexible during the data collection stage. We alternated between observations and interviews based on each physician's availability. Although formal ethical approval was not required for this study, the research was conducted with official authorisation from the head of the SAMU. The interviews were recorded with the consent of the participants, transcribed and rendered anonymous for the purposes of our study.

We conducted a total of nineteen interviews with over thirteen hours of recordings. With the data from these interviews, which were collected using sense-making methodology (Dervin, 2008), we studied the information behaviour of emergency physicians and, more specifically, the information sources gathered through lived experiences. Considering the SAMU physicians' missions, our unit of analysis was either an intervention on site or a dispatch call. Because the activity of emergency physicians cannot be dissociated from spatial-temporal concerns (Aboueljinane, 2014), we tried to capture the information behaviour of physicians in context. The description of the chosen example of an intervention was built on their knowledge, experiences and personal values (Dervin et al., 2003).

The results presented here stem from a data analysis conducted using the NVivo qualitative data analysis software. Compiled as an NVivo project, the collected data were encoded based on emerging concepts related to information behaviour (e.g. information gap, information sources, information sharing, etc.). The results presented here pertain to the sources of information emergency physicians used during the Covid-19 pandemic crisis and the associated factors influencing their use.

Results: emergency physicians' activity during a crisis

Emergency physicians reported an increase of their activity during the first wave of the Covid-19 pandemic. Their challenge at the outset of the crisis was an information gap, including a lack of knowledge about the virus itself, as well as a lack of clear procedures for crisis management. Therefore, many procedures physicians carried out were ultimately turned into protocols. In turn, these protocols steadily became a significant source of information in their practice.

Physicians described their experience of work during the first wave of Covid-19 as '*blurry*' and '*foggy*'. As they faced a rapid increase in activity and a worldwide shortage of protective gear, the strategy rested on maximising the identification of '*potential Covid*' patients. Phone dispatching represented a form of prevention and a way of protecting the teams operating on the ground. With time, professional medical information was shared at a global level and, most importantly, reliable information sources were made available nationally to support physicians. In this context, we examined the sources of information used by emergency physicians.

Information sources and factors affecting their use

The physicians from our study indicated that their way of working during the Covid-19 crisis was all the same. However, these actors experienced a significant information deficit at the beginning of a crisis, which was subsequently supplanted by an information overload.

> *At the beginning we had an obvious lack of information, then later we had too much information, and I manage all of that in the same way as I managed it before, but simply with some additional information that can help me make a choice in my decision orders.* (EN0034EP)

Regarding information sources, physicians emphasise the importance of professional information and sources to their practice. This information is presented in writing (protocols, decision-making orders, open letters), orally (feedback from experience, oral presentations on peers' new studies and on the scientific literature) and visually (lists of reference institutions written on whiteboards and the monitoring of activity on screens).

Operating on the ground and in emergency situations, emergency physicians have little to no time to search for information on their own, especially during intense crisis periods. Consequently, they report receiving pre-processed information from higher authorities in the form of decision-making orders, protocols, etc.

> *I am in an active phase, my nose to the grindstone, focused on healing people in the moment. What's happening from a national point of view, from an organisational point of view, etc., I don't have time to do research on my own. So, the information is given to me by experts, often doctors, who have a broader perspective of the situation and whose job it is to process and share 'digested information' with us.* (EN0048PB)

During the public health crisis, a variety of communication channels were used to transmit information to all staff members: meetings, emails, phones, apps, screens, etc. Sometimes, the same information arrived through multiple communication channels, contributing to information overload.

> *At SAMU, we have a lot of things. We have both conference calls and phone calls. Everyone at home, our head of department, and other eminent specialists speak. We listen and ask questions. Sometimes we share our experiences and difficulties. Then, we have emails quite regularly from some of our colleagues, who are working to develop protocols, to review different studies … and send us work that is already 'chewed'.* (EN0048PB)

Moreover, our study reveals a contradiction regarding information flows. Emergency physicians point out that formal directives changed daily during the crisis, making their monitoring more complex. However, some of the information they received was already obsolete. The actors explain this discrepancy by significant delays between the feedback from frontline personnel, decision-making by higher authorities and the dissemination of updated directives.

> *The DGS (general directorate of health), the ARS (regional health agency) – it is up to them to draw up regulations and that is what they did and that is what they changed every two seconds. In fact, the ARS and the DGS adapted to what they were told, they were necessarily late … by the time the information reached them, they wrote their text, which they sent to the SAMU manager, and the SAMUs hold the meeting among themselves and decide to broadcast it to the regulator.* (EN0073PJ)

Of all the available information, only scientific sources and information stemming from public health authorities were used for medical and decision-making purposes. That is why the typology of sources presented below (Table 1) takes this essential parameter into account. Based on the collected data, we organise sources of information into three categories: (1) official sources, (2) additional sources, and (3) informal sources. It is important to note that these examples stem from the testimonies of the physicians we interviewed and that they are not meant to be comprehensive. All identified information sources are arranged according to their origin: firstly, by organisational level and, secondly, by the space (geographical coverage) or perimeter of the activity.

Organisational level	Space	Examples
Official sources of information		
Intra-organisational	Team	Direct hierarchy (head of department and managers) Peers
Inter-organisational	Regional/zonal	SAMU of departments and regions Regional Health Agency (ARS) Hospitals Experts/heads of other services
	National	Ministry of Health Other ministries/government French Medical Board Directorate General of Health (DGS) General Directorate for the Provision of Care (DGOS) Other organisations (Pasteur Institute, French National Authority for Health (HAS), French National Public Health Agency, French Society of Anaesthesia and Intensive Care (SFAR), French Paediatricians Society (SFP))
Additional sources of information		
Intra-organisational	Regional/zonal	SOS doctors (on-call primary care physicians)
Inter-organisational	National	Union of private practice physicians (SML) Scientific research
	International	Scientific research
Informal sources of information		
Individual	Regional/zonal	Entourage (rumours)
	National	Traditional media (television, radio)
	International	Acquaintances, contacts

Table 1. Typology of information sources during the Covid-19 crisis

Official sources of information chiefly include sources containing specialised medical content meant for professional use and created by individuals, instances and organisations in the field of health. At the intra-organisational level, the information sources cover the perimeter of the Paris SAMU team. At the inter-organisational level and in the category of official sources, a distinction

is made between the national level and the regional or zonal (zone of activity) levels. This classification mirrors the way in which the health system and its members operate in France. That said, the Ministry of Health represents a source of information and guidelines that are to be applied nationally. Designated entities (such as the regional health agency, for example) make the information available and adapt it to the regional and zonal levels.

Additional sources complement the first category of sources and encompass the international scope. While the information from these sources can be official, it comes second, or rather as a complement, to the information from the previous category. Our subjects chiefly mention scientific publications and research from around the world. Health authorities operating at a global level, such as the World Health Organization, could be included in this perimeter. However, the physicians we interviewed did not mention this specific source.

Informal (unofficial) information sources are identified on an individual level. They are contingent upon the interviewed subjects' personal practices and context. This category includes '*general public*' sources like the media (at the national scale) or sources from the individual's entourage (family, friends, personal contacts). Health professionals could follow the news and learn about the Covid-19 pandemic in an informal manner through these sources. The information presented in the media could provide an *overall picture* of the situation in France. It could also serve as an *alert*, prompting SAMU officials and physicians to find out more. An interviewed actor offers one such example wherein the media identified a cluster of contaminations.

> *Sometimes the media are useful … in the style of the clusters that happened in the Grand Est [region] … in a village in the Alps, so there we know that something is happening thanks to the media. But then, if we want information, we call our colleagues at the local SAMU who give us the info. It's simply an alert, but then we go fishing for information in a much more efficient way.* (EN0066VB)

Since the information obtained in this way does not stem from official sources, it is not verified and can often be incomplete or incorrect. These professionals are hence not inclined to rely on it fully. Higher ranked staff members therefore turn to official sources of information (such as medical data, research studies or reports published by public authorities) to carry out in-depth research on a given topic. In this specific case, the manager who was interviewed explains that he searched for reliable information by turning to official entities: the local SAMU service directly involved in the situation.

In the following example, a physician indicates that their personal network of Chinese physicians became a significant source of information. Chinese physicians who were working in the first country affected by the SARS CoV-2 virus shared with this SAMU physician their initial assessments of treatments tested in China, as well as symptoms and results.

> *I have a lot of colleagues who work on the patient side: intensive care physicians and emergency physicians. They've been sending me information on a regular basis telling me what has happened over there, what treatments have been tested, what methods they tested, and what works, what doesn't work.* (EN0063NN)

The same physician adds that their peers do not perceive the information from this type of source in the same way. The value of the information is conditioned by the level of trust that a person has granted to the source.

It appears that, for emergency physicians in times of crises, national or regional health authorities and organisations are first-tier sources of information. These official sources are viewed as credible and reliable when they are combined with a direct or indirect hierarchical structure and with experts in the health sector. Scientific research and other entities (such as associations or

unions) come as a complement to official sources. While these sources are professionally recognised and perceived as reliable, they are seen as secondary or supplementary. This could be explained by the fact that official sources contain essential information. Finally, some information may come from unofficial or general public sources. However, the interviewed physicians placed little value in these, turning instead to official information and to the officials verifying it. We noticed that physicians relied heavily on the hierarchical structure as an information source in the context of a public health crisis.

Certain factors influence the emergency physicians' information activities and their use of the aforementioned information sources, observed from the standpoint of their space-time. By the very nature of the profession, time is characterised by rapid and urgent action. Space corresponds to the geographical area covered by the emergency medical service to which it belongs. We find that uncertainty and trust are critical for the interviewed physicians when choosing information sources in the context of the Covid-19 crisis. They faced great uncertainty regarding a new disease and therefore prioritised official sources of information emanating from hierarchical structures they trusted. In addition, the emergency physicians preferred reliable sources of information providing access to complete, credible and up-to-date information.

Discussion and conclusion

In this paper, we examine emergency physicians' information sources and the factors that determine their choices and uses in the context of the Covid-19 crisis. We find that during a public health crisis, emergency physicians rely chiefly on professional medical information from official sources such as national and regional health organisations and authorities. Additional sources complement the first category of sources, while informal (unofficial) information sources operate at the individual level and can provide some limited insights.

Trust, uncertainty and reliability appear as important factors impacting the choice of information sources. Emergency physicians state not having time to search for information during crises. The information they need is provided by trusted medical authorities and their managers. In our study, direct and indirect hierarchies are considered as official and trustworthy sources of information. Such trust can be explained by the emergency physicians' attachment to the health system and, as pointed out by Weick (1995), by the ties upholding each organisation. Lezon-Rivière and Ihadjadene (2018) conclude that health professionals can swiftly intervene when they have legitimate and trustworthy sources on which to rely. For flight nurses (from their study), who also operate in uncertain and unpredictable environments, trust is built on connections in conjunction with the institutional structure and the roles within it. This relationship of trust is confirmed in our study through our subjects' choices of information sources. The hierarchical structure stands out as a reliable source of professional medical information, of major importance in times of crisis. Reliable sources of information take the shape of medical files, peer opinions, professional documents, etc.

Along with trust, uncertainty influences emergency physicians' choice of sources. They are particularly vigilant about unverified information as it could be incomplete or could be the object of variable interpretations. These results affirm a connection between uncertainty, trust and sources of information. Incidentally, the organisational culture of the emergency medical aid service relies on trust as one of its founding principles because its core activity is defined by time pressures and a changing, complex and critical environment (HAS, 2020). Through our work, we have confirmed that such a climate of trust exists based on the emergency physicians' ways of choosing official information. These sources are based, among other things, on scientific information. However, Raynaud et al. (2021) call for caution when applying medical information produced in the urgent context of a pandemic. It therefore seems important to highlight the particularity of the crisis which can weaken the reliability of – and trust felt towards – official sources of information and, more specifically, towards the hierarchical structure.

Our results complement the work of Datta et al. (2020) and, more precisely, the distinction between formal and informal sources of information. These authors wondered why medical journals were infrequently used, and the answer remains nebulous. In our study, emergency physicians do not use informal sources to support their professional practices. At such an operational level, they do not have enough time to search for information when managing emergencies (Ayatollahi et al., 2013) and even less so in a crisis situation. Our results show that information (scientific research, among other elements) is gathered and processed by others before being shared with emergency physicians as guidelines or recommendations. This could explain why scientific journals rank low in the list of official information sources in the Datta et al. (2020) study.

Moreover, our research findings demonstrate that emergency physicians need reliable sources that provide timely and complete information. These actors experienced shifts from an information gap to an information overload. They report that, in the later stages of the Covid-19 crisis, information flooded in from multiple channels and often consisted of redundant or obsolete information (Lekic-Savatic and Lezon-Rivière, 2022). Similar results come from a study conducted during the H1N1 flu pandemic by Majid and Rahmat (2013) and the World Health Organization during the Covid-19 crisis (WHO, 2024). The latter emphasises that information and guidelines frequently changed for frontline healthcare workers, making it difficult to determine which sources were reliable. These findings should be considered by health authorities, because crisis management also requires management of information redundancy, as well as the risk of obsolescence or non-transmission (delay or loss) of strategic and essential information (Couty, 2004).

To prevent information overload, information sharing should be optimised. We also propose updating professional documentation in order to consider our findings regarding the needs of emergency physicians regarding information and information sources, and their difficulties experienced during the Covid-19 crisis. Majid and Rahmat (2013, p. 53) recommend that public health agencies and organisations precisely define their '*information-related roles and responsibilities during a crisis and make necessary preparations accordingly*'. This would help eliminate or reduce repetitive information coming from multiple channels.

This research is the result of a first empirical study. As such, it has some limitations. We obtained our results on sources of information from actors we interviewed. Those results may therefore not be representative of the full variety of information sources used by emergency physicians. It would also be beneficial to widen the scope of the sample to include physicians from other emergency medical aid services, going as far as including subjects from hospital emergency services. In the context of a crisis, observing the ways in which emergency medical aid services across the same region collaborate and share information would be of major interest. Our observation and our investigation took place within the walls of the Paris emergency medical aid service. We were granted access to video reports capturing the activity of emergency physicians. However, conducting a study with physicians in the field would allow us to study emergency physicians' information sources and behaviour in more depth. By accompanying these professionals on site, we could examine the way in which meaning is built when making medical decisions in emergency situations and/or during times of crisis.

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Advertising legitimacy – an analysis of authorised and unauthorised pharmacy websites

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Abstract

Introduction. Online pharmacies are playing an increasingly important role for both citizens and society. In the digital landscape, both legal and illegal online pharmacies are competing for visibility and customer appeal. This article analyses the layout and characteristics of online pharmacy websites.

Method. The article is based on a qualitative study of legal and illegal online pharmacy websites in Sweden. Seven Swedish nationwide pharmacy websites are analysed and fourteen illegal online pharmacies. The illegal websites were located through Google searches and lurking in Internet forums.

Analysis. The analysis draws on Critical Visual Methodology and Visual Frame Analysis to analyse different framings of online pharmacy websites, focusing on their visual appearance and use of specific logos.

Results. The findings illustrate that the websites of pharmacies that only exist online share visual similarities and, on the other hand, websites for pharmacies that exist online and as physical stores share similarities. Unauthorised Swedish online pharmacies can be divided into two categories (1) those mirroring authorised online pharmacies and appealing to a traditional form of medical expertise, (2) those online marketplaces that are more evidently unauthorised, often niched in the types of products they sell.

Conclusions. Several visual cues distinguish legal from illegal online pharmacies. These visual cues include, but are not limited to, the presence of commercials and a wide range of products marketed. Niched unathorised online pharmacies are easier to detect as their visual elements typically feature images of drugs, not typically found on authorised online pharmacies.

Introduction

Online pharmacies are playing an increasingly important role for both citizens and society as a whole. The purchase of medicines is an area of e-commerce that has been on the rise for several years, the Covid-19 pandemic also spurring it on (Madiudia et al., 2021). Online purchases that are not made through a specific app usually start with a query to a search engine. Such search queries can be open-ended (e.g. buy paracetamol) or specific (e.g. entering the name of a specific pharmacy) to get to a website containing certain products. Along with search engine optimisation (SEO) of websites, the search queries people use when searching play a crucial role in what types of results are displayed (Lewandowski, 2023).

In the digital landscape, both legal (authorised) and illegal (unauthorised) online pharmacies are competing for visibility and customer appeal. The fact that the infrastructure of the search engine reaches beyond national borders creates a greyzone wherein a user might search online for medications that are legal in the country of the searcher but end up on a website located in a country with different rules and regulations. This can make it challenging for a user to distinguish between that which is legal and illegal. While the Darknet, which can only be accessed through a certain browser (Tor), is often associated with illegal activities, illegal websites are prolific on the open web as well. This can be exemplified by a recent global operation, Pangea XVI, carried out by Interpol in October 2023, targeting illegal medicines. During the operation, more than 1,300 criminal websites were closed (INTERPOL, 2023). Previous research shows that when searching for certain medications in Sweden, search engine results pages often contain links that lead to greyzone online pharmacies (Sundin et al., 2023).

To guide consumers purchasing medicines online, the EU has created a certification for online pharmacies which is identified through a logo on websites. As of 1 July 2015, all online pharmacies or retailers legally operating in the EU should display the logo clearly on every page of their website (European Medicines Agency, 2024). However, statistics from Sweden shows that the majority of people (72 per cent) cannot identify if an online pharmacy is authorised by the Swedish Medical Products Agency and few people recognise the EU logo (The Swedish Medical Products Agency, 2024). These statistics indicate that other aspects of an online pharmacy website are likely to be of greater importance to consumers than the EU logo.

While the position of online pharmacies on search engine results pages (SERPs) has been studied in several papers (Fittler et al., 2021; Fittler, Paczolai et al., 2022; Sundin et al., 2023), less attention has been paid to the role of visual cues and text-based attributions of trustworthiness. The aim of this article is to provide an understanding of the distinguishing features of authorised and unauthorised online pharmacy websites. To achieve this aim, the article will explore similarities and differences in how authorised and unauthorised pharmacies market themselves, by carrying out a website analysis.

The choice of Sweden as a case study for an investigation of online pharmacies is relevant for several reasons. For more than 30 years, Sweden has pursued neoliberal policies leading to deregulation and privatisation in many formerly public sectors, including the pharmaceutical sector. In addition, the Swedish government has promoted the digitisation of society over many years. Statistics show that one in three Internet users in Sweden buy most of their medicines and healthcare products online (The Swedish Internet Foundation, 2022). Furthermore, a report from the Swedish pharmacy sector shows that almost a third of all pharmacy products were sold via e-commerce in 2021 (The Swedish Pharmacy Association, 2022). This development – deregulation, privatisation and digitisation – has been accompanied by a shift towards a discourse about the empowered patient who independently seeks and evaluates information for their own health (Fox et al., 2005; Henwood et al., 2003; Segal, 2020).

The Swedish online pharmacy market

The Swedish online pharmacy market consists of four nationwide chains, three online-only pharmacies and several independently operated pharmacies (The Swedish Pharmacy Association, 2022). Since deregulation in 2009, the number of physical pharmacies in Sweden has increased. In 2022 the number of physical pharmacies was 1,411 and approximately 20 per cent of the revenue consisted of e-commerce. Nevertheless, Sweden is one of the countries in Europe with the lowest ratio of pharmacies to the population in terms of access to bricks-and-mortar pharmacies (The Swedish Pharmacy Association, 2022). While other retail sectors have seen a decrease in e-commerce, the pharmacy sector experienced an increase in e-commerce during 2023. Beyond medicines, pharmacies, online and bricks-and-mortar alike, rely on sales of other goods for their revenues. In a recent pharmacy sector report (2024) it was noted that pharmacies tend to focus on providing a good range of high-quality products focused on health and wellbeing, as a way of dealing with the low sales markup on prescription medicines and the competitive nature of the self-care market (The Swedish Pharmacy Association, 2024). Swedish authorised online pharmacies' websites receive the majority of their visitors from search engines, from organic and paid results (Similarweb, 2023).

Since 1 July 2015, the EU has mandated online pharmacies operating legally in the EU to display a logo. The logo has the flag of the country in which the pharmacy is licensed and is accompanied by the text '*Click here to check if the website is legal*'. The logo also serves as a hyperlink to the Swedish Medical Products Agency's website (and respective agency in other countries). Authorised Swedish online pharmacies also include another logo with the text '*Approved by the Swedish Medical Product Agency*'. In sum, the authorised and legal Swedish market for online pharmacies is well-established and works within clear state and EU regulations.

Figure 1. Swedish version of EU logo and national logo for authorised pharmacy.

Earlier research

At present, pharmacies and their professional services are increasingly expanding into an online setting. The market demand for medicines associated with common gender stereotypes has increased, for example, drugs such as Viagra, diet pills and a variety of hormone-based products (Sugiura, 2018). In addition, the illegal trade in opioid painkillers has also increased (Hall and Antonopoulos, 2016). According to Eurostat, more than 11 per cent of Europeans bought medicines or dietary supplements online within three months in 2022 (European Commission, 2023). Figures vary from country to country and from product to product: clothes are, for example, more widely bought online than medicines. A study of people's behaviour and attitudes towards buying medical products from online pharmacies in the Central Eastern European countries of Czech Republic, Slovakia, Poland and Hungary shows that online purchases of medical products have increased,

most likely due to Covid-19 (Fittler, Ambrus et al., 2022). However, the study also shows that, in contrast to Sweden, the increase is modest, and the majority of respondents still prefer bricks-and-mortar pharmacies.

Online purchasing is to a high degree dependent on information seeking and search engines. Search engine optimisation is of particular interest to companies in relation to commercial products where there is strong competition. It should be emphasised that search results do not per se reflect the quality of content (Lewandowski, 2023). A study conducted in the USA in 2018 showed that when the names of psychiatric medicines were combined with the term '*buy*', a substantial 88 per cent of links led to online pharmacies that did not require a prescription for medications that are subject to prescription by law (Monteith and Glenn, 2018). Another study shows how a search query containing Covid-19 medications not endorsed by official authorities, in combination with the term '*buy*', opens the door to unauthorised pharmacies (Sundin et al., 2023). Another study illustrates how Google Search seems prefigured to a '*commercial logic*' which combines a certain question with a hidden '*buy*' (Haider et al., 2022; Haider and Rödl, 2023). Other studies have shown how search results for insulin are dominated by illegal websites for purchasing medicines (Penley et al., 2022) and how many online pharmacies are found that do not require a prescription when searching for drugs for Covid-19 treatment in the USA (Ozawa et al., 2022) and Sweden (Sundin et al., 2023).

For illegal online marketplaces, established SEO cannot be used. Instead, the illegal online marketplaces often use so-called *black hat* techniques to promote their links (Fittler, Paczolai et al., 2022; Sundin et al., 2023). This is often described as a way of poisoning the search engine results. Overall, previous research clearly shows how 1) websites for the sale of medicines without a prescription use so-called black hat strategies to place illegal marketplaces for the sale of medicines without a prescription high up in search engine results, and 2) search engine results are full of links to unlicensed websites that do not require a prescription for the purchase of prescription medicines.

On a domain-independent level, there is a large body of literature on evaluating online information and assessing credibility. The evaluation of information often involves the consideration of evaluation criteria, including elements such as currency, accuracy, authority, objectivity and comprehensiveness, which has led to the so-called checklist approaches (Meola, 2004; see also Metzger, 2007). These approaches can be effective in educational or academic contexts, but they can be difficult to apply in everyday situations (Flanagin and Metzger, 2000). From a cognitive science perspective, the difficulties of assessing credibility have been examined in terms of the increased cognitive load placed on individuals when they are given the responsibility of assessing credibility (Metzger and Flanagin, 2013). Research has suggested a number of cognitive heuristics that people employ in situations where analytical methods are not used (Sundar et al., 2008). According to Metzger and Flanagin (2013), these heuristics include website reputation, endorsement by others, agreement with other sources, confirmation of existing beliefs, prior expectations and perceptions of bias and manipulation.

In an investigation of potential relationships between visual design and credibility judgements on consumer health information websites, Robins et al. (2010, p. 25) identify that '*sites with preferred visual designs tended to be sites perceived to be more credible*'. Visual design includes aspects such as typography, images, colour and aesthetics. However, Robins et al. also put forth that visual design alone does not influence credibility judgements: factors such as brand recognition must also be considered. Recognised and trusted brands were rated higher in credibility and visual design in their study. A company logo is a unique point of reference for a brand. Logos are generally intended to convey certain values that a brand or organisation wants to be associated with. Forceville (2020, p. 140) notes that '*It normally takes a long time before logos are broadly recognized and can efficiently function in a larger community*'. Returning to the EU logo, it is intended to be

recognised across the EU and to convey a message of approval and credibility. However, it has not yet reached a point of recognition where it functions efficiently in the larger community.

Conceptual frame

The paper is underpinned by a sociomaterial perspective (Haider and Sundin, 2023) and the analysis draws on Critical Visual Methodology (Rose, 2023) and Visual Frame Analysis (Luhtakallio, 2024). Together these entry points create a framework that considers different aspects of the digital landscape that are of importance for the study. The sociomaterial perspective emphasises the interweaving of technical and social aspects. As noted by Haider and Sundin (2023), the relationship between society, people and information has changed in far-reaching ways. For example, not only do people find information but '*it is increasingly the other way around: information finds people, often without them knowing how and sometimes without them knowing why*' (Haider and Sundin, 2023, p. 18). A sociomaterial perspective favours the combination of different methods and empirical materials. It also emphasises the need to invite technology into the analysis (Haider and Sundin, 2023).

Critical Visual Methodology is characterised by its emphasis on taking images seriously, considering the social conditions and effects of images and their modes of distribution as well as considering one's own way of looking at images (Rose, 2023, p. 43). It thereby supports the argument of analysing images as well as text when approaching the websites. Visual Frame Analysis, on the other hand, pays attention to the situation in which visuals are being interpreted; framed (Eriksson, 2023). Visual Frame Analysis draws on Goffman's Frame Analysis (1974) and also his analysis of advertisements in relation to gender. The theory has since been developed to situate the theory in a contemporary context (Luhtakallio, 2024). The key focus of Frame Analysis is the way that that people make sense of various situations in everyday life. The way that various situations are interpreted, which also guides action, is referred to as frames. A framing is the way that a certain situation is identified, a typical frame analytical question being '*what is going on here*' (Goffman, 1974). In terms of Visual Frame Analysis, Eriksson (2023, p. 99) puts forth that to frame something '*is to both narrow down possible readings and to place focus on certain aspects of visuals*'. To do so, the aim of the visual and the context in which it appears need to be considered (Eriksson, 2023). As stressed by Luhtakallio (2023, p. 541), frames are not stable constructs with a static meaning but rather '*elastic; they change and transform*'.

Method

A qualitative approach is taken within the study. The first step in the data collection began with identifying the online marketplaces to be included in the study. With the aim of providing an understanding of distinguishing features of authorised and unauthorised online pharmacy websites, both types of websites needed to be included in the study. The authorised online pharmacies were identified through information from the Swedish Pharmacy Association. At the time of the study, in 2023, the Swedish pharmacy market consisted of four nationwide chains, three online-only pharmacies and several independently operated pharmacies. The four nationwide chains as well as the three online-only pharmacies were included in the study, namely:

- Apohem (online-only)
- Apotea (online-only)
- MEDS (online-only)
- Apotek hjärtat
- Apoteket.se
- Doz
- Kronans Apotek

The unauthorised marketplaces for medicines are difficult to define in terms of geographical context. Only websites that use Swedish language were included in the study, with the assumption that they are aimed at Swedish consumers. The unauthorised online marketplaces selling prescription medicine were located through Google searches and lurking in discussions on various Internet forums. They include marketplaces with a variety of medical products, marketplaces focusing only on one type of medicine (erectile medicine such as Viagra and Cialis) and online pharmacies situated in other countries that sell prescriptions. A total of fourteen unauthorised online marketplaces were included in the analysis:

- Express Apotek
- Svenskamedspharma
- Apotheke-fur-sie
- Big Pharma
- Pillershoppen
- ViagraExpress
- Viagrabutiken
- Online Apotek: Potensmedel online i Sverige
- Online Apoteket
- Apotek Online
- Recept Online
- ViagraStore
- SverigeApoteket24
- Andreas apotek
- Brablåpiller.com
- LPTHARMA

In line with the qualitative approach taken within the study, the selection of marketplaces was motivated by the desire to find a variety of marketplaces to illustrate variation rather than, as is usual in quantitative research, to map how widespread the phenomenon is. The number of marketplaces was deemed enough to reach saturation in the material in relation to the aim of the study (Meyer and Mayrhofer, 2022).

The second step in the data collection consisted of gathering traffic data for the authorised online pharmacies through web analytics company Similarweb. This data gives information on, for example, how people locate the websites and what search terms that are used. Such data is not possible to retrieve for the unauthorised online pharmacies.

Empirical material

Material for the study was gathered during the spring of 2023. The material compiled consists of screenshots of the homepage of the online pharmacy websites. If the website also had an '*about page*', that page was also screen-captured. In both cases, the entire website was screen-captured. The study was carried out on a laptop and no material was compiled on, for example smartphones. The material also consists of reports of website traffic from Similarweb.

Ethical considerations

The study has undergone an ethical approval by the Swedish Ethical Review Authority (Dnr 2021-05062).

Analysis

The analysis is operationalised by reviewing the visual appearance of the websites and the way they argue for their trustworthiness in the text (Rose, 2023). The focus was on interpreting the online pharmacies' strategies for becoming trustworthy, and attractive for purchase, to their customers. In my analysis, I draw on Luhtakallio (2024) methodological development of Visual

Frame Analysis. This entails identifying dominant and secondary frames when analysing visuals. The dominant frame can be likened to that of looking at something at first glance, whereas the secondary frame is likened to a second glace, a closer look, that allows for a deeper exploration of an image. I argue that this resonates with the way that people might navigate a website when looking to purchase something online, going from a quick initial browse to a more detailed exploration before proceeding to purchase.

The visual and textual elements contributing to the dominant framing is here defined as the part of the website that is visible on the home page without much scrolling. While this will be slightly different depending on the size of the screen in use, such consideration is beyond the scope of this study. The secondary framing is identified as the framing that takes place after a more thorough look at the website, including scrolling down the page and looking at the different categories on the website.

Findings

In this section, findings from the analysis are presented. Firstly, findings regarding the visual analysis of authorised online pharmacies are presented. Secondly, findings from the visual analysis of unauthorised pharmacies are presented. Third, and lastly, findings from the analysis of textual cues are presented.

Authorised online pharmacies

Seven Swedish authorised online pharmacy websites were analysed. Three of them only exist online. An initial finding that stands out in relation to the online-only pharmacies is that they place the Swedish authorised pharmacy logo at the top of their websites, as illustrated by Figures 2 and 3. Out of the three, Apohem has the smallest references to medicines at the top part of their websites.

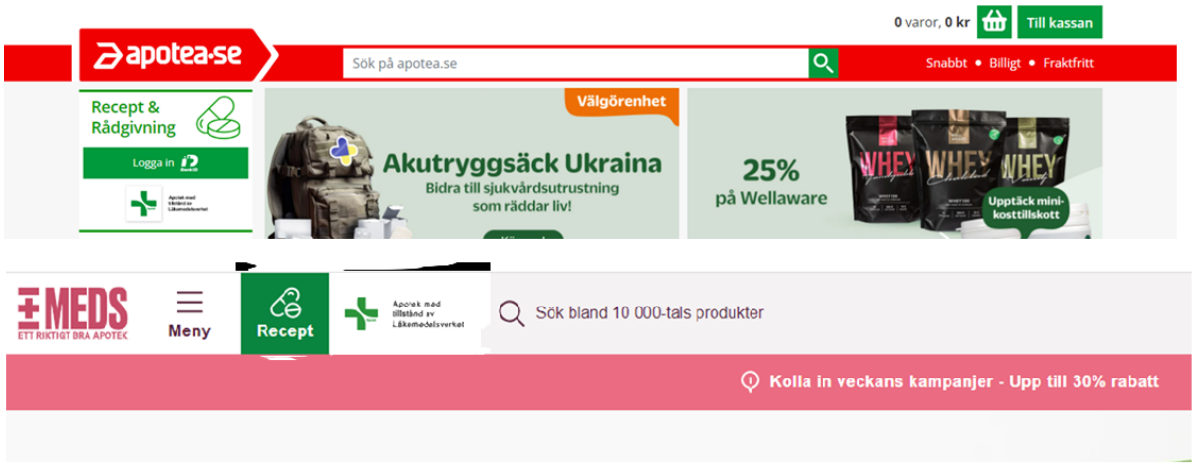

Figure 2. Top part of online pharmacy website of Apotea and MEDS.

Figure 3. Top part of the online pharmacy website of Apohem.

All the authorised online pharmacies sell a range of products, which is in line with the statistics from the sector report from the Swedish Pharmacy Association (2024), Many of these products,

such as make-up and vitamins, are not sold in pharmacies only, making the pharmacy websites less distinguishable from other shops. This could be one explanation for why the online-only pharmacies choose to place the pharmacy logo at the top of their websites; to make clear that it is indeed a pharmacy. It thus appears as important to the visual framing of the website. Had the logo been removed, a primary frame (Luhtakallio, 2024) for the website could be that of a skincare retailer, for example.

The positioning of the authorisation logo sets the online-only pharmacies apart from the ones with bricks-and-mortar stores. One interpretation of this fact is that the online-only pharmacies cannot rely on their physical shops to contribute to the framing of their websites, making the credibility of the primary framing of greater importance than for online pharmacies with physical stores. In contrast, the online pharmacies with physical stores place their brand at the top of their website, as exemplified in Figure 4. This indicates that they identify their established brands as being more relevant for consumers than the EU logo. This relates to research indicating that logos and branding take time to establish (Forceville, 2020) and that reputation has been considered one aspect of credibility assessment of websites (Flanagin and Metzger, 2013). In relation to reputation and logo, it is worth mentioning that the pharmacy Apotek Hjärtat, Figure 4, is associated with one of the largest food chains in Sweden. Apotek Hjärtat stores are thereby found in or near many food stores. With this follows that, for some consumers, the pharmacy is already framed in a certain manner and associated with being an established actor.

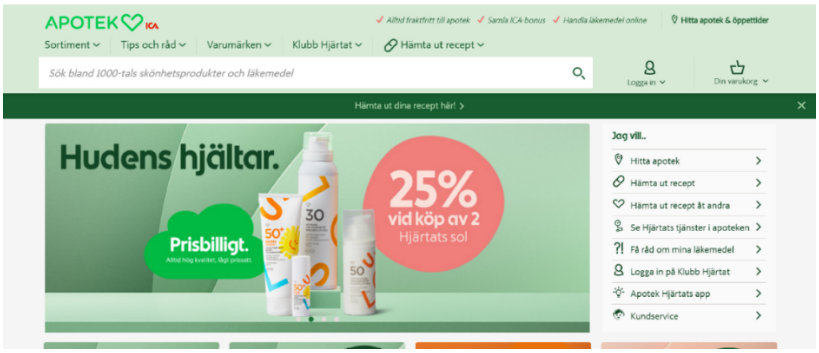

Figure 4. Front page of the pharmacy website of Apotek Hjärtat.

Similarly, Apoteket can benefit from being a well-established actor. Apoteket was the only existing pharmacy before the deregulation of the Swedish pharmacy market. It thus stands to reason that, particularly for older consumers, the chain is associated with being a trustworthy store for medicines.

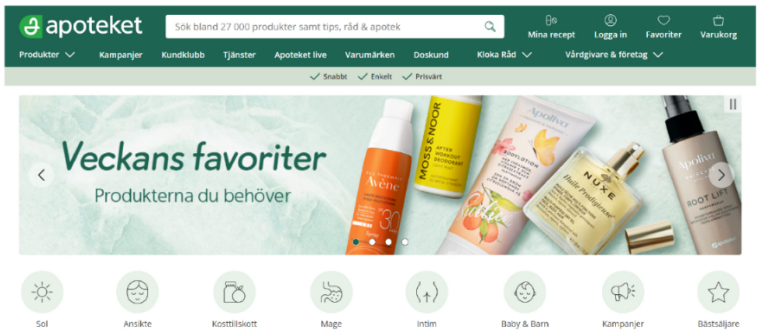

Figure 5. Front page of the pharmacy chain Apoteket.

The bricks-and-mortar pharmacies with an online presence thus share the similarity that the authorised pharmacy logo is placed further down on the website and instead the brand name is placed on top of the website. This indicates that their brands are, visually, of greater value to them than the EU logo. However, the pharmacies do abide with the EU directive to display the logo on their websites.

The four pharmacies that have brick-and-mortar stores also have in common that their names more explicitly are called *pharmacy* (which translates to apotek in Swedish). Their names are Apotek Hjärtat, Apoteket AB, DOZ Apotek and Apotek Kronan. Thereby, a consumer is quickly exposed to the term pharmacy when visiting their websites. In contrast, the online-only pharmacies are named Apotea, MEDS and Apohem. While those three names implicitly refer to the name pharmacy, it is not spelled out in the same manner. Apoteket AB currently has a commercial where they emphasise being the original pharmacy as well as being a proper pharmacy, stating that people should turn to '*Apoteket Apoteket*', i.e. '*The pharmacy pharmacy*'. In terms of visual appearance Apotek Hjärtat, Apoteket AB and Apotek Kronan all have a green layout of their website, which corresponds with the colour of the Swedish logo for pharmacy, as well as the EU logo for authorised pharmacies. As visual appeal and favourable credibility assessments have been found to be related (Robins et al., 2010), the colour choices could be associated with trustworthiness.

The unauthorised market

The exact number of unauthorised online marketplaces selling medicines in Sweden is difficult to ascertain. Statistics from the Swedish National Council for Crime Prevention indicate that there are approximately 50 websites in Swedish that sell narcotics on the open web (Tollin et al., 2021). In their report from 2021, they conclude that people selling drugs online usually operate on multiple arenas. In this study, fourteen websites of unauthorised pharmacies are analysed. Some of the marketplaces only advertise Viagra and other drugs for erectile dysfunction (e.g. Viagrabutiken, Online Apotek) or drugs for anxiety, sleep disorders or muscle pain (e.g. Pillershoppen), while others have a broader range that includes, for example, drugs for high blood pressure, weight loss, ADHD, diabetes, depression and opioids (Express Apotek, Svenskamedspharma). In the material there is also an example of a marketplace that offers amphetamines and cocaine in addition to medicines for anxiety, sleep disorders or muscle pain. The unauthorised online pharmacies are of course not allowed to use the EU logo. However, two of the websites (Express Apotek, Apotheke-fur-sie (with the logo EU pharmacy)), examined use a logo which is similar to that used by authorised Swedish pharmacies, thereby signalling that the logo is of considerate value as a visual cue (Rose, 2023) and in terms of framing (Luhtakallio, 2024).

Figure 6. Logo of unauthorised pharmacy EU Pharmacy.

Figure 7. Logo of unauthorised online pharmacy Express Apotek.

Two framings of online marketplaces: niched and copycat

The unauthorised online marketplaces can be divided into two framings in terms of the images used, the texts and what they sell. In the first framing, there are marketplaces that have made an effort to make the website look reputable with images of happy patients or trustworthy doctors (Express Apotek, Svenskamedspharma) as well as with well-written texts that put the customer in focus. One marketplace has the following introduction on the first page written with large letters: '*The best solutions for your health: buy medicines safely and stress-free from your home.*' (Express Apotek). Another marketplace writes '*Our pharmacists work closely with you and your healthcare providers to ensure you take the right medications at the right time. We can also help you manage any side effects or drug interactions*' (SvenskaMedPharma). They might even recommend consulting a doctor before ordering: '*Important: buying medication through the internet does not substitute a medical consultation*' (Apotheke-fur-sie). In this category, the trust that the marketplaces establish relates to traditional medical expertise. These online marketplaces mimic the website layout of authorised online pharmacies and could be considered a form of copycats, as exemplified in the side-by-side image of authorised DOZ Apotek and unauthorised pharmacy Express Apotek.

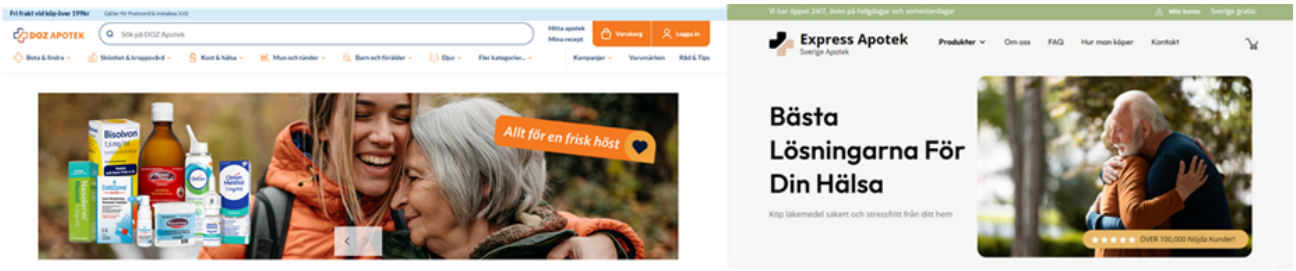

Figure 7. Side by side image showcasing authorised online pharmacy (left), next to *copycat* unauthorised online pharmacy (right).

In the second category, the niched online pharmacy category, there are several marketplaces whose appearance, advertised products and textual content make it clear that they are illegal. They have names such as Pillershoppen (the pill shop), Online Apotek: Potensmedel online i Sverige, and Viagra Express. The pharmacies in this category typically display their products with images of pills, packaging, and lists of various prescribed medicines, as exemplified in Figure 9.

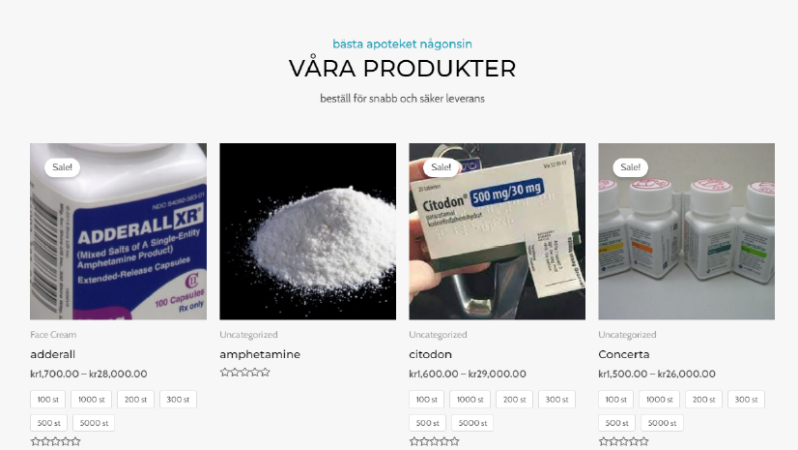

Figure 8. Image from unauthorised online pharmacy showcasing their products.

While the websites in this category do not take after traditional pharmacy websites, they all guarantee the medical quality of their products, for example: LTPHARMA writes '*Our online pharmacy offers costumers efficient, certified and approved by specialist in pharmaceuticals to increase the strength of and decrease erectile dysfunction in men*' or '*Our products are manufactured in the best way possible with expert pharmacist and professional team on every product*' (Svenskamedpharma). The visual appearance of these pharmacies signals that they are marketing themselves to a different consumer base than the online marketplaces in the copycat framing.

The visual appearance of the unauthorised online pharmacies in the niched framing is built around showcasing specific products rather than creating the image of a pharmacy with a wide range of products. Vitamins and make-up are not in focus here, which sets them apart, visually and content-wise, from the authorised online pharmacies in this study. In this category, the trust that the marketplaces establish relates to an effectivity expertise that rather than building on medical expertise builds on the marketplace's capacity to safely and with privacy deliver what and when the customer wants. The trustworthiness of this second category of market places, relies more on promotion of prices, integrity, secure payment and fast delivery: '*we are open every day, 24 hours a day. You can shop when it suits you without any hassle. We stand for safety, discretion and a life of energy and health*' (Sverige-Apoteket24). Within both categories of online marketplaces, there are examples of trustworthiness being communicated by reference to age in existence: '*Viagrastore is one of the oldest Swedish web stores. We have been on the market since 2007*' (ViagraStore) and '*We have provided healthcare products for more than 14 years.*' (Svenskamedpharma).

Textual justification of business of unauthorised online pharmacies

The unauthorised online pharmacies in this study rely on textual cues to convey a justification for the existence of the marketplace. Three different types of justifications and narratives can be discerned: the empowered patient narrative, the avoiding of embarrassment narrative, and an access to health narrative.

The empowered patient narrative relates to the argument that the products the marketplace sells should be able to be bought without a prescription; that it '*should be a right*' (Express Apotek). Often, the narrative is phrased in an empowered patient style, such as, '*Only you may decide which product is right for you*' (Apotheke-fur-sie). Another example is: '*we believe in your ability to make well-informed health choices as long as we provide you with reliable advice*' (DokterOnline). The same marketplace describes their philosophy as '*responsible self-management*' and states that '*[f]reedom of choice is a precious right*'. The second narrative focuses on the way in which ordering from the marketplace can avoid embarrassment: '*It's very comfortable for men who are*

uncomfortable talking about intimate issues with their doctors' (LTPHARMA). This is a recurring narrative in many of the marketplaces analysed. A third type of justification concerns how the marketplaces create access to health care. One of the marketplaces makes the argument that '*many of our customers who live in remote parts of Sweden and in the countryside, where men may not have easy access to local doctors or pharmacies*' (Online Apoteket).

The justification narratives of the empowered patient and access to healthcare are only to be found in the first of the two abovementioned framings: the marketplaces that attempt to mirror the visual cues of authorised pharmacies. The avoiding embarrassment narratives is found within both categories of online marketplaces.

Discussion and conclusion

The aim of this paper is to provide an understanding of the distinguishing features of authorised and unauthorised online pharmacy websites. To achieve this, the article has explored similarities and differences in how authorised and unauthorised pharmacies market themselves. This has been done through an analysis of websites, drawing on Visual Frame Analysis (Luhtakallio, 2024).

At the beginning of the paper, it was noted that the EU created a logo for authorised online pharmacies that became mandatory on websites as of 2015. It is possible to discern a difference among the authorised online pharmacies that merely exist online and those with bricks-and-mortar stores in relation to the placement of the EU logo and the Swedish national authorisation for pharmacies. The online-only pharmacies favour placing the logo at the top of their website. The logo thereby becomes part of their primary framing. In contrast, the other authorised online pharmacies place it at the bottom of their website and seem to rely more on their brand. Although the EU logo is not well-known among Swedish citizens, it seems that the authorisation is still of visual importance to the online-only pharmacies. This might be of greater importance to these pharmacies as they are not visible physical stores and can thereby mostly build a reputation (Flanagin and Metzger, 2013; Forceville, 2020) online. Still, with the rise in e-commerce over the last few years, particularly Apotea has become a well-known brand, although this includes news reporting on problematic working conditions (Aftonbladet, 2024). All the online authorised pharmacies sell a range of products that are not medicine, from haircare products to certain foods. The framing of the websites as pharmacies thus relies on visual cues related to being established pharmacy brands, the name of the brands as well as the placement of the logo. The online pharmacies have a lot in common with other online retailers, such as health food stores and stores selling skincare products. If the top part of their websites were removed, it would be challenging to identify them as pharmacies. The primary and secondary framing thus largely relates to the consumer patterns of the user, whether medicines are in focus or not.

The findings illustrate that unauthorised Swedish-language online pharmacies can be divided into two categories in terms of their visual cues and textual features: (1) those mirroring authorised online pharmacies and appealing to a traditional form of medical expertise, (2) those that are more evidently unauthorised, often niched in what types of products they sell. These two categories are here defined as two different framings. The first category is defined as a copycat framing. The illegal online pharmacies in that category rely on visual cues from established online pharmacies. Rose (2023) underlines the relationality of images, visual elements and surrounding contexts. In this study this relation is particularly obvious in relation to the websites that take after traditional authorised pharmacies. The second framing is referred to as a niched online pharmacy framing. Rather than appealing to a traditional form of medical expertise, they communicate their efficiency, integrity and quality products. Rather than showing images of happy customers and credible doctors, many of the niched websites show images of various pills, a visual cue that is perhaps discouraging for a customer searching for an authorised online pharmacy but might be relevant information for someone used to identifying various drugs.

A distinguishable difference between authorised and unauthorised online pharmacies is the existence of commercials on legal pharmacies as opposed to a general lack thereof on unauthorised marketplaces. Another distinguishable difference is the range of products for sale. All the authorised online pharmacies sell a wide range of products, which does not hold true for illegal online pharmacies. Thus, a visual feature that could confuse a consumer into thinking that a legal pharmacy is a health food shop, is also characteristic of a legal pharmacy. In a similar vein, commercials, which are typically considered a nuisance, are an indicator of the website existing within the legal and stipulated working logic of the commercial search engine market, as opposed to working with, for example, black hat search engine optimisation. In terms of the relation between the search engine and the online pharmacies, a high ranking of an illegal pharmacy might contribute to it being perceived as credible. Similarly, on the search engine results page it might not be evident that some of the links will direct a user to an unauthorised online pharmacy. Given that both an explicit '*buy*' entered in a search engine (Sundin et al., 2023) and an implicit one (Haider and Rödl, 2023) can lead to an illegal online pharmacy, being able to distinguishing those from authorised ones are of importance for public health. The copycat framing of the illegal websites can be said to be the most problematic one as it mimics the visual logic of the authorised ones. The niched illegal marketplaces are more distinguishable from the legal ones.

This article has carried out an analysis of the Swedish context: further research that links this to other EU countries would be of interest. So would research that looks into how people navigate this digital landscape populated by legal and illegal online pharmacies, taking use of various digital devices into consideration

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About the author

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‘It can also be a really positive place’: co-research on young people’s health information literacy practices in social media

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Abstract

Introduction. This study investigates health information literacy practices of young people navigating their social media environments to enhance mental health, and the role of peer support within these practices. While previous studies have focused on the negative effects of social media on youth mental health, this study highlights its potential positives and offer an inclusive perspective into information literacy research.

Method and data. The study employs a co-research strategy where young people actively engage as equal partners in data production. Produced in collaboration with a students’ mental health organisation, the data includes two focus group interviews, two co-research workshops, two peer interviews and one group interview with participants aged 18 to 29.

Findings. The findings reveal young people actively navigating and shaping their social media environments to support their mental health. The construction of a *positive social media bubble*, involving, often algorithm-mediated information practices like seeking positive content and avoiding the negative, and creating supportive content emphasise the adaptability of youth health information literacies.

Conclusion. Understanding of the embodied, interconnected, social, and transformative nature of youth health information literacies may inform initiatives promoting positive mental health among youth in the digital age.

Introduction

The impact of social media on young people's mental health has been widely studied across various fields, but the research has mainly focused on its negative effects. However, it is clear that social media is an important part of young people's lives and often serves as a key channel for building and maintaining social relationships, seeking and creating information, and finding peer support (Abidin, 2015; Multas and Hirvonen, 2022; Naslund et al., 2020). Thus, it can also offer a significant opportunity to promote young people's wellbeing. Through various interconnected and embodied information practices (see e.g. Multas and Hirvonen, 2022; Olsson and Lloyd, 2017), social media can empower young people to master their information environments. However, the role of peer support as part of these practices and its contribution to health information literacies among youth in online contexts has remained unexplored.

This study challenges the adult-driven and concern-based discourse surrounding the negative effects of social media by examining its positive effects on youth mental health through co-research, i.e. research conducted together with young people (e.g. Kulmala et al., 2024). Our aim is to explore the information literacy practices of young people navigating their social media environments and the role of peer support within these practices. Here, the focus is placed on those information literacy practices that young people describe to benefit their mental wellbeing. The study builds on a sociocultural understanding of health information literacies, which are defined as a set of information practices related to seeking, finding, evaluating, understanding, creating and sometimes even avoiding information enacted in the social settings and everyday environments of people, including online contexts (see e.g. Hicks et al., 2024; Multas, 2022; Zhao et al., 2020). In this study information practices are viewed as a set of social actions mediated through semiotic and material cultural tools (mediational means), such as language and technological applications (Wertsch, 1991). The research questions are as follows

RQ1: What kinds of information practices do young people engage in on social media to enhance their mental wellbeing?

RQ2: What role does peer support play in these practices?

The significance of this study builds upon its new and inclusive perspective on both mental health-related social media research as well as research on information practices. It also has significant implications for information literacy research, especially because it is built on the perspectives of young people themselves. The research is part of the TUBEDU research project (YouTubers as Peer Mental Health Educators for Adolescents' Social Environments), funded by the Research Council of Finland (2023–2026) in collaboration with the Universities of Turku, Tampere and Helsinki, as well as the student mental health organisation Nyyti ry, the youth mental health organisation Yeesi ry, and Aseman Lapset ry.

Theoretical background

Health information literacies

Theoretically, this study builds on the sociocultural understanding of health information literacies and information literacy practices in digital contexts emphasising the social, embodied and material nature of information literacies enacted in everyday life (Lloyd, 2010, 2017; Multas, 2022). Broadly viewed, health information literacies connect to the ways we interact responsibly, sustainably and critically with health-related information (Grizzle et al., 2014). More specifically, health information literacies are constructed of a set of interconnected, social, material and embodied information practices related to, for example, seeking, finding, evaluating, understanding and creating health information that we utilise in our everyday environments, digital contexts included (Multas, 2022).

In the context of health, embodied information practices are often highlighted, as the body itself serves as a significant source of health information (Lloyd, 2010; Olsson and Lloyd, 2017). In this study, the health-related information literacy practices of young people in social media are considered as socially constructed and shaped by young people themselves to support their wellbeing (Lloyd, 2010; Multas, 2022; Multas and Kulmala, 2024). Health information literacy practices, therefore, are not merely individual acts but are embedded in the social, cultural and material contexts where they occur (Anderson, 2007).

Information practices

Building on the foundational work of Lloyd and Savolainen, Zhao et al. (2020, p. 229) describe information practice as '*a set of socially, culturally, and historically constructed, materially mediated actions to identify, create, seek, manage, use, and share information*' (Lloyd, 2010; Mckenzie, 2003; Savolainen, 2007, 2008; Talja and Mckenzie, 2007). This perspective considers information practices as a set of mediated actions taking place in the everyday activities of people. The notion on mediated action highlights the material, semiotic and sociocultural aspects of social action (see e.g. Wertsch, 1991, 1998). According to the mediated action theory, coined by Wertsch (1991), all action is considered social and mediated by cultural tools. These tools, also referred to as mediational means, include semiotic resources, such as language, and physical and material tools, such as technological applications (Lane, 2014). From this perspective, the health information literacy practices of young people enhancing their mental health in social media are constructed of a set of repeatedly taken and, thus, habitual social actions (Scollon and Scollon, 2004) related to, for example, finding experience-based information or encountering content recommended by algorithms on different social media platforms (see Figure 1).

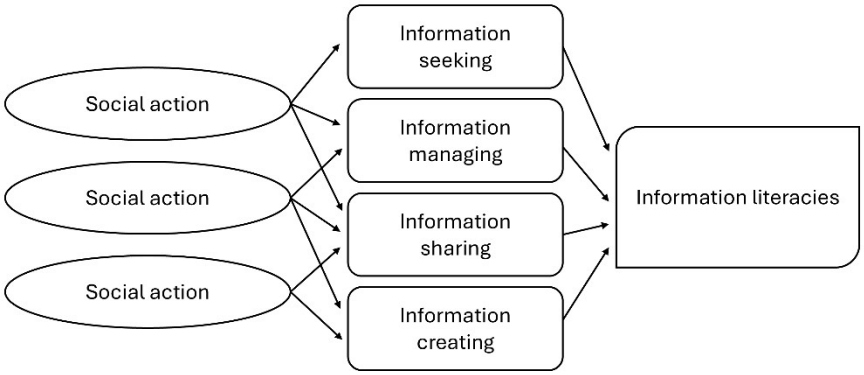

Figure 1. The conceptual model of information literacies in the study.

A recent systematic review argues that the core information activities are information seeking, sharing and use, with less focus on practices like information creation or avoidance (e.g. Zhong et al., 2023). Building on Savolainen's (1995) influential model of Everyday Life Information Seeking (ELIS), McKenzie (2003) categorises information-seeking practices into distinct modes of active seeking, active scanning and non-directed monitoring, for example. Here non-directed monitoring is related to serendipitously coming across information while not seeking it all, also conceptualised as information encountering by Erdelez (2005). While information creation is a central social media activity, it has only recently gained attention in information research (Ju et al., 2022). Empirical studies have variously described information creation, for instance, as '*making contributions to the information world*' (Koh, 2013, p. 1826) and bringing information into existence (Trace, 2007). On social media creation of content is often closely linked to information sharing, as created content is often repeatedly shared to other users (e.g. Harlan et al., 2014). Information avoidance, defined by Hicks et al. (2024, p. 326) as '*practices that moderate interaction with information by reducing its*

intensity, restricting control over it, and/or excluding it based on perceived properties' has gained attention in research, particularly due to global crises and their prominent visibility in the media, which has led, for example, to young people consciously ignoring and avoiding content that triggers negative emotions (Soroya et al., 2021).

Youth information practices in online contexts

Research on youth information practices remains surprisingly limited, with only a few studies exploring young people's information practices in online contexts. For instance, Hirvonen (2022) and Kitzie (2019) examine youth information practices in online discussion forums, where young people engage in seeking, sharing and creating information, pooling opinions and peer experiences, aggregating advice and negotiating the credibility of information. These practices are facilitated by the forums' affordances, such as searchability, visibility, anonymity and social connections. In contrast, Jylhä et al. (2024) highlight how algorithmic recommendation systems encourage more passive information practices, reducing the need for active searching and critical evaluation of information. Vacca's (2024) study on Afro-Latino youth engaging with social media mental health content reveals how young people use platform features to shape their information practices, creating algorithmically mediated spaces to promote alternative narratives, foster identity and community resilience and avoid negative content.

Like Kitzie's (2019) findings on LGBTQ+ youth, Vacca's study demonstrates that young people are adept at shaping and navigating their online environments to meet their information needs. Multas and Hirvonen's (2022) study on young video bloggers' information creation practices supports this view and shows that young people engage in various interconnected and embodied practices, such as planning, organising, seeking, editing and presenting information. Their research highlights the importance of genuineness, authenticity and experience-based competence in social media information creation.

Methodology

The research data was produced in a co-research project as part of the TUBEDU research project. Co-research is a participatory and multi-perspective research strategy that aims to increase the inclusivity of research by inviting people whom the research concerns to participate as active and influential agents throughout the research process. These people are valued as experts in *the studied world*. Knowledge generated through lived and felt experience is, thus, at the heart of co-research and guides the co-research process from designing research to its implementation and reporting in appreciation of different skills, perspectives and therefore different forms of knowing. (Kulmala et al., 2024; James and Buffel 2022; Liddiard et al. 2022). The co-research participants, thus, with support from professional researchers, play a significant role in defining the research design, including the research questions and methods for data production and analysis. For example, in our co-research, young people engaged in producing new knowledge on various aspects of peer support in social media through peer-to-peer interviews, focus group interviews, autoethnography and a questionnaire.

Despite the development of information research towards sociocultural thinking and so-called user-centred research, the use of participatory research strategies in the field remains limited (Nesset et al., 2024). Nesset et al. (2024) recognise a few recent trends towards more human-centred approaches within the field, focusing for example, on participatory design and participatory action research in library settings (e.g. Singh, 2020; Somerville and Brown-Sica, 2011; Turner and Gorichanaz, 2016) and system- or service-based co-design processes with different groups (e.g. Augusto et al., 2018; Bers et al., 2018). However, Nesset et al. (2024) point out that some of these studies do not fully align with participatory principles and end up strengthening the hierarchical power relations in their research. Participatory research strategies such as co-research have the potential to enhance the impact of information research by promoting inclusion

and fostering more democratic data production methods. By actively involving the individuals most affected by the topic, particularly youth, these approaches help ensure that their perspectives are central to the study. As Agosto (2019) emphasises, there is a pressing need for studies that gather data directly from young people and understand their information worlds from their unique cultural and personal viewpoints.

Data and analysis

The data production was conducted in collaboration with students' mental health organisation Nyyti ry from September 2023 to February 2024. Participants in the study were recruited through Nyyti's social media channels and email lists. Nyyti ry is a Finland-wide umbrella organisation, the member organisations of which are mostly large student organisations of different universities in Finland, yet the oldest Finnish mental health organisation Mieli ry is also a member. Via its communication channels, Nyyti has a large outreach of students throughout Finland. However, Nyyti's activities are mainly targeted at students in higher education (i.e. university students, including those in universities of applied sciences), which is why we can assume that it best reaches out to young people who study in Finnish universities.

The participant selection criteria were an age range of 18–29 years and an interest in mental health and social media issues. In the first phase, two focus group interviews were arranged with four young people participating in the first interview and two in the second. Interview questions included questions on social media use and the role of peer support especially related to mental health. The second phase was organised as co-research with five young co-researchers who were compensated for their work by fees. The co-research team included five co-researchers, three researchers from the project and a social media communication expert from Nyyti. The team worked together in five workshops (November 2023 – February 2024) with a goal to discuss scientific research and co-research as a methodology, design individual subprojects, analyse data, and plan the dissemination of findings. The substudies were implemented in researcher-co-researcher pairs focusing on the chosen research questions. Via the different substudies, a total of 21 young people participated in the project. The data for this study consists of a subset of the material collected in the research project including audio recordings and their verbatim transcripts of two focus group interviews [FGI 1&2] (a total of 3h 49min), two co-research workshops [WS 1&2] (a total of 5h 56 min), and two peer interviews [PI 1 & 2] (a total of 1h 25min) and one group interview [GI] (1h 28min) produced by co-researchers. In total, the data includes 133 pages of transcripts.

The data analysis was conducted through qualitative content analysis which had both inductive and deductive elements (see e.g. Miles and Huberman, 1994). The coding scheme was built deductively based on the conceptual model of information practices as mediated actions presented previously (Figure 1) and modified along the analysis as new categories emerged inductively (Miles and Huberman, 1994). The unit of analysis was determined as the explication of a mediated action (Wertsch, 1994). The coding began with identifying these explications of actions related to navigating social media and then unitising the citations. The social actions identified in the data were then conceptualised into different information practices. The strategies for verification and validation employed in this research were member checking through the co-research process, seeking saturation in analysis, peer reviewing findings in research seminars and conferences as well as documenting the research process (Morse, 2018).

Findings

The analysis reveals that the central topic occurring in the discussions with young people was the construction of a '*positive social media bubble*' which appears as a strategy that young people employ to enhance their mental wellbeing by for example seeking positive content and limiting negative. To reach this goal, the participants employed several information practices that were

strongly influenced by the platforms' technological features, such as algorithmic recommender systems.

Seeking and encountering useful and relatable information

Most of the participating young people explained that they encounter mental health information on social media on a regular basis. However, they also recognised that encountering certain types of information was impacted by the recommendation system and based on your earlier engagement and reactions on the platform; for example, liking or commenting on posts and searching with certain hashtags. Encountering health information was seen as a good thing if it was perceived as useful, such as posts shared by mental health organisations or those related to specific events. On the other hand, Joni described that continuously coming across similar type of mental health content may get overwhelming:

> *Maybe in terms of mental health content, like on Instagram, and for others as well, there's a lot of self-help material, and it's starting to get a bit much, like 'how to get rid of anxiety in 2 minutes'.* [G1, Joni].

Joni also mentioned that the encountered mental health information is highly gendered, focusing mostly on the female perspective. Encountering mental health information was considered as a means to educate yourself and develop self-awareness, as explained by Sini:

> *Through social media, at least, it's the fact that you can easily access information, and there are accounts that share mental health-related stuff, and everything is presented in a way that you'd assume young people might not know how to search for that information elsewhere. But then, when it comes up on social media, maybe that's how they end up learning to understand themselves better and so on. And they might learn to demand better for themselves.* [FGI2, Sini]

One way that participants ensured they encountered positive mental health information was by actively scanning social media, consciously selecting who to follow and which types of accounts to engage with, as these could provide valuable and supportive content over time. For example, Edith explained that '*I've personally made a conscious choice about the type of content I follow, because I've noticed it has such a big impact on how I feel*' [FGI1, Edith].

Actively seeking mental health information on social media was seen as important for enhancing your mental health but also as hard work. Finding good and positive mental health content and accounts to build your positive social media bubble takes time and involves understanding how algorithms work and managing the overwhelming amount of information to focus on what feels relevant for you, as described by Nina:

> *Then there's also the point that it takes quite a lot of effort to find accounts with good content. They're not really recommended by platforms like Instagram or anything, so you have to spend time going through them to find accounts that work well for you.* [WS1, Nina]

Other participants identified the impact of algorithms as well. For example, when searching for information about ADHD, Aada noticed that '*social media, especially TikTok, kind of adapts the feed. Like, if I see a video from someone talking about ADHD, my feed might change in just an hour to show more videos on the same topic*' [FGI1, Aada].

Evaluation of the content was connected to relevance and authenticity of the content. Especially in relation to mental health information, authentic peer experiences were considered central, as Edith expressed: '*I'm interested in following people who are authentic, and that's the kind of content I consume*' [FGI1 Edith]. Most of the young people searched for fact-based content produced by mental health professionals and organisations as well as experience-based content produced by

peers. The experiences of other young people on mental health struggles and, for instance, about their diagnoses, was seen as important, as described by one participant:

> *And I've also searched for or gotten a lot of information about different mental health disorders, especially, and mental health in general, specifically from Instagram, TikTok, and YouTube. Especially when I've been wondering, in a way, what's wrong with me, I've found connections when people have shared their own experiences.* [FG1, Minja]

Most participants, especially women, felt that they receive peer support related to mental health through social media. In the group interview with men, it emerged that it is not easy for men to find peer support on social media, partly because mental health content is often presented from a woman's perspective. However, according to the participants, social media provides access to mental health information that is often unavailable elsewhere. This includes information on sensitive topics, such as mental health issues affecting LGBTQ+ youth or severe mental health disorders. Sometimes social media is the only place where young people can find peer support for their mental health challenges.

Filtering and avoiding information to reduce exposure to negative content

A central theme in the discussions on enhancing mental health through social media was filtering and even avoiding content that may be scary or upsetting and thus, evoke negative emotions. As one participant explained

> *we've talked about the algorithms and everything, it's about drawing a line for myself in terms of what content I follow, so I don't get too caught up in any dark places on social media* [FGI, Edith].

Another strategy to avoid negative content is to limit who you follow and who follows you:

> *So, I started to filter out the accounts I follow and removed some, even if they were people I knew, but if they didn't somehow support my mental health or if they were harmful, I'd rather just remove them completely. I only follow those who somehow support me.* [R2, Sini]

Sini continued to explain that some of her followers didn't resonate with the content she posted, so reducing the number of followers became a way for her to better understand herself and discover her own opinions. The participants also expressed that they were able to handle the social media algorithms so that they could actively avoid negative content:

> *It's kind of like, if you don't want to see something, you try to avoid it, and gradually it starts disappearing. Of course, it also depends on the algorithms, but I think TikTok has a system where if you start skipping certain content or give feedback saying you don't want to see that kind of stuff, it stops showing it for you.* [WS1, Kia]

Kia continued and explained that '*the individual is still responsible for setting those boundaries about what they want to see*,' and filtering out and avoiding content as part of building a positive social media bubble was considered as '*a shield against negative things*' [WS1, Kia]. These negative things could be, for example, content that is harmful or offensive regarding ethnicity, life circumstances, gender or sexuality, as described by Arela:

> *some content is the kind you definitely don't want to read, so you just quickly scroll past it, especially since the content you scroll through can sometimes be offensive to ethnicity or life circumstances. For example, memes about unemployed or homeless people are surprisingly common, and there are also really nasty memes about people of all genders. You don't want to watch that, because the idea behind memes is supposed to be that they're funny.* [PI1, Arela]

Sharing and creating information to gain and offer peer support

The data reveal that creating and sharing of mental health related content are often overlapping activities, and the word '*sharing*' in discussion refers to both, creating new content (comments or posts) and sharing content made by others or by yourself. The centrality of content sharing in social media was emphasised in the discussions with young people. The shared content was usually posts including personal experiences or content by mental health professionals and organisations. However, there appeared to be a gender difference in this regard, as one male participant explained that

> *It's not shared directly there, but it's kind of shared indirectly in another way. It might be that someone else's experience is shared, or maybe something more general. That's how it's shared in principle, but not personally, as such.* [P1, Aaro]

Criteria for sharing were for example, the relatability and usefulness of the content; that is, how much the content offers peer support, but also feelings that the content evoked. For instance, mental health related memes were shared if they were funny and resonated with one's own feelings, as described by Rea:

> *I'm probably the kind of person who deals with really difficult things through humour, so I share a lot of bad memes and stuff like that. For me, it's like I might have laughed at something, and then I'll share it on my Instagram story or something like that.* [FG1, Rea]

One participant explained that they share mental health information found on social media to their close friends or relatives, if they see it could be useful and offer peer support:

> *I think what I was trying to say is that when you know a lot of people, actually a lot of people, who are doing poorly, and then if I come across a video on social media that reminds me of someone close to me, I'm like, 'Wow, this is just like that person'. Then I'll send it to them and say, 'Listen to what this person is saying, you're not alone'.* [FGI1, Lilja]

Creating mental health information was linked to sharing personal experiences, such as in Instagram stories, where young people shared posts from mental health organisations with their own comments. Through this, they not only shared information but also received peer support:

> *I follow quite a few expert accounts on Instagram, so I've shared their content or talked about my own experiences. Then people sometimes message me, saying things like, 'Someone in my circle has been through this' or 'I've had similar experiences,' and it's been a way to get peer support through that, as they've felt comfortable reaching out. I also add at the end that people can message me, since I'm quite open and can talk about these things. Through that, I've also received kind of face-to-face peer support.* [FGI1, Minja]

A few participants explained that creating mental health content on their own accounts on a regular basis was an important way to gain peer support, as described by Sini:

> *I've used social media myself just to talk there, I've started a few years ago to talk really openly about my life and problems and everything, and I've gotten a lot of peer support through it, and in general it's been a really good and important channel for me to talk about things.* [FG2, Sini]

Aada shared this experience and explained that '*as I started sharing things and telling people there that it's okay, and if you're in this situation, everything will work out, it helped me a lot as well.*' [FGI, Aada]. Aada continued to explain that '*since I got help and peer support through social media, I was able to give it more effectively to others, and it also eased my own feelings a lot*'. Creating mental health content to offer peer support was therefore a meaningful way to benefit not only your own mental health but also that of others.

Creating content on your own was also seen as a way to express your thoughts and feelings on your own terms, helping to build a positive social media space for yourself. However, as Sini explained, this process was not easy:

> *Yeah, it was difficult at first, especially accepting it when I realised that the people who were close to me at the time didn't accept what I started talking about. But I decided to continue anyway, because for so many years, I had tried to be what I was supposed to be in order to fit in with everyone around me. So, as I kept going, the people around me changed. Of course, those people left, but many more came in, people who actually wanted to listen to what I had to say.* [FGI2, Sini]

Sini also explained that creating content by yourself was easier than to talk about these things face to face:

> *Maybe it's the fact that I can do it from home. I don't have to let a big group of people in to listen if I want others to hear what I have to say. And I get to do it on my own terms. If I want to be quiet, I can be quiet, but if I have something to say, I can speak without anyone interrupting, and they just listen.* [FGI, Sini]

However, not all participants felt comfortable sharing their experiences publicly. Those who were hesitant expressed concerns about privacy, judgement and the potential impact on their personal lives. On the other hand, young people who did not create mental health content or share their experiences on social media viewed such actions as both courageous and important. They believed that by doing so, it was possible to, for example, reduce the stigma surrounding mental health.

Constructing a positive social media bubble

The insights gathered from discussions with young people offer a deep understanding of how they actively shape their social media environments to support their mental health. The creation of a '*positive social media bubble*' is a strategy designed to protect and enhance one's own mental wellbeing through peer interactions and peer support, as Sini explained: '*Anyway, I've made my social media bubble one where I only follow accounts that reinforce the feeling that I'm not alone*'. This positive social media bubble becomes especially crucial in times when the world feels overwhelming and full of stress and uncertainty, as one participant expressed

> *I know that many people need that kind of positive content, especially since we live in such a performance-driven society. It's nice to have that positive content that promotes soft values and creates a kind of virtual safe space.* [WS2, Pinja]

The participating youth were aware of the media narrative highlighting the negative effects of social media on youth mental health, and wanted to emphasise that there is another side to this story, as most young people are capable of shaping their social media environments so that it supports rather than hinders their mental health:

> *social media can be really bad for you and quite a toxic place. But I think you can influence it a lot yourself by what you do there and what kinds of accounts you follow. It can also be a really positive place.* [FGI2, Pinja]

Discussion

The analysis highlights how young people are active and capable users of social media and utilise social media to enhance their mental health by creating a '*positive social media bubble*'. This involves actively seeking positive content, especially experience-based information and limiting exposure to negative content, a process mediated by platform algorithms. Participants frequently encounter mental health information on social media, which they find beneficial when it is perceived as relatable and useful, particularly including experience-based information on mental

health. To promote a positive environment, young people consciously modify their social media feeds by following supportive accounts and filtering out harmful content. They also engage in sharing and creating mental health-related content, which serves as a means to gain and offer peer support. The active avoidance of distressing content was seen to maintain emotional wellbeing. Participants noted the importance of setting personal boundaries regarding the content they engage with, which they considered essential for protecting their mental health.

These findings align with previous research on youth information practices in online contexts, demonstrating that young people actively shape their social media environments. Similar to Vacca's (2024) study on Afro-Latino youth, participants in this study utilised platform features, particularly algorithmic recommendation systems, as key mediational tools to construct a virtual safe space. However, unlike Jylhä et al. (2024), algorithmic recommendation systems did not lead participants into passive practices but instead encouraged active exploration and innovative approaches to seeking relevant information. Echoing Vacca's (2024) findings, participants viewed creating mental health content and avoiding negative material as ways to boost self-esteem and establish boundaries. In line with Multas and Hirvonen's (2022) study, authenticity played a central role both in content creation and as a key criterion for assessing mental health information. Social connections also emerged as vital, reflecting Kitzie's (2019) study on LGBTQ+ youth information practices. Participants emphasised making conscious choices about who and what to follow, fostering information seeking and continuous active scanning (McKenzie, 2003) of these accounts. This practice often led to serendipitous encounters with valuable information, as well (Erdelez, 2005).

Overall, the findings suggest that while social media can present risks to mental health, young people are adept at shaping their online experiences to create supportive environments that enhance their wellbeing. The health information literacy practices young people enact in social media are dynamic and continuously evolving alongside changes in the technological platforms. Importantly, young people appear capable of adapting to these shifts, engaging in a reciprocal process of transformation with the platforms themselves (Multas, 2022). These health information literacies are also deeply embodied (e.g., Lloyd and Olsson, 2017), interwoven with emotions such as trust, safety, empowerment, fear and uncertainty. Furthermore, they are shaped by the socio-material context in which they occur (Anderson, 2007), highlighting the interplay between technology, social interactions and individual agency. It is important to note that the agency of young people, as agency always, is both facilitated and constrained by wider structural factors (Hitlin and Elder, 2007). Young people are equipped with different resources in their lives which affects their positions and resourcefulness to exert their agency in relation to their health information literacies.

As often in co-research (Kulmala et al., 2024; Nind et al., 2016), the young people who engaged in our co-research can be considered rather resourceful, as all of them had been in, were in or planned to continue to higher education during our study. One of the reasons for that is obvious: the student mental health organisation through which the participants were recruited mostly targets its communication and activities at students in higher education. The fact that participants paid attention to our recruitment call obviously also shows their existing interest in being active in promoting their own mental health or mental health related issues wider in our society. Furthermore, all our participants represented, for instance, the racial and language majority in Finland. All these can be considered, among numerous many other advantages, as resources for the young people to practise their agency for their own (mental) wellbeing. On the other side of the coin, one can assume that there are numerous factors that might place young people in less advantaged positions to practise their agency. For instance, marginalisation, exclusion, lack of supportive social environments, minority stress, active experience of health-related struggles and low education, could be considered as disadvantages to young people in actively shaping their social media environments to support their wellbeing. These dis/advantages are often

intersectional and can cause cumulative inequalities (cf. Crenshaw 1989; Davis 2008). It is, thus, important to pay attention to the societal boundedness of the participants' agency (also Buchert et al., 2023). According to Aaltonen (2013, p. 377), bounded agency refers to agency that is socially situated vis-à-vis social structures, and thus a key dynamic of societal inequalities. The very same structural inequalities that shape our societies generally function in a similar manner in the context of social media and other digitalised platforms (e.g. Buchert et al. 2023; Granholm et al. 2023; Richteric and Abend, 2019). Importantly, one needs to bear in mind that if the algorithms can be taught to feed content promoting positive feelings, they function similarly with harmful content.

Conclusion

The findings reveal that young people actively navigate and shape their social media environments. A key theme emerging from the data is the construction of a '*positive social media bubble*' that supports mental wellbeing. This involves information practices, such as: 1) seeking and encountering content: engaging with algorithms, systems, and people to promote positive interactions and find useful and relatable mental health information, 2) filtering and avoiding content: filtering information to meet information needs, particularly identifying content that provides peer support, while limiting exposure to negative content, 3) creating and sharing content: offering and gaining peer support through content creation, which is both empowering and beneficial for mental health.

These findings indicate that young people's health information literacies encompass highly adaptive information practices, highlighting their embodied, interconnected, social and transformative nature. Such insights can guide the development of health communication initiatives aimed at promoting positive mental health among young people in the digital age. Future research should, however, pay closer attention to how social positions and societal inequalities affect youth health information literacies. This would allow us to better understand the kinds of resources young people need to acquire and maintain their health information literacies necessary to exercise their agency in shaping social media to support their wellbeing.

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It's textbook: controlling the narrative about residential schools in Ontario classrooms

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Abstract

Introduction. Between 1831 and 1996, 149 residential schools were established in Canada with the purpose of assimilating young Indigenous children by stripping them of their language, culture and history. However, residential schools have been historically absent as a topic of study in Ontario primary and secondary school classrooms.

Method. This study examines the way curricula and textbooks approved for use in Ontario classrooms by the Ministry of Education between 1998 and 2024 help control information taught to students about residential schools.

Analysis. These materials are analysed to examine the evolution in the number of times residential schools are mentioned as well as the quality of these descriptions to better understand the culture of information control which surrounds the topic of residential schools.

Results. These educational materials contain a lack in both quantity and quality in the description of residential schools despite a slight increase in the number of times residential schools are mentioned in these materials after 2013.

Conclusion. These results reflect the effects of political information control on educational materials and its impact on the way residential schools have been relegated to the margins of Canadian history in favour of a nationalistic White settler colonial narrative.

Introduction

In 2021, members of the Tk'emlups te Secwépemc First Nation undertook an archaeological survey of the site of a residential school in Kamloops, British Columbia to try to identify possible grave sites on the school's grounds. In their preliminary report, they indicated that the area contained suspected grave sites of up to 215 children, some as young as three years old, who were victims of the residential school system. Canadian and international media quickly seized this evidence and published several news articles on the topic (Nasser and Lloyd, 2021, May 28). This news was met with shock, surprise and outcry throughout the country and the world. The main thought running through the minds of many Canadians was the same: '*How did we not know*?' (Yoshida-Butryn, 2020).

The following paper will seek to answer this question by analysing the way in which residential schools are discussed in curricula and textbooks published in Ontario between 1998 and 2024. These two mediums were chosen as they are the main, government-published educational materials which outline what the Government of Ontario expects students to learn in classrooms. The eight curricula and 28 textbooks published by the Ministry of Education in Ontario during this period did not mention, or hardly made mention of, residential schools prior to 2013. In the past decade, changes have been made to these documents in order to include this history in classrooms and correct the historical absence of residential schools in Canadian education. While the number of times residential schools are mentioned by the Government of Ontario in curricula and textbooks has increased, the quality of these descriptions leaves much to be desired.

This research fits into a broader narrative of information control in education related to the history of minorities and disenfranchised communities. Due to White, nation-centrist conceptions of history in many western nations, minority groups – including BIPOC, 2SLGBTQIA+, and women – have often been relegated to the margins of history and underrepresented in the nationalistic narratives which are taught to children in classrooms. Many researchers, such as Tonia Sutherland, Saidiya Hartman, Krista McCraken, Skylee-Storm Hogan-Stacey and Marika Cifor, have discussed these topics in recent works by outlining the epistemic injustices which minorities face every day, but which are rarely discussed in history books, or in classrooms. This study proposes to add to these works by uncovering the ways in which government regulation in the development of textbooks and curricula in Ontario has created a network of information control which purposefully marginalises the history of residential schools. Using various methods of information control, including mentioning, argumentation strategies, linguistic realisation and placement, curricula and textbooks are being used as political tools of neo-colonisation, which continuously perpetuates cultural genocide.

For the purposes of this study, no other additional educational materials were investigated. While teachers and individual schools are free to supplement what is taught in the classroom with their own lesson plans, videos, media or other forms of knowledge, these materials reflect independent choices rather than official, standardised expectations of the materials which should be taught. As such, while the sources should be acknowledged, the study of their impact on what students learn about residential schools in Ontario classrooms would be better served by a future, in-depth analysis.

Historical context

The history of residential schools in Canada is long and dark. Between 1831 and 1996, a total of 149 residential schools operated in Canada under the control of religious institutions and the Canadian government (Interactive Map - NCTR, 2020). They operated in every province and territory with the exception of Prince Edward Island and New Brunswick, with some residential schools even being located in large metropolitan centres such as Winnipeg, Manitoba (Assiniboia), Regina, Saskatchewan (Regina), Edmonton, Alberta (St. Albert and Edmonton), Calgary, Alberta (Sarcee, St.

Joseph's, and Morley) and Vancouver, British Columbia (St. Paul's). At their peak in the early 1930s, more than 80 schools were in operation at once, housing over 17,000 students. It is estimated that over the 167 years during which residential schools were in operation, approximately 150,000 First Nation, Inuit and Métis children attended schools in one or many of these institutions (Residential Schools in Canada, n.d.).

These students were forcibly removed from their homes by government, police and church officials, along with civil officers such as therapists and counsellors. Once at school, students were often stripped of their names, and they were forbidden from practising their culture and language in order to assimilate into White, Canadian culture. Students faced hunger, loneliness, as well as psychological, emotional, sexual and physical abuse (Residential Schools in Canada, n.d.). Students often faced illnesses because of malnutrition, overcrowding and the generally poor conditions at the schools. It is estimated that anywhere from 2,000 to 10,000 children died while attending residential schools. Many of their bodies were buried on the grounds and, more often than not, parents were not notified that their children had died (National Student Memorial Register, 2019; Residential Schools in Canada, n.d.). The children who survived, known as Residential School Survivors, continue to struggle with deep trauma, including generational trauma, as a result of the long-lasting psychological effects of their experiences. The effects of residential schools continue to impact Survivors and their families in various ways including financially, emotionally, medically and psychologically (Rice, n.d.).

Despite the large number of schools and students, the location of some of these schools in many of Canada's largest cities, and frequent pleas by Indigenous leaders and Elders for recognition and reconciliation on the topic of residential schools, reconciliation was only first offered by the Canadian government in 1998. The Liberal government at the time, led by Jean Chrétien, offered a Statement of Reconciliation which acknowledged the abuse suffered by children who attended residential schools. In 2007, the damage inflicted by residential schools upon Indigenous peoples was further recognised by the Indian Residential Schools Settlement Agreement. This agreement aimed to bring a '*fair and lasting resolution*' to the legacy of residential schools (Government of Canada, 2021). Following this agreement, Conservative Prime Minister Stephen Harper issued an official apology on behalf of the Canadian government in 2008.

During this same period, the United Nations issued Declaration 61/295 titled the *United Nations Declaration on the Rights of Indigenous Peoples* (UNDRIP) on September 13, 2007. The purpose of this declaration was to affirm '*that indigenous peoples are equal to all other peoples*' and recognise the fact that Indigenous peoples in states colonised by various European powers during the era of colonisation have been subjected to and '*suffered from historic injustices as a result of [...] their colonization and dispossession of their lands, territories and resources*' (United Nations, 2007, pp. 2-3). The document outlines a series of articles which would guide nations to create a framework for reconciliation and healing including providing resources for self-governance, education, healthcare and justice while recognising and acknowledging historical injustices and their long-term effects on Indigenous individuals and communities. The declaration was met with worldwide acclaim and was adopted by a majority of 143 states with 11 abstentions. Only four states voted against the declaration: Australia, New Zealand, the United States and Canada. Of these four states, Canada was the last to announce its full support for UNDRIP in 2016.

The publication of UNDRIP by the UN and of the Indian Residential Schools Settlement Agreement by the Canadian federal government in 2007, was followed by the creation of the Truth and Reconciliation Commission (TRC). Formed in 2007, the TRC is the largest class-action settlement in Canadian history. Its goal is to raise awareness and create a historical record of residential schools while promoting reconciliation. Over six years, the TRC was given $72 million and access to over five million records in order to travel across the country and gather both textual and oral evidence of residential schools and their continued impact on Indigenous individuals and

communities in Canada today. Their final report, *Honouring truth, reconciling for the future*, was published in 2015 and consists of a multi-volume record which documents the horrors of the Canadian Residential School System. This report also included 94 Calls to Action which serve as recommendations by the TRC to the government of Canada to further the process of reconciliation between Canada and its Indigenous peoples (Government of Canada, 2024).

The establishment of the TRC and the publication of its report sought to spark a change in the ways in which the history of residential school is taught in Ontario classrooms. Calls to Action 62 to 65 from the section on '*Education for reconciliation*' in the TRC final report advise that the topic of residential schools should be taught to school-aged children from kindergarten to grade 12 (three to eighteen years old) as well as in post-secondary institutions (Annex 1). These Calls to Action request funding for the creation and implementation of age-appropriate curricula on residential schools in consultation and collaboration with Indigenous peoples, particularly residential school Survivors, as well as the integration of Indigenous teaching methods and knowledge practices in Canadian classrooms. They also ask for funding to better train teachers and educators on how to teach about these topics in schools (TRC, 2015, pp. 62-65).

Method

For the purposes of this study, the eight Ontario curricula and 28 ministry approved textbooks published in English between 1998 and 2024 for history courses taught in the 7th, 8th, and 10th grade were analysed in depth by extracting and coding each mention of residential schools in these texts. These passages where coded based on the frequency and quality, in content, wording and placement, with which residential schools are described. Specific keywords, including abuse, death and generational trauma, were of particular interest, to analyse whether the true extent of the residential school system's cruelty was captured in these texts. Extracting each passage and analysing them in this way makes it possible to understand how specific choices made by the government in the creation, publication and wording of educational material impacts the ways in which the subject of residential schools is taught in classrooms.

Grades 7, 8 and 10 were chosen for two reasons: the age of the students, and the structure of mandatory classes in Ontario. The average student in grades 7, 8 and 10 is between the ages of eleven and sixteen. This age group is a crucial moment for the development of prejudice and discrimination. While studies have shown that children as young as three or four can exhibit signs of prejudice (Raabe and Beelmann, 2011; Williams and Steele, 2019), the pre-teen and teen years are also an important moment when these beliefs take hold. Studies on teen peer culture show that it is during this age range that young teens learn to develop their own identities, identities which can be threatened by those they see as *other* or different to their own (Hughes et al., 2016). This period is also fraught with power struggles and rebellious behaviour which can lead young teens to lash out and discriminate against those they see as different or, in the case of youth from minority groups, to experience various forms of discrimination from their peers or adults (Hidgon, 2008; Takamasa et al., 2024). As a result, learning about different peoples and cultures as well as historical injustices committed against minority groups in a school setting is crucial to help teenagers learn about discrimination and prejudice as well as their long-lasting effects on dispossessed communities (Bryan, 2012).

These grades were also chosen because of the ways in which mandatory and optional courses are established in the Ontario school system. In middle school and high school, history is only a required course for graduation in grades 7, 8 and 10. Students are not required to take any other history class outside of these grades. They are also not required to take any humanities courses beyond history except for a Canadian geography class in 9th grade and a half-semester civic and citizenship course in 10th grade. As of 2019, students can also opt to fulfil their Grade 11 English requirement and their Grade 9 Arts requirement by taking Grade 11 English: Understanding Contemporary First Nations, Métis and Inuit Voices and Grade 9 Expressions of First Nations,

Métis, and Inuit Cultures respectively, provided that the school they are attending has a teacher or educator who is qualified to teach these courses and that enough students enrol in the course in order to justify offering it. Students in Ontario do have the right to take optional course credits in history, including six unique courses currently offered on Indigenous history and culture. However, just as the Grade 11 and Grade 9 requirements, these courses are dependent on the availability of trained teachers and demand. As such, for most students attending schools in Ontario, their only exposure to Canadian history in the classroom beyond elementary school is in grades 7, 8 and 10 (Ministry of Education, 2020).

Between 1998 and 2024, four curricula were published for grades 7 and 8 (1998, 2004, 2013 and 2018) and four curricula were published for grade 10 (1999, 2005, 2013 and 2018), for a total of eight curricula for the study of Canadian history. During this same period, 28 textbooks were approved by the Ministry of Education of Ontario based on these curricula: eight for grade 7, six for grade 8, and fourteen for grade 10. For the purposes of this study, these curricula are separated between those published before 2007 (1998, 1999, 2004 and 2005) and those published after (2013 and 2018) so as to reflect the impact of UNDRIP and the establishment of the TRC on Ontario's education system. Textbooks are also separated into two groups. Unlike the curricula, they are not divided based on their date of publication, but rather the date they were approved for circulation in Ontario classrooms by the Ministry of Education: fourteen before 2007 and fourteen after 2007. The educational materials published in these two distinct periods show a clear shift and evolution in the importance accorded to residential schools in Ontario classrooms.

Results

Curricula

The Ministry of Education outlines the four main components of a school curriculum as: (1) mandatory learning expectations, (2) optional teacher supports, (3) curriculum context, and (4) programme planning and assessment and evaluation information (Ministry of Education, 2024a). This first element is the most pertinent for this paper as it outlines '*the knowledge and skills students are expected to learn and apply by the end of a grade or course*' (Ministry of Education, 2024a). In other words, the history curriculum outlines what the Ministry of Education believes to be historically pertinent enough for students to learn and apply. Of the four curricula published before 2007 (1998, 1999, 2004, 2005), none make mention of residential schools. Residential schools are only mentioned for the first time in the Ontario curriculum in the two curricula published in 2013.

In these two curricula, residential schools are mentioned five times in the curriculum published for grades 7 and 8, and ten times in the grade 10 curriculum. Both curricula also include an identical definition of residential schools:

> *Federally funded, church-run educational institutions for First Nations, Inuit and Metis children, these schools were particularly numerous in the first half of the twentieth century, although some continued into the 1990s. Aboriginal children were removed from their families and sent to boarding (residential) schools as part of a government policy of assimilation. Students were deprived of their families, languages, and culture, and some were subjected to physical or sexual abuse.* (Ministry of Education, 2013a, p. 209)

In these curricula, teachers are instructed to teach students about the establishment of residential schools, the increased number of schools opening in the 1930s, the challenges that the schools posed to First Nations, Métis and Inuit communities as well as the short and long-term effects of these schools on these communities.

The two curricula published in 2018 continue to show an increased importance accorded to residential schools. The number of times residential schools are mentioned in the 7th and 8th grade

curriculum increases to 20 and the number in the grade 10 curriculum increases to 17. Beyond the material covered in the two 2013 curricula, the 2018 curriculum for grades 7 and 8 also mentions the impact of residential schools on intergenerational trauma (Ministry of Education, 2018a, p. 282), and the fact that students died while attending these schools (p. 284). While these topics are not included in the grade 10 curriculum of 2018, this curriculum includes a section in the front matter on Indigenous Education in Ontario which pertains to the effects of the legacy of residential schools (Ministry of Education, 2018b, p. 15). Both curricula also contain a definition of residential schools. Unlike the 2013 version, this definition has been edited to remove all mentions of abuse:

> A *network of government-funded, church-run schools for First Nations, Métis, and Inuit children, the goal of which was to eradicate Indigenous languages, traditions, knowledge, and culture and to assimilate Indigenous peoples into mainstream settler society.* (Ministry of Education, 2018a, p. 363)

Therefore, while there is an increase in the number of times residential schools are mentioned in school curricula in 2013 and 2018, there still appears to be a hesitancy to describe the true nature of residential schools as a cultural genocide by not including the forced removal of children, nor the abuse and death which took place.

Textbooks

While curriculum materials are a useful tool to guide teachers and help them decide what to teach, students often never see these curriculum materials in the classroom. Rather, students tend to use textbooks based on these guidelines rather than the curricula themselves. Textbooks are written by historians and educators, but, like curriculum materials, textbooks are also subject to approval by the Ministry of Education. Once a textbook is submitted to the Government of Ontario, it undergoes a rigorous editing process to ensure that the final text contains at least 80 per cent of the required materials outlined in the curriculum before it can be approved. These approved textbooks are published on the Trillium List in Ontario and schools can decide which textbook to purchase based on this list (Ministry of Education, 2024b).

Twenty-eight textbooks were approved for classroom use for grades 7, 8 and 10 between 1998 and 2024, totalling over 10,000 pages. Of those pages, only 61 make mention of residential schools, which equals roughly 0.6 per cent of all content featured in these textbooks. Moreover, no single textbook mentions residential schools on more than nine pages, with eight textbooks not mentioning residential schools at all, sixteen making mention of them less than five times, and only four textbooks mentioning them five times or more. Of these four, three were published in 2014 or later, with the fourth being published in 2000.

There is no clear increase in the number of times residential schools are discussed in textbooks approved for use in classrooms after 2007 until 2014, after the updated 2013 curriculum was implemented (Figure 1). Of the four textbooks which were created after the publication of this new curriculum, three mention residential schools from eight to nine times, with only one grade 7 textbook making no mention of them. Still, this trend suggests that the addition of residential schools in the 2013 curriculum had an impact on the inclusion of this topic in textbooks. Given that no new textbook has been approved by the Ministry of Education for the study of history in grades 7, 8 and 10 since 2016, it is unclear whether this number will continue to rise according to the requirements of the 2018 curriculum and the Calls to Action of the TRC, but, taking in account the jump following the 2013 curriculum, it is likely that the number of pages attributed to residential schools will continue to grow in coming years.

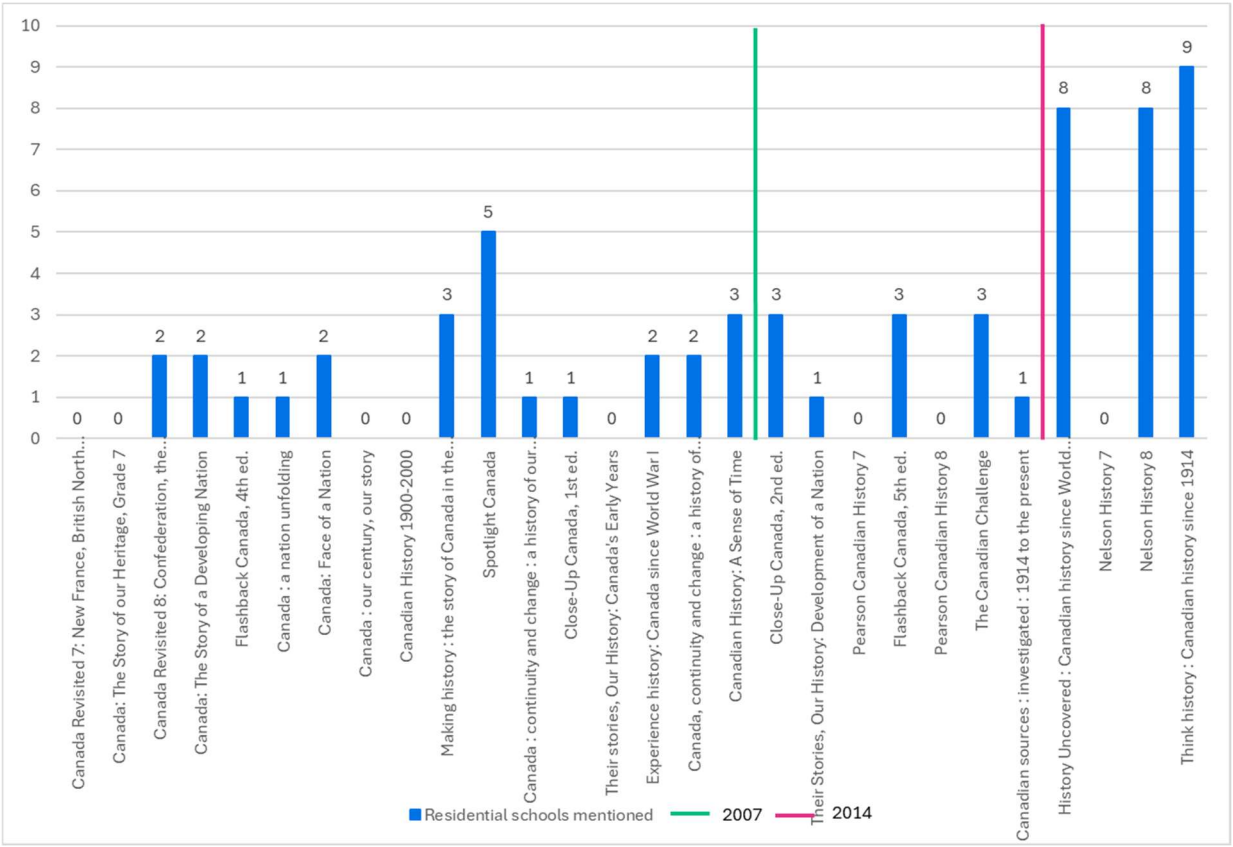

Figure 1: Number of pages dedicated to residential schools in grade 7, 8 and 10 history textbooks in Ontario (1998-2024) listed chronologically.

When residential schools are mentioned in these textbooks, these descriptions vary wildly in terms of quality and placement. Most textbooks define residential schools much in the same way as they are described in curriculum materials: (1) residential schools are acknowledged as tools of assimilation by church and state, (2) students were forcibly removed from their families and stripped of their language and culture, and (in some definitions) (3) students faced abuse while attending these schools. Sixteen out of 28 of the textbooks examined in this study contain at least two of these characteristics when defining residential schools. For example, one textbook defines residential schools as '*boarding schools established by the federal government to encourage First Nations children to assimilate*' (Haskings-Winner et al., 2007, p. 326), while another text may go further in depth to describe them as such: '*Government-established schools in which Canadian Aboriginal children were forced to abandon their traditional culture and assimilate into the dominant European culture*' (Newman et al., 2000, p. 414). The best definitions include all three elements, but these definitions are among the minority:

> *Children were removed from their reserve homes and taken to the schools, mostly run by religious organizations. [...] The schools discouraged children from speaking their first languages and practicing their cultural traditions. Physical abuse was common.* (Borlotta et al., 2000, p. 7)

Comparatively, very few textbook entries diverge from this cookie-cutter definition to further elaborate on what happened in residential schools. Nine textbooks talk about the long-term impacts of the residential school system on Survivors and their families. However, of these, five discuss only the loss of cultural identity, while the other four go deeper to examine the psychological effects of residential school trauma. Only one textbook makes mention of

generational trauma as a result of residential schools. Further, only three textbooks explain that children were often stripped of their names and given Christian names as '*teachers thought their given names were too hard to pronounce*' (Deir et al., 2000, p. 307) and as such, this facet of identity deletion which took place in residential schools is often forgotten.

While abuse is mentioned sixteen times in these textbooks, it is often not further elaborated upon. Rather, the abuse faced by students of the residential school system is often described vaguely. For example, one textbook simply states, '*children suffered from diseases, neglect and abuse at the schools*' without explaining the type of abuse that took place, nor the long-term effects of this abuse on Survivors (Hallman-Chong et al., 2016, p. 4). Only five textbooks specify that the abuse was physical, sexual, and/or mental, and all these books are reserved for grade 10 students. Moreover, the diseases, like tuberculosis, which ravaged the student population due to unhealthy living conditions are mentioned only four times. Likewise, the deaths which occurred because of this abuse and these illnesses are only mentioned in passing in three of the textbooks. Only one textbook mentions suicide (Hallman-Chong et al., 2016). No details about the estimated number of deaths are provided in any of these texts.

Many of these textbooks also have a hard time pinning down the timeline of the residential school system. While most correctly place its apogee in the 1930s, none correctly date its inception in 1831. Of the textbooks which do provide a start date for residential schools, most place it in the 1880s or 1890s and link residential schools to the Indian Act of 1876. Most textbooks also fail to identify the end date of the residential school system. Eight textbooks which provide an end date place it in the 1960s and two place it in the 1980s. Only three textbooks correctly identify the true end date of residential schools: 1996.

The localisation of the descriptions of residential schools in these textbooks is also underwhelming. Residential schools are hardly ever given their own two-page (or more) spread. In fact, only three textbooks spend two consecutive pages discussing residential schools, with one of these books doing so twice in two different sections of the textbook. More often, the pages which mention residential schools only allocate a single paragraph to the matter. This paragraph can measure anywhere between a single sentence to twelve sentences. The remaining passages on the residential school system are contained within boxes which are inserted either on a full page or amongst other text. These *snapshot* boxes occur in eight textbooks. Finally, in thirteen out of 28 textbooks, residential schools are mentioned alongside other discriminatory practices undertaken by Canada towards its minority groups.

Analysis

This paper has shown that while the number of times residential schools are mentioned has increased over time in both curricula and textbooks, it still remains very small when compared to the rest of the content in the textbooks, and the quality of the descriptions pertaining to these topics is still lacking. The question that remains to be answered is: why? Considering Canada's apparent openness to the discussion of the history of residential schools since the establishment of the TRC, and most definitely since the publication of its final report in 2015, why do school curricula and textbooks fall so far behind when it comes to describing the realities of the residential school system? One answer lies in the inherently political nature of curricula and textbooks and their status as tools of information control, particularly when describing historical injustices, prejudice and racialised groups.

In the 1990s, researchers began to question the previous assumption that textbooks were objective and '*unproblematic transmitters of knowledge*' (Roldán Vera, 2018, p. 106). However, most of this research focused on developing countries such as the western colonies in Africa and Asia or socialist nations in Eastern Europe and Latin America (Müller, 2018, 281; Roldán Vera, 2018, 107). According to scholars, these regions were chosen due to the authoritarian government structures

which governed these nations in the twentieth century. It was theorised that the nature of these governments increased state meddling and control in the development of school curricula and textbooks (Roldán Vera, 2018, p. 107). While this assumption has been shown to be correct, it nonetheless presents a western bias that authoritarian regimes are more likely to manipulate history in textbooks to present a positive, nationalistic past to school-aged children.

Textbook and curriculum manipulation is not a phenomenon which is exclusive to authoritarian governments. Democratic regimes also rework the past to suit specific agendas and craft national historical narratives which promote pride while erasing wrongdoings and shameful events. The effect of this historical censorship leads to the further marginalisation of peoples who have suffered at the hands of democratic countries such as BIPOC individuals (Morning, 2008; Araújo and Maeso, 2012), members of the 2SLGBTQIA+ community (Höhne and Heerdegen, 2018), women (Fine-Meyer and Llewellyn, 2018) and other minorities (Hickman and Porfilio, 2012; Chisholm, 2018).

It is only more recently that studies have begun to be produced which focus on how textbooks are crafted with specific political, economic and cultural goals in mind in democratic countries as well (Apple and Christian-Smith, 1991; Choppin, 2008; Fuchs and Bock, 2018; Apple, 2019). According to these studies, '*education and power are terms of an indissoluble couplet*' (Apple and Christian-Smith, 1991, p. 2) and history curricula and textbooks fall under the adage that history is written by the victors. In Ontario, as in many other provinces, curricula and textbooks are created according to a long and complex process of negotiation between the interests of scholars, government officials, publishers, educators and pupils. The final product is essentially a compromise, one which has historically favoured the views of dominant groups (Apple, 2014, p. 9). While scholars have come to accept that this compromise is but one construction of reality, textbooks and curricula, nonetheless, contribute towards the creation of '*what society has recognized as legitimate and truthful*' (Apple and Christian-Smith, 1991, p. 4).

The description of residential schools in Ontario schools follows the same trends as those identified in this new scholarship outlining the politics of information control in textbooks. When discussing residential schools, the creators of these textbooks and curricula employ information control tactics such as mentioning, argumentation strategies, linguistic realisation and placement to include residential schools in textbooks while at the same time limiting the impact of this history.

One tactic used by these educational materials is called *mentioning*. Mentioning is a process which carefully selects knowledge that has previously been excluded and incorporates it in limited ways to appease public demand (Chisholm, 2018, p. 226). The practice of mentioning is frequently employed when discussing the history of non-majority groups in books. By using this technique, minorities and their history are mentioned in text '*but are not developed in depth*' (Apple, 2014, p. 56). These histories are often hidden, sequestered away into small sections which number only a few pages, and are often grouped together, with women, racialised individuals and other minorities all sharing space in a single section on minority groups rather than being granted their own, individual attention (Apple, 2014, p. 56). In the case of residential schools, once the public and the TRC began to make demands for the inclusion of residential schools in curriculum materials and textbooks so that it would be taught in classrooms, the Ministry of Education had no choice but to include it. That being said, they could choose exactly in what ways and to what extent residential schools would be featured in these materials. Residential schools would be mentioned, but only because they could be included while still allowing the dominant group (in this case, White settlers) to maintain a certain amount of dignity and national pride (Apple, 2014, p. 9) and they are often placed in a section featuring the history of other marginalised groups rather than being accorded their own pages.

Argumentation strategies and linguistic realisation are both types of linguistic choices employed by curriculum and textbook creators in this process of mentioning. These linguistic strategies help to promote the point of view of dominant groups as '*official history*' (Oteíza and Achugar, 2018, p. 320). The passages which describe residential schools in textbooks and curriculum materials often use argumentation strategies like justification discourses and the tactic of playing down in order to hide the true dimension of the abuse and violence of residential schools. Authors use justification discourses to make the reader reflect on why residential schools were established, in the hopes that students may see this decision as rational or as justified. One example of this type of linguistic manipulation can be found in the 2018 curriculum for grades 7 and 8. In this curriculum, teachers are provided with possible questions they can ask students to encourage reflection. One of these questions encourages students to put themselves in the shoes of the religious groups which helped run residential schools: '*What have you concluded about why some religious institutions in Canada felt the need to establish residentials schools?*' (Ministry of Education, 2018a, p. 262). These types of questions encourage students to find justifications for the establishment of residential schools and serve to minimise their true nature as tools of assimilation and cultural genocide.

Textbook and curriculum authors are also very careful in their choice of words. The words they choose tend to downplay the actual horrors of residential schools. As mentioned, authors rarely specify the type of abuse undergone by students, preferring to simply refer to *abuse* as a general and vague term. Some textbooks prefer not to mention abuse at all, implying that students were simply '*punished for practicing their traditional spiritual beliefs*' (Cruxton et al., 2001, p. 232). This same tactic is used when textbooks purposefully omit the fact that students died as a result of their treatment in residential school and when textbooks constantly use the word *assimilation* but refuse to use the term *cultural genocide*, which has been identified by both scholars and Survivors as a more appropriate term to describe the effects of residential schools (MacDonald and Graham, 2012; Cohen, 2017; Amir, 2018).

Textbook and curriculum authors also make use of anonymisation to play down the role of White settlers in the violence of the residential school system. To do this, they use broad categories to name the actors such as *the government* and *religious groups* rather than naming individuals responsible for the creation or continuation of the residential school system. Even Egerton Ryerson, one of the fathers of the residential school system, is only mentioned in one textbook (Cruxton and Junyk, 2007, p. 170). Likewise, the role played by the Royal Canadian Mounted Police (RCMP) in the forced displacement of children is not mentioned in any of these curricula or textbooks. These linguistic tactics serve to play down the culpability of individuals and White settlers in the residential school system when it is mentioned in textbooks and curricula.

The placement of these passages in textbooks and curricula also plays an important role in the way that residential schools are mentioned. Passages about residential schools are often lumped in with other discriminatory measures employed in Canada on other minority groups. Residential schools are often found surrounded by passages about civil rights struggles for Black Canadians (Newman et al., 2000, p. 186; Cruxton et al., 2000, p. 354) and for women (Arnold et al., 2000, p. 337; Borlotta et al., 2000, p. 210; Bain and Flaherty, 2000, p. 286). In curricula, residential schools are often compared to Japanese Canadian internment camps during the Second World War (Ministry of Education, 2018b, p. 128). As a result, Indigenous and minority struggles tend to be lumped together into a small section about racism and discrimination rather than adequately contextualised and given their own section.

The placement of descriptions of residential schools in *snapshot* style boxes also contributes to this process of mentioning. In both cases, residential schools are awkwardly inserted with very little context, or sandwiched by pages of White colonial history, making them seem like an intruder which does not quite belong within the rest of the narrative. This approach is commonly taken

when discussing minorities in school textbooks and leads to *othering* minority groups by placing them outside the main narrative of the text, one of nation building and the inevitable and commonsensical development of a White, capitalist settler society (Carleton, 2011, p. 101). Othering and mentioning residential schools in these ways gives the impression that they are but a small, inconsequential chapter within a larger, more important nationalist narrative.

Conclusion

In brief, since the publication of the two 2013 curricula for grade 7 and 8 and for grade 10 history classes in Ontario, there has been an increase in the number of times that the residential school system is mentioned in both curricula and textbooks. However, the quality of these descriptions is still severely lacking. When residential schools are mentioned, the wording used is chosen in a way that absolves White guilt, and the placement of these passages equates the residential school system to the struggles and discrimination faced by other minorities in Canada rather than identifying its true nature as an attempt at cultural genocide. All these tactics are carefully employed by the Ministry of Education and the Government of Ontario to control the quality and exactitude of the information about residential schools which is presented to students.

These approaches of information control employed by a government body in Ontario are in direct opposition to creating an environment of reconciliation and openness. By controlling information about residential schools in these ways and limiting the exposure of students to the true extent of the horrors which children their own age were forced to undergo, the Ontario government is further perpetuating the cycle of violence and discrimination which continues to impact First Nation, Inuit and Métis communities to this day. The staunch adherence to a White, nationalistic narrative, and the continued marginalisation of the history of minority groups, including the mere 0.6 per cent of textbook pages reserved to residential schools, shows clearly that the Government of Ontario has a long way to go to improve its transparency and openness on the topic of residential schools and the way they are presented in classrooms.

Of course, textbooks and curricula are only guidelines which teachers and educators are encouraged to follow in the classroom. This study does not consider what teachers reference from these materials, what information is added off-book, and what students learn from these materials. It would be interesting to uncover how textbooks are used by teachers and students in these contents, especially since most schools only have access to one textbook (rather than 28 as in this study) and that schools may not necessarily have the resources to purchase new textbooks every time a new curriculum is published. Students and teachers may very well be using material which is a decade out of date by the time that new textbooks are purchased in accordance with updated curricular standards. The information behaviour of teachers and students pertaining to discussions on residential schools in the classroom would thus benefit from further research.

Annex 1

62. We call upon the federal, provincial, and territorial governments, in consultation and collaboration with Survivors, Aboriginal peoples, and educators, to:

> i. Make age-appropriate curriculum on residential schools, Treaties, and Aboriginal peoples' historical and contemporary contributions to Canada a mandatory education requirement for Kindergarten to Grade Twelve students.
> ii. Provide the necessary funding to post-secondary institutions to educate teachers on how to integrate Indigenous knowledge and teaching methods into classrooms.
> iii. Provide the necessary funding to Aboriginal schools to utilize Indigenous knowledge and teaching methods in classrooms.
> iv. Establish senior-level positions in government at the assistant deputy minister level or higher dedicated to Aboriginal content in education.

63. We call upon the Council of Ministers of Education, Canada to maintain an annual commitment to Aboriginal education issues, including:

> i. Developing and implementing Kindergarten to Grade Twelve curriculum and learning resources on Aboriginal peoples in Canadian history, and the history and legacy of residential schools.
> ii. Sharing information and best practices on teaching curriculum related to residential schools and Aboriginal history.
> iii. Building student capacity for intercultural understanding, empathy, and mutual respect.
> iv. Identifying teacher-training needs relating to the above.

64. We call upon all levels of government that provide public funds to denominational schools to require such schools to provide an education on comparative religious studies, which must include a segment on Aboriginal spiritual beliefs and practices developed in collaboration with Aboriginal Elders.

65. We call upon the federal government, through the Social Sciences and Humanities Research Council, and in collaboration with Aboriginal peoples, post-secondary institutions and educators, and the National Centre for Truth and Reconciliation and its partner institutions, to establish a national research program with multi-year funding to advance understanding of reconciliation. (Government of Canada, 2024)

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From consciousness to actions: shaping the library consciousness of ethnic minorities with an actor-network theory approach

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Abstract

Introduction. Ethnic minorities (EMs) are a significant focus for public libraries striving to enhance more inclusive, egalitarian and sustainable services. Despite the availability of library services to EMs, their engagement in libraries is still relatively low, which can be further attributed to the lack of library consciousness.

Method. This study selected City L, an autonomous city for EMs located in the southwest of China, as the research site to explore the human and nonhuman actors of EMs' library consciousness. The ethnographic method was conducted through a 12-month longitudinal observation and engagement in City L. A total of 35 government officials and librarians, as well as 128 EM residents, were interviewed.

Analysis and Results. Adopting actor-network theory as an approach, the thematic analysis reveals the interactive relationship and translation process between human and nonhuman heterogeneous actors (including cultural traditions, education levels, information acquisition channels, economic conditions, EM residents, librarians and government officials) in the establishment of EMs' library consciousness.

Conclusion. Cultural traditions were positioned as the focal actor due to their influence on EMs' knowledge acquisition processes. Based on the findings, stakeholders in EMs' library services can take corresponding actions to shape EMs' library consciousness.

Introduction

As institutions of equity and access, public libraries have the responsibility to provide services for multicultural communities (IFLA, 2009) and contribute to building community, creating social capital and bridging digital divides (Kinney, 2010; Scott, 2011; Vårheim et al., 2008). Central to their mission is the provision of services that are inclusive and comprehensive, ensuring that all individuals, including ethnic minorities (EMs), have equal opportunities to benefit from the information services they offer (Elliott, 1986a, 1986b, 1999; IFLA, 2009). As integral members of society, EMs are a significant focus for public libraries striving to enhance more inclusive, egalitarian, and sustainable services (Geraldo, 2021).

Many countries have established specialised library services for EMs, with some even incorporating these services into national policies (Berger, 2002; Thorhauge, 2003). In China, library services for EMs have made significant progress in several aspects such as increase in resources, acceleration in digital transformation, and enhancement of librarian competencies (Feng Y., 2018b). This progress indicates that EMs have enough and equal access to libraries and successfully bridged the first-level digital access divide (Feng W. et al., 2024). However, despite the presence and availability of library services in China, a discernible gap persists in the engagement of libraries among EMs (Ke and Peng, 2018; Shi et al., 2023; Zhou et al., 2020), which has been further attributed to the lack of library consciousness by several scholars (Li, 1996; Liu Z., 1989; Zhang Y., 2019). Library consciousness refers to the recognition, awareness, appreciation and engagement with library services and resources (Liu G. and Fu, 2002; Wang Y., 1998). The lack of library consciousness is particularly concerning as it may indicate both subjective and objective barriers to accessing information. The constraints behind the lack are multifaceted and require a nuanced understanding to address effectively.

Some important actors, such as the government (Tanackovic et al., 2012b), library associations (K. Kim and Sin, 2008), national libraries (Fuentes-Romero, 2004), and community leaders (Weller, 2005), have been identified to influence EMs' access to and engagement with library services. The previous literature has indicated that both human and nonhuman actors can affect EMs' library consciousness. However, there is a lack of in-depth empirical research and descriptive focus to conceptualise these actors and their relationships, which limits the applicability of current findings.

To address these gaps, this study contends that actor-network theory (ANT) should be introduced to library consciousness studies. The systematisms between human and nonhuman actors are emphasised by ANT, which also focuses on the formation and translation of networks between actors (Latour, 2007; Sovacool and Hess, 2017). This research aims to identify actors influencing EMs' library consciousness and examine their interactions in shaping it. To our knowledge, this is the first empirical study to explore EMs' library consciousness. Through achieving the above objectives, the study can practically offer some useful insights for related groups to strengthen EMs' library consciousness, therefore helping them overcome the second-level and third-level digital divide. Theoretically, this study can contribute to the current literature by conceptualising EMs' library consciousness from the perspective of ANT.

Literature review

Library consciousness

The concept of *library consciousness* was first used by Ranganathan (1950) to describe the awakening of awareness regarding the value and significance of libraries in rural India. Thompson (1954) also noted the awakening of library consciousness in the Middle East, where libraries played a dual role as both indicators and catalysts of social change. The social transformation and religious differences across different countries in the Middle East have presented distinct challenges to librarianship development. Recognising the importance of library consciousness, the *Library Awareness Program* was launched by the United States government in the 1970s to collect

information on the reading habits of library users (Fitch, 1992). However, research on library consciousness across the international academic community is quite limited and previous research or programmes did not provide a unified definition of library consciousness.

In the Chinese context, library consciousness has been articulated across four key dimensions: the government, librarians, the public and the news media (Li, 1996). Wang Y. (1998) defines library consciousness as the degree to which individuals recognise the importance of libraries. This recognition implies that when faced with information requirements, individuals consciously think of libraries and actively engage with libraries, fostering a sense of responsibility for libraries' survival and development. Wang Y.'s (1998) definition of *library consciousness* has been adopted by several Chinese scholars (Cheng, 2006; Wang R., 2012; Zhang S., 2008). Subsequently, Liu G. and Fu (2002) differentiate between narrow and broad definitions of library consciousness. The narrow definition focuses on the recognition and use of traditional libraries, while the broad definition includes awareness and utilisation of all information resources related to libraries, such as document collections, exhibition spaces, digital platforms and mass communication channels.

Although these definitions from Chinese scholars are not yet unified, they reflect the public consciousness within the mindset culture, according to the cultural formation theory proposed by Feng Tianyu, a renowned Chinese cultural historian. As suggested by this theory, culture can be classified into four levels, moving from external to internal: material culture, institutional culture, behavioural culture and mindset culture. Changes in material culture are the most noticeable, while mindset culture constitutes the core of cultural identity. Mindset culture is characterised by public consciousness that operates as an instinctive *subconscious* or *collective unconscious*. This consciousness is difficult to grasp and navigate due to its remarkable stability and continuity. Consequently, consciousness does not always correspond directly or swiftly to social and environmental changes (Feng T., 2013). The development of librarianship among China's EMs mirrors the patterns of consciousness formation. Given that significant advancement has happened in EMs' library services with historical, industrial and societal progress, EMs' library consciousness has developed slowly (Zhang Y., 2019).

The lack of public library consciousness hinders the development of reading societies and cultural communities (Liu G. and Fu, 2002). Various groups, including students (Al-Muomen et al., 2012), the elderly (Liu X., 2008) and adolescents (Ruan, 2006; Zhang S., 2008), demonstrate limited library consciousness. The strength of library consciousness also differs across sectors (Sang, 2006). Factors influencing public library consciousness include social productivity, public educational attainment, the completeness of information resources, as well as the societal promotion, public perceptions and operational philosophies of libraries (Wang Y., 1998; Zhang S., 2008). Library consciousness can be fostered and cultivated through various actions, such as strengthening collaborations between libraries, utilising functions of library societies, strengthening social publicity of libraries, improving competencies of librarians, and rethinking service philosophies of libraries (W. Feng et al., 2023; W. Feng and Zhou, 2023; Ruan, 2006; Wang R., 2012).

Library services for EMs

In the west, EMs are often viewed as marginalised and vulnerable groups, such as immigrants, refugees (Berger, 2002; Vega and Rumbaut, 1991) and people of colour (Kim K.-S. et al., 2007), primarily stemming from a colonial past as displaced communities (Cabecinhas and Feijó, 2010; Foster, 2023). Even after generations in host nations, they struggle to form a cohesive cultural identity, which may contribute to social tensions and potential conflicts (Bahouli, 2024; Hu and Cheung, 2024). Public libraries are instrumental in nurturing the cultural identity and values of multicultural populations, including EMs (IFLA, 2009; IFLA and UNESCO, 2012), by fostering intercultural dialogue and developing diverse library services (Buttlar, 1994; Elbeshausen and Skov, 2004; Tanackovic et al., 2012b, 2012a; Weller, 2005; Zhou et al., 2019).

To achieve this mission, several nations have provided diverse library services tailored to EMs. For instance, serving as inclusive community spaces for EMs, Danish libraries are tasked with providing information resources in the native languages of immigrants and refugees, along with Danish language instructional materials to facilitate their integration into Danish society (Berger, 2002; Thorhauge, 2003). Similarly, despite some EM groups having resided in Croatia for generations, there remains a demand for library resources in their native languages. However, their library usage frequency is still lower than that of other information sources such as television, newspapers, and the Internet (Petr, 2004; Tanackovic et al., 2011, 2012b). In the UK, public libraries often collaborate with self-help organisations serving EMs to provide educational and informational services in their native languages. However, EMs in the UK generally prefer to access services outside the public sector (Elliott, 1986a, 1986b, 1999).

Despite the diverse services offered by libraries to EMs, the overall library utilisation rates of EMs remain low (Hansson, 2011; Shi et al., 2023). This suggests that the low engagement with library services is more likely attributable to internal factors within EMs, with a fundamental lack of library consciousness being the primary cause. This deficiency in library consciousness may be associated with various factors, such as cultural adherence, language barriers, socioeconomic disparities, potential racial discrimination, absence of materials reflecting EMs' cultures and a shortage of professional librarians (Ellis, 1983; Matthews and Roper, 1994; Thwaites, 1993; Tufte and Riis, 2001; Wu et al., 2022). Consequently, to enhance EMs' engagement with libraries, it is imperative to not only continue improving library services but also to focus on nurturing their library consciousness.

Library services for EMs in China

China is home to 56 ethnic groups, with the *Han* nationality as the majority and the other 55 groups classified as EMs. China views its EMs as equal and integral members of society, each with unique cultural traditions (Feng Y. and Cheung, 2008; Ma, 2006). Although these groups represent a small percentage of the total population, their settlements are distributed across approximately 60 per cent of the country's territory(Mackerras, 2018). China's EM policy emphasises national equality and ethnic unity by protecting EMs' languages, cultures and traditions and promoting harmonious coexistence among all ethnicities. This principle guides the mission of Chinese libraries to ensure EMs' equitable access to and utilisation of library services (Qin, 2023; Yao et al., 2024).

Since the Reform and Opening-up period, libraries in China's EM regions have made significant progress, as demonstrated by the increasing number of libraries, enhanced operational standards, enriched information resources, improved service quality, and strengthened librarian competencies (Feng Y., 2018b; Zhou et al., 2020). These advancements enable libraries in China's EM regions to play crucial roles in fostering cultural confidence, safeguarding cultural heritage, promoting social equity, supporting rural revitalisation, fostering ethnic unity and facilitating intercultural exchange and integration (Feng Y., 2022). More importantly, the *Public Library Law of the People's Republic of China* (2018) has included provisions for supporting librarianship development in EM regions, thereby providing essential backing for its advancement.

Despite progress in external conditions for librarianship in China's EM regions, library consciousness remains underdeveloped (Wang H. et al., 2015). Empirical studies highlight constraints on this growth. For instance, Ke and Peng (2018) examined public cultural services in a Guiyang EM town, identifying issues such as limited local government investment, inadequate promotion of EM cultures and neglect of vulnerable populations. A survey of 29 grassroots libraries in EM regions revealed significant challenges in cultural service provision, librarian training and service promotion (Zhou et al., 2020). Recently, Shi et al. (2023) conducted longitudinal fieldwork in the Wuling Mountain EM regions, uncovering factors hindering librarianship development, including a unique organisational framework, low public interest in library services, a disconnect between agency autonomy and incentives and insufficient community engagement in library development.

To address these constraints, Chinese scholars have proposed certain strategies, such as providing multicultural and multilingual services in EMs' public libraries (Wu et al., 2022; Zhou et al., 2019), improving digital services for EM residents (Feng Y., 2018a), and increasing investment on librarianship in EM regions (Feng Y. et al., 2023). Nonetheless, these strategies are overly general and insufficient for improving EMs' library consciousness.

ANT as an approach

Actor-Network Theory (ANT) conceptualises society as a network of interconnected actors. It challenges traditional understandings of agency and social structures by proposing that all entities, whether human or nonhuman, are part of a network of interactions (Sovacool and Hess, 2017). ANT emphasises the construction of *actors* and the networks through which they operate, arguing that these networks are not pre-given but are constructed through ongoing social processes (Dolwick, 2009).

In ANT, an actor possesses agency to influence its surroundings, create dependencies among other elements and translate the intentions of others into its own language (Callon and Latour, 1981; Dolwick, 2009; Latour, 2012). *Actor* encompasses both human (e.g., individuals, organisations) and nonhuman (e.g., ideas, technologies, visions) entities (Latour, 2007). *Network* is neither a purely technological construct like the Internet nor a representation of informal ties among human actors as stated by Granovetter (1973). Instead, the network serves as an effective tool for understanding the processes of connection and operation among actors.

The establishment of an actor network is contingent upon the ongoing translation of interests among its actors (Callon, 1984; Cohen and Cohen, 2012; Latour, 1983). Translation refers to the process by which actors strive to articulate the interests of other actors on their terms (Law and Hassard, 1999). Callon (1984) outlines four stages of translation, which are interwoven rather than occurring in a strictly linear fashion. If the translation process is successful, the focal actor '*speaks for others but in its own language*' (Callon et al., 1986, p. 26).

The first stage is *problematisation*, where the focal actor defines the common problem/goal and the '*obligatory passage points*' (OPP) to solve the common problem. To enter the network, other actors must pass OPP and align their interests with the common solutions. This stage positions the focal actor as essential and indispensable within the network (Callon et al., 1986). The second stage is *interessement*, where the focal actor attempts to lock other actors into the roles it has proposed (Law, 1986). In the second stage, the OPP serve as the channel to achieve the interest of all actors and further enhance the interaction between actors. The third stage, *enrolment*, seeks to incorporate as many actors as possible into the alliance. The effectiveness of the solutions to the OPP determines the actors' ability to integrate into the network and impacts the stability of the network. The final stage is *mobilisation*, where the focal actor transforms its network into representatives for other actors, and actors are motivated to actively work together to go through the OPP (Shiga, 2007).

ANT is familiar in the field of library and information science (LIS). It has been used to guide librarians to better train students (Lihosit, 2014), analyse the informal learning environment of libraries (Loh and Nichols, 2020) and examine the design and inclusion of specific objects within libraries (Parker, 2021). In information system research, it is important to explore not only the technical and social systems individually but also the phenomena that arise from their interactions. ANT offers a robust qualitative analysis tool that enables researchers to gain a deeper and more systematic understanding of information systems and their impacts (Hanseth et al., 2004; Orlikowski and Iacono, 2001; Walsham, 1997).

Enhancing EMs' participation in libraries is essential for building cultural networks, strengthening identity recognition and promoting ethnic unity (IFLA, 2009; Kuang et al., 2023). To achieve these

common goals, establishing EMs' library consciousness has become the OPP in the actor network. Although EMs' library consciousness is not strong, ANT can be utilised to analyse the intricate interactions of actors involved in establishing library consciousness and promote future actions of actor network formation. Thus, ANT is employed by this research as the analytical tool.

Research methodology

This research utilised an exploratory inductive approach since there is '*a general lack of knowledge*' (Elman et al., 2020, p. 24) about the topic of EMs' library consciousness. Ethnography, as a classical inductive approach, has a long history of use in social studies, especially in studies that focus on social-cultural issues (Berg and Lune, 2017). In this way, tacit and fragmented internal ideas can be gradually translated into scientific knowledge that outsiders can understand and accept (Berg and Lune, 2017). Thus, ethnographic methods were employed to gather detailed information about the cultural practices, beliefs and attitudes of the EM community towards libraries and information access. This method has been adopted by certain previous research in studying EMs' cultural issues (e.g., Bansal et al., 2022; Coombes, 1991; Takenaka, 2009; Taylor, 2008).

To gain firsthand insights into the local EM community, the first author registered for the Western Development Volunteer Programme (https://xibu.youth.cn/) supported by the Central Government of China. This programme, initiated in 2003, selects postgraduate students and graduates to provide voluntary services as government servants in China's developing regions. With the support of this programme, the first author conducted a twelve-month longitudinal ethnography from July 2022 to June 2023.

The ethnographic fieldwork was carried out in an autonomous city for EMs in the southwest of China, which, for the sake of anonymity, will be assigned the pseudonym City L. City L encompasses a diverse population consisting of 37 EM groups, accounting for approximately 80 per cent of City L's total population. This unique demographic composition offers a rich context for exploring EMs' library consciousness. Additionally, a comprehensive library system has been established in City L. This includes a municipal library, eight county/district libraries, 66 township/neighbourhood libraries, and numerous village-level rural libraries. However, EMs in remote areas of City L, characterised by high altitudes, limited resources and dispersed populations, particularly suffer from a lack of library engagement and show a lack of library consciousness. This disparity highlights the ongoing relevance of studying EMs' library consciousness in City L, making it an ideal site for this research.

The data collection period of this ethnographic study was divided into three stages:

Stage one: trust-building phase (July 2022 to August 2022): As suggested by Postill and Pink (2012), researchers (or ethnographers) should establish trust and symmetrical power relations with informants, forming reciprocity, or what Clifford (1980, p. 527) termed the '*ethnographer–informant exchange*'. Thus, the research team first connected with local government units and cultural organisations (e.g., library associations). This was achieved through the guidance of local Tibetan staff members with 20 years of work experience in City L and fluent in Sino-Tibetan languages. The research team engaged in preliminary meetings and discussions with these staff to gain their support and cooperation for the research. Concurrently, the team conducted random visits to EM households to understand their basic usage of library services and to establish trust and connections with the local EMs. Notably, the local Tibetan staff assisted and accompanied the subsequent two phrases, helping the research team resolve the translation problem between Mandarin and EM languages.

Stage two: interviews with stakeholders (September 2022 to December 2022): The author visited government departments and various libraries in City L, interviewing a total of 35 government officials and librarians. The department distribution of the interviewees is shown in Table 1. Each

interview lasted approximately 30-40 minutes, aiming to gather rich, practical data from stakeholders representing different levels within City L's library network.

Representative letter	Department	Number of Interviewees
A	municipal government	2
B	municipal cultural bureau	2
C	county-level cultural and tourism bureaus	4
D	county-level cultural activity centres/libraries	7
E	township cultural stations/libraries	8
F	village-level rural libraries	12

Table 1. The department distribution of the interviewees.

During visits to local libraries, the author conducted participatory observations of EMs' use of library resources and engaged in informal conversations with EM users. The approach began with the establishment of a role that allowed the author to become a part of the library's daily operations, interacting with patrons and staff, and observing the flow of activities. This immersive experience yielded valuable insights into understanding EMs' library consciousness, which was documented in detailed field notes.

Stage three: interviews with local EM residents (January 2023 to June 2023): The author conducted semi-structured interviews with local EM residents in City L. A total of 128 EM residents were reached out during the process. The details of all informants are shown in Table 2. The interview questions covered a range of topics, including information requirements, information sources, daily library engagement, knowledge of the library, daily cultural activities, Internet use, etc. Given the varied levels of library consciousness among EM residents, the interview duration ranged from 15 to 60 minutes.

Item	Content	Value	Proportion
Gender	Female	56	43.75%
	Male	72	56.25%
EM Groups	Tibetan	58	45.31%
	Hui nationality	22	17.19%
	Dongxiang nationality	18	14.06%
	Man nationality	11	8.59%
	Mongol nationality	8	6.25%
	Tujia nationality	6	4.69%
	Kazak nationality	5	3.91%
Education Levels	Undergraduate and above	22	17.19%
	High-School level	37	28.91%
	Junior-Middle School Level	26	20.31%
	Primary-School level	26	20.31%
	illiteracy	17	13.28%
Age	Over 65 years old	14	10.94%
	50-65 years old	27	21.09%
	31-50 years old	36	28.13%
	19-30 years old	44	34.38%
	Under 18 (including 18)	7	5.47%
How often do you use online/offline library services per year?	7 times and above	25	19.53%
	4-6 times	35	27.34%
	1-3 times	40	31.25%
	Never	28	21.88%

Table 2. Demographic characteristics of participants.

All the interviews were audio-recorded and then transcribed into approximately 200,000 Chinese characters of transcripts. To ensure accuracy and consistency, especially in the translation of EMs' language elements, the transcripts were reviewed by the local Tibetan staff and meticulously checked by the research team. The interviews highlighted the specific impact of both human and nonhuman actors on EMs' library consciousness. To better showcase the diverse agents and dynamic processes in shaping EMs' library consciousness, this article adopts ANT as an analytical framework. Since ANT emphasises the agency of both human and nonhuman actors (Latour, 2007), this article identifies seven actors through thematic analysis, namely cultural traditions, education levels, information acquisition channels, economic conditions, EM residents, librarians (or libraries) and government officials (or the government). Through four translation steps of problematisation, interessement, enrolment and mobilisation, this research explores the dynamic process of establishing EMs' library consciousness.

Findings

Alignment with EMs' cultural traditions

The cultural traditions of EMs, as a significant nonhuman actor, creates a robust network of influence through historical and social practices. This network profoundly shapes the knowledge acquisition processes of EMs. Through the process of *translation*, these cultural traditions of EMs emphasise traditional oral transmission and informal learning within the community, which carry specific benefits and values and thus become the primary means of knowledge acquisition for EMs. In City L, the cultural heritage of EMs, including ancient scriptures and historical documents, is predominantly preserved within temples (B1, B2 and C4). From a very young age, EMs are immersed in a religious culture, leading them to historically acquire knowledge primarily from temples and monks (C1, E2, E3, F9 and 32 EM interviewees). They are more accustomed to obtaining knowledge and information through interpersonal oral communication, where '*the older generation imparts knowledge to the younger*' (43 EM interviewees), and 'masters educate apprentices through direct instruction' (38 EM interviewees).

Thus, the emergence of contemporary public library services as a formal channel for knowledge acquisition creates a divergence from the traditional methods employed by EM residents. This divergence prevents EMs from going through the OPP of establishing library consciousness, further limiting their limited use of library services. Notably, a total of 92 EM interviewees (71.88%) acknowledged the profound influence of Tibetan Buddhism on their cultural traditions. For instance, *Zhaxi* (All names mentioned in this paper have been anonymised), a 42-year-old Tibetan resident, articulated his family's perspective on library consciousness as follows:

> *My family and I hold deep respect for our Buddhist cultural heritage. Temples are not merely repositories of ancient scriptures; they provide spiritual sustenance and psychological comfort. Therefore, even when libraries are available, we prefer to visit temples for study and prayer. This tradition, passed down through generations, reflects a shared cultural practice among many residents of City L.*

In addition to their religious beliefs, the *enrolment* of cultural traditions was reflected in their deep fondness for artistic activities, such as singing and dancing. To satisfy the diverse cultural needs of EMs and mobilise their library engagement, the government officials and librarians in City L have organised diverse recreational events to encourage EM residents' participation. Although the participation and enthusiasm for these artistic activities among EMs are remarkably high (F2, F5 and F7), these activities have failed to enhance the reliance and familiarity of EMs with libraries and other public cultural institutions (E3, E3, F8, F10 and F11).

Improving EMs' education levels

According to the observations of government officials and librarians, EM residents in City L demonstrate a deficiency in reading consciousness (D5 and F8), reading interests (E1) and reading habits (B1). Reading does not hold a central place in EMs' daily lives (A1 and D1), and there is '*a noted difficulty for EM residents in maintaining focus on reading*' (D7). Consequently, the location of books becomes '*inconsequential*' (B2). EM residents '*remain unread even when books are delivered to their homes*' (B2). The concern over '*whether the library lacks the books [EMs need] is thus rendered moot*' (D6). Some librarians have acknowledged that '*while they desire to enhance library services, there is a lack of specific requests from EM residents*' (E6 and F8).

A small portion of interviewed EM residents (n=23) engage in reading due to '*having developed reading habits during their schooling years*' or '*being influenced by their family's culture of reading*'. However, reading is regarded as '*requiring a relatively high level of education and knowledge for EMs*' by F7 and 13 EM residents, and is seen as '*a sophisticated form of intellectual pursuit for EMs*' by A1 and 8 interviewed EM residents. Some EM residents, especially those aged over fifty, are unable to derive pleasure from reading due to a lack of education, which leads to their underutilisation of libraries (E2, E4, E7 and F11). This educational barrier is '*not confined to Chinese language books but also applies to Tibetan language texts*' (B1).

> *My formal education concluded after completing nine years of compulsory schooling in primary and junior high school. My family did not encourage further academic pursuits, so I followed our family's tradition of pastoral living. Reading and using libraries are not common practices in my family, and thus, I have not developed such habits either.* (Danzeng, a 34-year-old Mongolian herder whose family has been engaged in pastoralism for generations)

> *Some of us have the consciousness of using libraries for study or work. During school years, we have the opportunity to engage with school or university libraries, develop a demand for library resources, or receive guidance from our teachers about the importance of libraries.* (E6, a 24-year-old female Tibetan librarian who obtained her bachelor's degree from a university in central China)

The above narrative indicated that the nonhuman actor of education level has shown a strong agency in shaping EMs' library consciousness with *interessement*. In the network of actors, education level is connected with EMs' reading habits and recognition of the importance of libraries. Put differently, the improvement in educational level enables EMs to engage in more reading activities that require library resources. Guided by the Chinese belief that '*books contain treasures*,' EM residents can recognise the connection between libraries and their interests.

Coordinating with diverse information acquisition channels

The proliferation of mobile Internet has enriched EMs' information acquisition channels. EM residents exhibit '*a strong reliance on the Internet and smartphones, with even children being adept at using mobile phones*' (F5 and F7). This preference leads to a tendency among EMs to '*use smartphones for immediate information acquisition rather than visiting libraries*' (B2). The mobile Internet makes EMs feel that knowledge is '*easily accessible*' (C2, D2, F8 and 34 EM interviewees), because they can '*acquire new knowledge more easily through mobile platforms like TikTok and WeChat public accounts*' (C1, F5 and 58 EM interviewees). F4 also noted that mobile tools are replacing certain functions of libraries.

> *Previously, the traffic police department required drivers to complete their theoretical knowledge study and exams for driving qualifications at libraries, but now this can be done on mobile phones, further reducing the utilization rate of offline libraries.* (F4)

To cater to EMs' habits of using mobile devices and enrol EM residents, some libraries have launched online resources (C4). However, the usage of these resources remains low as suggested by some librarians (e.g., F1, F2, F5 and F7). A total of 27 EM interviewees agree that this is mainly because they cannot calm down and focus on the structured library resources. Furthermore, library resources tend to be '*overly systematic*' for EMs (A2), necessitating EMs to possess '*robust information processing skills*' (C3 and D2). This expectation '*exacerbates the cognitive burden for EM residents, particularly given their typically lower educational levels*' (D6).

Besides mobile devices, traditional media like television also serve as important channels for EM residents in City L to access information. Over 90 per cent of EM interviewees have televisions at home and enjoy the leisurely life of watching TV to obtain information while passing the time. Moreover, offline information exchange remains common among EM residents in City L but not in libraries. Several interviewed government officials (e.g., C4, D1, and D2) noted that tea houses are ubiquitous, affordable and cosy leisure spots in the EM community, as well as places bustling with information. A total of 85 EM interviewees mentioned the information exchange mode in the tea house. For example, Ma, a 43-year-old Mongolian interviewee, said,

> *We spend most of leisure time in tea houses, drinking tea, chatting, or watching TV together. The daily information we obtain through these activities about herding, farming, and handling family relationships is much more useful than what libraries can provide.*

In the actor network, EMs' existing information acquisition channels, as nonhuman actors, have attracted EMs by offering convenient information services, thereby establishing stable network relationships. These established relationships may hinder libraries, as new actors, from being integrated into the network, since existing actors strive to maintain the stability of the network (Callon, 1984). Consequently, EM residents lack the motivation to shift their information acquisition habits from current channels to libraries, posing challenges for libraries to pass the OPP.

Improving the economic conditions of libraries

The establishment, operation and maintenance of libraries require substantial financial support. Serving as the fundamental actor in the network, economic conditions significantly impact the quality of library services, which in turn affects EMs' library consciousness. One government official even noted that '*all issues of libraries in City L, [including EMs' lack of library consciousness,] can ultimately come down to funding*' (C3). Therefore, actively seeking and effectively utilising local fiscal resources to support libraries is essential for the sustained operation and long-term development of librarianship in City L (C2). The thematic analysis revealed that the economic conditions of libraries in City L have posed challenges for other actors (i.e., government officials, librarians, and EM residents) to pass the OPP in two main ways.

First, insufficient and unevenly distributed financial resources have led to inadequate infrastructure development and limited services in libraries located in EM regions. Many librarians (e.g., F3, F6, F10) pointed out that national financial support for librarianship development in City L is disproportionately allocated across libraries at different levels. While some libraries benefit from additional support through local budgets, library funding remains critically insufficient (B2, E2 and F12). Due to the varying fiscal strengths of different counties and districts in City L, there are significant disparities in investment in libraries, leading to a marked differentiation in library development (A2 and C1).

> *Although City L is a major urban centre, economic conditions in its remote outlying areas remain constrained. Consequently, libraries in these regions often face challenges in securing the most basic operational resources, making improvements in service quality and resource expansion particularly difficult.* (B1)

> *In economically disadvantaged, geographically remote agricultural and pastoral areas of City L, libraries encounter significant challenges, such as inadequate infrastructure and limited service capacity.* (A1)

Second, the limited economic condition of libraries has led to a lack of professionalism among librarians and an inability to shape EMs' library consciousness. Many librarians in City L, particularly those in grassroots libraries, are part-time government officials (E7 and F5). C4 elaborated on the backgrounds of library personnel across various levels in City L:

> *At the county level, there are only 1-2 full-time librarian(s), with most positions held by officials from the Cultural and Tourism Bureau of City L. At the township level, librarian roles are often filled by government publicity officers or cultural specialists, while village libraries are typically managed by civil servants from the village government.* (C4)

The dispersion and inadequacy of librarians have resulted in '*difficulties in maintaining regular operating hours for libraries*' (D4). Part-time staff frequently report '*feeling limited in energy*' (F3) or '*facing challenges in their work*' (C1). During the ethnographic fieldwork, the research team discovered that some libraries have been closed for extended periods due to librarian shortages, requiring advance contact to arrange access.

Discussion and conclusion

Adopting ANT as the analytical framework, this research reveals the interactive relationship and translation process between actors involved in shaping EMs' library consciousness. The identified actors include cultural traditions, education levels, information acquisition channels, economic conditions, EM residents, librarians (or libraries) and government officials (or the government). The analysis is based on qualitative data derived from a one-year ethnographic study conducted in an autonomous city for EMs located in southwestern China.

Compared to previous studies (e.g., Si and Luo, 2020; Wang P. et al., 2023; Zhao et al., 2018) that have applied ANT to analyse established networks, this research utilises ANT to examine a network centred on EMs' library consciousness that has not yet been established. Through utilising ANT, this study identifies both human and nonhuman actors contributing to the weak library consciousness among EMs in City L, and analyses how these actors hinder the establishment of EMs' library consciousness. Despite the absence of an established network centred on library consciousness, interactive relationships and translation among these actors already exist. After passing the OPP, these actors can develop a new network serving the common goal of building cultural networks, strengthening identity recognition and promoting ethnic unity (IFLA, 2009; Kuang et al., 2023). In view of this, the research implicates stakeholders in EMs' library services to take actions to shape EMs' library consciousness.

Among the identified actors, this research positions cultural traditions as the focal actor. This perspective is closely linked to the unique national context of China, where EMs are significant social constituents with unique cultural traditions (Feng Y. and Cheung, 2008; Ma, 2006). The Chinese government and various societal sectors believe they should fully respect and protect these cultural traditions. Thus, other identified heterogeneous actors (e.g., government officials and librarians) cannot intervene in these cultural traditions. Instead, they must adapt and evolve in accordance with their development.

Cultural traditions of EMs, as a nonhuman actor, significantly influence their knowledge acquisition processes. These traditions, manifested through religious beliefs, cultural and artistic activities and lifestyle routines, do not completely align with the concept of libraries as a source of knowledge. As a result, many EM residents fail to recognise the connection between library services and their cultural rights, community wellbeing and socioeconomic development (Zhang Y., 2019). This disconnect leads to a lack of library consciousness among EM residents, who may

view libraries as entities foreign to their cultural traditions. The findings broadly supported Feng T.'s (2013) viewpoints on the stability and continuity of public consciousness, which shape the knowledge acquisition processes of EMs. If libraries and other actors do not effectively translate their values and functions in a manner that resonates with the cultural traditions of EMs, they risk remaining marginalised within the network. To address this, libraries must take action to align their services with the cultural practices and values of EMs and increase their ties with other actors.

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Neutrality vs. social justice: a democratic perspective

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Abstract

Introduction. In recent years, there has been heated debate about the relationship between neutrality and social justice in library and information science. This intense dialogue is explicitly linked to democracy, yet, with few exceptions, the rich literature on democracy is not incorporated into the ongoing debate. The aim of this paper is to use theories on democracy as a lens to understand the ideological battle between neutrality and social justice.

Method. A systematic search in *Library, information science & technology abstracts* for relevant papers serves as the starting point for the analysis.

Analysis. Among scholars discussing democracy, there is general agreement that freedom and equality are core democratic values. However, disagreements arise in how these two concepts are defined and related to one another. This tension is also reflected in the debate over neutrality and social justice.

Results. Three distinct positions are identified: liberal freedom, freedom as equality and radical equality.

Conclusions. Democracy is a highly contested concept, and as a result, it is not possible to judge any one position as superior in democratic terms. Nevertheless, a democratic perspective can enrich and nuance future discussions in this area.

Introduction

Neutrality has traditionally been seen as a prerequisite for libraries to fulfil their democratic function. In this view, the library serves as a reservoir of society's entire knowledge and opinions, to which citizens should have free access in the ongoing process of forming their own opinions (Harris, 1973; Hafner, 1993). The British librarian D. J. Foskett (1962) encapsulates the ideal of neutrality in his title: *The creed of a librarian: no politics, no religion, no morals*. Neutrality is inextricably linked to intellectual freedom, where individuals have the right to explore and form their own beliefs without fear of reprisal (Knox, 2020). In a library context, intellectual freedom encompasses freedom of opinion, freedom of access to information and freedom of expression (Sturges, 2016). According to Macdonald (2024), the emphasis on intellectual freedom within the ethical codes of the library field gives it a legitimate claim as the most prominent value. However, the traditionally elevated position of neutrality has been increasingly challenged. In a bibliometric analysis, Gardner (2022) documents that the amount of research in library and information science addressing intellectual freedom increased only slightly from 1993 to 2020, while research related to social justice markedly increased. Samek (2001) analysed the starting point of this shift in an American context in *Intellectual freedom and social responsibility in American librarianship, 1967-1973*, which explores the growing critique of neutrality within the American Library Association. This critique began with the establishment of the Social Responsibilities Round Table, created as a supplement to the Intellectual Freedom Round Table. The Social Responsibilities Round Table argued that librarians should take a clear, progressive stance on non-library issues, such as the Vietnam war. Additionally, they engaged in efforts to prevent injustices stemming from racism and poverty (Wenzler, 2019). According to Berninghausen (1975), a prominent advocate of neutrality, it is impossible for libraries to uphold both neutrality and social justice simultaneously. Taking a stand, he argues, is incompatible with neutrality. Nonetheless, both in the past and today, social justice is frequently linked explicitly to democracy. One contemporary example is provided by Gibson et al. (2017), who argue that libraries must advocate for people of colour if they aim to challenge systemic racism and uphold an informed democracy. Popowich (2020) further contends that transphobia cannot simply be addressed through additional information or better arguments; rather, it reflects real inequalities and oppressive structures. Thus, if libraries aspire to support a more equitable and democratic society, they must abandon strict neutrality.

Apart from introducing the debate on neutrality and social justice, the text above also illustrates that democracy can be supported in different ways. In a frequently cited text within democratic literature, Gallie (1956) argues that democracy is perhaps the most contested of all contested concepts. For Gallie, contested concepts are both appraisive and complex. In a western context, democracy is widely regarded as desirable, and consequently, it is the most used concept for legitimising libraries (Yamagishi et al., 2024). Additionally, democracy is a complex concept with a history spanning over 2,500 years, during which new and sometimes contradictory meanings have been added. From this perspective, it is unsurprising that proponents of both neutrality and social justice seek to connect their positions to democracy, though they do so with differing arguments. Among scholars of democracy, there is broad agreement that freedom and equality are the most important values, though disagreement often arises regarding how these concepts should be defined and related to each other (Herman Hansen, 2010). The outlined debate on intellectual freedom and social justice essentially reflects these same discussions. Therefore, the following text will briefly outline three positions in the debate on libraries, neutrality and democracy, 1) neutrality as liberal freedom, 2) freedom as equality, and 3) radical equality.

The empirical foundation of this paper consists of articles, books and book chapters in English that address neutrality in public libraries. As experienced researchers on public libraries and democracy, we were already familiar with many relevant texts before conducting this study. However, to ensure comprehensiveness, in the fall of 2024, we conducted a search in the *Library, information science, and technology abstracts* database using the keywords *neutrality* and *public*

libraries to identify additional relevant works. This paper does not provide an exhaustive review of the literature on neutrality and public libraries, nor is that its purpose. Rather, the aim of this short paper is to relate the debate on neutrality and social justice in public libraries to concepts of democracy

Neutrality as liberal freedom

Neutrality has historically been closely connected to liberal democracy. According to Held (2006, pp. 56-95), a liberal democracy essentially combines a constitution with political democracy. Public libraries are linked to both dimensions of liberal democracy: they are part of the infrastructure for political democracy because they provide citizens with alternative sources of information, which is central to the minimal definition of democracy (Diamond and Molino, 2004). Additionally, intellectual freedom relates to the constitutional aspect of liberal democracy, as constitutions in many countries serve as the foundation for protecting individual liberties, including the rights to free thought, expression, and access to information.

As the term intellectual freedom suggests, freedom, rather than equality, is prioritised when neutrality is under consideration. In philosophy, it is common to distinguish between negative and positive freedom (or liberty), with intellectual freedom primarily associated with negative freedom. Negative freedom refers to freedom from interference or coercion by others, particularly by government or other institutions (freedom from). It allows individuals to think, read, speak and seek knowledge without external constraints, which is essential for intellectual freedom (Carter, 2022). Neutrality in a library context is hereby embedded in some fundamental freedom rights that should prevent external interference in the personal formation of opinion. Berninghausen (1975) is perhaps the best example of viewing neutrality as an absolute right in the context of libraries. For him, neutrality is the core value that should remain uninfluenced by other values. However, today it is rare to find such wholehearted reverence for neutrality. Among library professionals, there is clear Nordic support for neutrality (Koizumi and Larsen, 2023). Additionally, Wenzler (2019) and Larsen (2024) are sympathetic towards neutrality, though they acknowledge certain paradoxes and criticisms related to it.

Freedom as equality

Equal rights, such as free access to information, represent just one way of understanding freedom. Individuals may have access to written information, but if they cannot read, this right has limited value. This highlights the distinction between negative freedom and positive freedom. Sometimes, merely having certain rights is not enough for individuals to pursue their own happiness: relatively equal opportunities are also necessary. Positive freedom is the ability to act in a way that allows one to take control of one's life and realise fundamental purposes (freedom to) (Carter, 2022). In a library context, this approach involves providing varying levels of support based on users' needs to achieve comparable outcomes. Such a practice in libraries is relatively uncontroversial. Library services are not only a matter of equal rights but also of addressing users' specific needs. This reflects a modest definition of social justice that emphasises giving special consideration to those who are worst off (Khechen, 2013). This definition of social justice focusing on positive freedom incorporates elements of both freedom (the ability to act autonomously) and equality (having relatively equal opportunities or resources to pursue one's aims). Similarly, the present discussion includes participants who argue that neutrality and social justice are not mutually exclusive. Mathiasson and Jochumsen (2023) contend that the dichotomy between neutrality and non-neutrality is false. Instead, they advocate for a more nuanced discussion about neutrality and the professional identity of librarians, arguing that the self-reflexivity is key. With a theoretical foundation in political science and urban planning, Dudley and Wright (2022) try to overcome the incompatibility between neutrality and social justice by stressing communicative aspects of librarianship. The academic librarian Stephen Macdonald has also explored a nuanced understanding of neutrality in several works. Macdonald and Birdi (2020) demonstrate that

neutrality can take on various meanings in both the literature and among librarians. Drawing on Wittgenstein, Macdonald (2022) argues that neutrality is a heterogeneous and contextual concept. Finally, Macdonald's (2024) work, *Intellectual freedom and social responsibility in library and information science: a reconciliation*, further explores these themes.

Radical equality

Social justice, like democracy and freedom, is a contested concept. Above, a modest definition is associated with a fairer and more equal distribution of resources. However, social justice has also been defined in a more radical way, where addressing structural inequalities, promoting recognition and supporting representation are central to achieving equality. The American feminist Iris Marion Young (1990) argues that social justice is not only about the redistribution of resources; it also entails the elimination of institutionalised domination and oppression. Another feminist, Nancy Fraser (1998), adds that recognition is a vital part of social justice for marginalised groups. Later, Fraser (2009) identified another dimension of social justice: representation. Social justice, she argues, requires that individuals and groups have equal participation in democratic decision-making processes. This aspect addresses who has a voice in framing social issues and making decisions about them. None of the texts in the ongoing discussion on public libraries that we know of directly reference Young or Fraser. However, the above-mentioned characteristic of a more radical equality is apparent in this position. A fundamental premise is that neutrality is not possible. Jensen (2004) argues that neutrality constitutes a passive acceptance of the existing distribution and is, therefore, a political choice. For Bales and Engle (2012), neutrality in libraries is part of the '*ideological state apparatuses*' that implant the dominant ideology in a non-violent way. Schlesselman-Tarango (2017) contends that white female cuteness in libraries mitigates, veils and neutralises whiteness in these spaces. Recognition is primarily linked to taking a stand for Black Lives Matter (Pagowsky and Wallace, 2015) and antiracism (Gillis, 2023), but it also encompasses acknowledgement of religious minorities (Gerolami, 2020). Finally, Van Vegten (2022) discusses internal representation, advocating for the recruitment of a racially diverse staff in libraries, while Gibson et al. (2017) argue that libraries should facilitate the political participation skills of communities of colour.

Concluding remarks

Democracy is frequently mentioned in the ongoing debate on neutrality and social justice, but the rich literature on democracy is only sparsely referenced. Consequently, the aim of this paper is to connect the debate to theories addressing democratic issues. The starting point is the two core values of democracy: freedom and equality. The overall pattern observed is that proponents of neutrality primarily emphasise negative freedom, while advocates of a more radical interpretation of social justice regard equality as the hallmark of democracy. Both democracy and the debate on neutrality and social justice are complex concepts. Thus, with the aim of presenting a broad perspective, this paper outlines three overarching positions in the debate on neutrality and social justice: neutrality as liberal freedom, freedom as equality and radical equality.

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Informational self-deception: deconstruction and reconstruction within philosophy of information

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Abstract

Introduction. Hannah Arendt argues that, in the twentieth century, there arose diffuse systems of mendacity tied to information communication. Such '*modern lies*' engendered self-deception among both officials and citizens, allowing the perpetuation of atrocities. In this paper, I examine self-deception from within philosophy of information, confronting and deconstructing a central dichotomy in self-deception research: that between ontological and psychological renderings of the concept.

Method. Derridean deconstruction is used to create and mine tension between ontological and psychological self-deception. Ultimately, informational self-deception is reconstructed within this tension.

Analysis. Ontological self-deception positions deceit as a natural and passive condition of being-in-the-world. As members of an entropic infosphere, we are all subject to self-deception, and we thus have an imperative to continually question ourselves and our information. Psychological self-deception positions such deceit as an active concept; rather than the passive condition of the many, self-deception is the active choice of a few. This opens questions surrounding intentionality, motivation and variances in levels of deceit.

Conclusion. Ultimately, I reconstruct informational self-deception as sustained by the tensions between ontological and psychological self-deception, raising new questions for philosophy of information regarding what it means to be deceived.

Introduction: Hannah Arendt and the modern lie

There are, on a basic level, three entities involved in an act of deception. First, there is the deceiver, the one intentionally crafting a fabrication. Second, there is the lie itself, the content that is fabricated. Third, there is the person or group of people being deceived. In philosophy of information, significant attention has been granted to the first two. Don Fallis (2010; 2022), for example, questions what it means to deceive in the twenty-first century, challenging and expanding traditional definitions of the lie to account for more nuanced forms of deception. Additionally, theorists focus on fabricated content, establishing and challenging definitions for mis- and disinformation (Fallis, 2011, 2015, 2016), examining the impact of such mis- and disinformation in various political contexts (Palomo, 2021; Søe, 2018, 2021), and confronting traditional conceptions of information quality from different levels of abstraction (Floridi and Illari, 2014). Less attention, however, is paid to the third entity involved in an act of deception: the deceived. What does it mean to succumb to a specific mediatic and informational narrative despite evidence to the contrary? What are the political and ethical stakes of doing so?

These questions become increasingly complicated in more diffuse mediatic systems where a specific deceiver is difficult, perhaps impossible, to locate. When narratives are propagated by institutions, governments and corporations and spread from multiple outlets on multiple platforms both by individuals and by bots, then there exists a breakdown in the traditional formulation of deceiver and deceived. Hannah Arendt was a twentieth-century theorist interested in this breakdown between the traditional formulation of deceiver and deceived, and she dedicated considerable attention to unravelling what she deemed to be a transformation in what it means to lie. In my introduction, therefore, I turn to Arendt (1968) to establish what she calls '*the modern lie*' and to introduce the dangerous self-deception such mendacity engenders (p. 253).

Arendt was a German Jewish philosopher who fled Germany as Naziism gripped the country prior to WWII and who, throughout her career, dedicated considerable attention to unravelling diffuse systems of mendacity against the backdrop of the twentieth century. Specifically, she examined political events like the rise of totalitarian regimes (Arendt, 1973), the post-war trials of high-ranking Nazi officials (Arendt, 1963; 1971; 2006), and the production and reception of the Pentagon Papers in the US (Arendt, 1972). Her political and philosophical writings unearthed what she argued to a be a transformation of the lie from the traditional lie, specific and targeted towards one's enemy, to the modern lie, dispersed and often targeted towards one's own citizenry. On the one hand, '*the traditional lie concerned only particulars and was never meant to deceive literally everybody*', while, on the other hand, the modern lie '*is the relatively recent phenomenon of mass manipulation of fact and opinion as has become evident in the rewriting of history, in image making, and in actual government policy*' (Arendt, 1968, pp. 252-253). This modern lie is not spoken of in explicitly informational terms by Arendt, who died in 1975 at the very onset of an informational turn in theory. However, it is nonetheless an informational phenomenon, as such deception encompasses political systems of informational propaganda proliferated by increasingly widespread and sophisticated information and communication technologies (ICTs). The modern lie, diffuse and dangerous, is informational. Moreover, such mendacity is not a relic of the twentieth century; structures of information communication are more pervasive and advanced than ever, and they foster similar modern lies today (La Caze, 2017).

Though Arendt dedicates volumes to unpacking different case studies, characteristics and consequences of the modern lie in the twentieth century, there is one aspect of such deception that I find particularly intriguing for philosophy of information – the propensity of the modern lie to breed self-deception. She defines self-deception as,

> *the nature of our ability to deny in thought and word whatever happens to be the case. This active, aggressive capability is clearly different from our passive susceptibility to falling prey*

> *to error, illusion, the distortions of memory, and to whatever else can be blamed on the failings of our sensual and mental apparatus.* (Arendt, 1972, pp. 4-5).

While self-deception is not a new concept, Arendt (1968) argues that the modern lie is more likely than the traditional lie to produce self-deception even amongst those responsible for deceiving: '*the business of [political] deception […] used to belong to [those…] who among themselves still knew and could preserve the truth. […T]hey could deceive others without deceiving themselves*' (p. 253). In the twentieth century, however, '*self-deception [became] an indispensable tool in the trade of image-making*' and in the functioning of increasingly large bureaucratic and governmental apparatuses (Arendt, 1968, p. 253). It is to self-deception that Arendt (1963) attributes some of the most horrific atrocities of WWII, arguing that holocaust organisers like Adolf Eichmann had submitted to a banal evil by ceasing to question themselves or their actions, instead willingly falling prey to a thoughtless self-lie that their bureaucratic duties were necessary and justified rather than abhorrent and divorced from factuality. Moreover, she suggests that such self-deception was widespread amongst the German citizenry during the Third Reich: '*Eighty million Germans had been shielded against reality and factuality by exactly the same self-deception, lies, and stupidity that had now become ingrained in Eichmann's nature*' (Arendt, 1963). The ethical and political stakes of self-deception are thus set, and Arendt's texts pose a warning to twenty-first century scholars to be wary of self-deception, evolving forms of mendacity and the relationship between mendacity and power.

In this paper, I am interested in exploring self-deception from the perspective of philosophy of information, building from Arendt's foundational scholarship on deception to examine the twenty-first-century relationship between information and the self-deceived. Because Arendt suggests that self-deception can be widespread, stemming from a mendacity which alters the fabric of the real, it is important to establish what the real means in informational terms. To do so, I turn briefly to philosopher of information Luciano Floridi (2013), who popularised the term '*infosphere*' to denote '*the whole informational environment constituted by all informational entities (thus including information agents as well), their properties, interactions, processes, and mutual relations*' (Floridi, 2013, p. 6). Because information is so encompassing, the infosphere '*can also be used [as a term] synonymous with reality, or Being*' (Floridi, 2013, p. 6). The systems of mendacity which Arendt warns against can be understood as manipulations of the infosphere, manipulations which perhaps result in the same self-deception today that proliferated in the twentieth century. My research questions are thus:

1) What is informational self-deception?
2) What are the political and ethical stakes of informational self-deception?

To answer these research questions, I confront a central paradox inherent to self-deception as it is portrayed in philosophical literature: that between ontological and psychological renderings of the concept. Some theorists present self-deception ontologically, as a pervasive state of being-in-the-world. Put informationally, we exist as part of an imperfect and entropic infosphere, and so we are collectively subject to a certain level of self-deception. Other theorists, however, argue that self-deception is an active choice of a few rather than the passive condition of the many. Put informationally, some individuals are motivated towards self-deception, willingly ignoring or warping information that would rupture the image of the world they have crafted. In this paper, I label such active self-deception as psychological, as these renderings of self-deception often draw on more recent work in psychology to describe the partitioning necessary for such deceit. In this paper, I seek to stabilise the concept of self-deception within philosophy of information, examining informational self-deception as a concept which is maintained by the tension between an ontological condition of un-intentional deceit and a psychological condition of intentional deceit.

Method

My method for this paper involves confronting and deconstructing ontological configurations of self-deception and psychological configurations of self-deception. Is self-deception an ontological concept, the passive condition of humanity out of which we must actively work to escape? Or, rather, is self-deception a psychological concept, an active choice, something into which we fall rather than out of which we escape? In examining ontological self-deception and psychological self-deception, divergences in questions of self-deception's relationship to complacency, action, intentionality and motivation become apparent.

The subsequent deconstruction is explicitly Derridean. On a basic level, the project of Derridean deconstruction involves the examination, complication or creation of dichotomous and aporetic structure with the goal of creating productive, irresolvable tension (Derrida, 1992). Unlike a Hegelian dialectic, Derridean deconstruction does not strive for a mediating synthesis between a thesis and antithesis. Rather, it seeks to destabilise and maintain paradox, continually disturbing foundational assumptions in order to make ethical space for the yet-to-come. In this way, I do not seek to establish informational self-deception as a mediating synthesis between ontological and psychological renderings of the concept. Rather, I use deconstruction to argue that informational self-deception is itself maintained by the very aporias created between the ontological self-deception and psychological self-deception. Informational self-deception is active *and* passive, collective *and* individual, intentional *and* unintentional; it creates paradox, and in so doing it invokes the constant examination and destabilisation of the relationship between self, information and deception.

Self-deception as ontological

Ontological self-deception positions deception as a natural state of being-in-the-world; we exist naturally deceived, and it is our responsibility, therefore, to be critical, to scrutinise information and to work our way out of such deception. Arendt (1963), for example, seems to describe self-deception ontologically when she discusses entire citizenries as being complacent in a passive self-deception that perpetuated the harms of regimes. For philosophy of information, thinking of self-deception through the lens of an information ontology is interesting in that it explains how individuals who allow themselves to passively be swept into information silos fall prey to self-deception without actually *doing* anything. When we allow the infosphere to go unquestioned, we can become informationally self-deceived. Situating informational self-deception as an ontological concept is additionally beneficial in that it places the onus of responsibility to escape self-deception on each person regardless of any perceived allegiance to ideology, social group or bureaucracy. It inspires a moral charge to consistently question information gaps and our own positionality.

To establish ontological self-deception in discourse, I risk anachronism by turning to a pre-ontological thinker: Plato. Plato is considered pre-ontological because his

> *interest in the theory of the self, or egology, was ethico-political and epistemological, not yet ontological [...] It is mainly from Descartes onwards that the unity, identity, and continuity of the I, or self, as an entity become the subjects of an ontological investigation in their own right.* (Floridi, 2011, p. 552)

Though Plato's construction of the self necessarily varies from future iterations of the concept, his development of deception as a natural condition for humanity structured centuries of future theorising. Moreover, his theory of self-deception as tied to existence fits the contemporary use of the term *ontology* even if Plato himself came well before Descartes' *cogito*.

One of the clearest places within Plato's dialogues in which a theory of natural deception is outlined is in the allegory of the cave, which is found in book seven of his *Republic*. In this allegory, Plato

(1982/375BCE) describes humanity as prisoners chained in a cave, staring at shadows cast upon the cave wall, listening to echoes and believing them to be produced by the shadows. Having never experienced reality beyond the cave, we deceive ourselves in believing these shadows and echoes are reality. It is important to specify that Plato's allegoric prisoners do not begin in the illumination of knowledge only to be pushed into the cavern by some force or captor. Rather, they begin the allegory already chained to the cave, having only ever known the cave, falsely assuming the truth to be '*literally nothing but the shadows of images*' (Plato, 1982/375BCE, VII515). Wise prisoners can learn to shake their chains and drag themselves '*up a steep and rugged ascent*,' but this journey out of deception is painful, marked by disorientation and light that blinds (Plato, 1982/375BCE, VII515). It is an escape requiring effort: few can make the ascent, and those that do receive ire and vitriol from those prisoners still chained.

While steeped in figurative language, Plato's depiction of self-deception as a condition of existence in the *Republic* mirrors Socrates' own defence that he mounts for himself at his trial as found in Plato's (1998/399BCE) 'Apology of Socrates'. In this text, Socrates is standing trial, accused of corrupting the youth of Athens and of blasphemy towards the gods. Socrates claims that the real reason he is on trial is because he revealed to Athenians the deception in which they were complicit. He questions Athenians in high regard, the supposed experts in different crafts and fields, tearing away the veil of feigned knowledge to conclude in each case,

> *I am wiser than this man; it is likely that neither of us knows anything worthwhile, but he thinks he knows something when he does not, whereas when I do not know, neither do I think I know; so I am likely to be wiser than he to this small extent, that I do not think I know what I do not know.* (Plato, 1998/399BCE, 22d-e)

Those who purported to possess expertise were often uncritical of themselves and of their knowledge, and, when prompted by Socrates' questions, were left unable to account for the opinions they held. Therefore, the unsuccessful defence Socrates mounts for himself at his trial is that he did not participate in the self-deception of the masses. Self-deception as an ontological condition became a core tenant of Platonism.

Interestingly, Floridi's concept of the infosphere provides a novel way of approaching Plato's ancient allegory of the cave. Though we may not be born into a literal cave, we do exist both in and as a part of an imperfect, shadowy informational world. Just as the Platonic cave contained shadows and echoes, so too does the infosphere contain entropy. Entropy in information ethics is defined broadly as '*a quantity specifying the amount of disorder, degradation, or randomness in a system bearing energy or information*' (Floridi, 2013, p. 66). Insofar as entropy is informational disorder and degradation, entropy can cause deceit. This implicates a deception that operates on an ontological level, for the infosphere itself is an ontological concept. Put simply, we, as informational beings, participate in the informational Being of the infosphere, a Being containing the entropic potential of deception. Floridi (2013) argues, '*we are slowly accepting the idea that we are not Newtonian, standalone, unique entities, but rather informationally embodied organisms [...], mutually connected and embedded in an informational environment, the infosphere*' (p. 14). There is currently '*a re-conceptualization of our ontology in informational terms*' (Floridi, 2013, p. 10). Therefore, ontological self-deception can be attributed to the fact that entropy exists in the infosphere, the informational reality in which we are ontologically imbedded. Because of this, we must be continually weary of the semantic content we receive, the information caves in which we find ourselves. Succumbing to self-deception may be conceived as a moral harm within the macro-ethical framework of information ethics insofar as it perpetuates or creates entropy within the infosphere.

Floridi's recasting of ontology along informational lines also implicates ICTs as re-ontologising technologies '*because they create and re-engineer whole realities that the user is then enabled to*

inhabit' (Flordi, 2013, p. 97). How can ICTs, as re-ontologising technologies, contribute to or dispel ontological self-deception? This question connects to philosophy of information research on the creation and proliferation of conspiracy theories in the twenty-first century, theories which thrive on the collective and participatory environments engendered by ICTs (Sicart, 2018; Zeeuw and Gekker, 2023). Research at the intersection of game theory and media theory positions conspiracy theories as most impactful when they are able to successfully engage a diffuse collective to participate in world-building practices; for example, '*conspiratorial metanarratives like QAnon construct an engrossing and immersive communal world for its adherents, cultivating (or strengthening) belief (regardless of original intent) and shaping (political) behaviors*' (Zeeuw and Gekker, 2023, p. 10). Beyond static *theory*, contemporary conspiracy movements invoke the re-ontologising nature of ICTs to fiction an (un)reality which is driven by '*engagement, fuelled by fannish "fictioning" practices of those in the know, and aided by the hyperstitional unbelief and mythos of its followers [...] building alternate realities while disrupting existing ones*' (Zeeuw and Gekker, 2023, p. 5). This ability to build alternate reality, to superimpose the phantasmic over the ordinary, implicates a self-deception operating at an ontological level, using the re-ontologising nature of ICTs to build entropic information caves in which being-in-the-world is redefined.

In this section, I presented arguments for understanding self-deception ontologically; it is a diffuse condition of the many which echoes throughout the history of philosophy. Socrates observed in Athenians a collective and participatory self-deception woven into the very fabric of being-in-the-world. Such ontological self-deception bred a complacency which served those in power, and, when Socrates began to draw forward and question such a collective deception, he was sentenced to death. Centuries later, Arendt (1963) also wrote with horror on a collective self-deception that defined being-in-the-the-Third-Reich. This self-deception likewise encouraged a complacency which served those in power and resulted in massacre. Now, as the twenty-first century progresses and as being-in-the-world is understood in increasingly information ways, there seems a moral imperative to once again recognise the collective and ontological nature of self-deception, to search for entropic shadows in the infosphere and to question the role of ICTs in casting or dispelling these shadows.

Self-deception as psychological

The second way to construe self-deception is as a psychological concept. In this understanding, the motivations and intentions of individuals are centred. Psychological self-deception is conceived as an active and motivated choice of a select few rather than as a passive and ontological condition of the many. Because it is tied to intention and motivation, it is usually, though not without debate, separated in scholarship from unintentional and uncontrollable delusions or psychotic breaks (Bayne and Fernández, 2009). Psychological self-deception holds allure for philosophy of information because it opens questions surrounding the motivations of self-deception and whether these motivations are more prevalent in specific individuals. Thomas Froelich (2017, 2019, 2021), for example, uses psychological source material to examine self-deception among individuals who support Trump, engaging concepts of intentionality and responsibility in relation to the consumption and production of semantic content. In this section, I present a brief history of psychological self-deception in philosophical literature before connecting such self-deception to concepts of information behaviour and to today's political environment.

Just as I turned to a pre-ontological thinker to establish ontological self-deception, so too do I turn to a pre-psychological thinker to root psychological self-deception; I first examine how René Descartes reversed Platonic assumptions, before establishing more contemporary strands of the theory. Of course, it would be anachronistic to assume that Descartes, a seventeenth century thinker, was himself interested in psychology, a discipline which emerged in the nineteenth century. However, I argue that self-deception conceptually transformed from a collective to an

individual concept through Descartes, and this transformation paved the way for future psychological theorising.

When Descartes was writing in the seventeenth century, most of his contemporaries ascribed to Plato's rendering of self-deception as a pervasive state of being-in-the-world. Blaise Pascal (1995/1670), for example, lived and wrote in France at the same time as Descartes, and he characterised persons as '*nothing but a subject full of natural error [...] Nothing shows him the truth, everything deceives him*' (p. 12). Both reason and the senses '*compete in lies and deceptions*' (Pascal, 1995/1670, p. 13). In other words, we are Platonic prisoners existing naturally in a cave of deceit.

Descartes, however, viewed self-deception as a barrier to the pursuit of knowledge through reason. Therefore, he begins his *Meditations on a First Philosophy* by taking seriously the question of self-deception:

> *as I sometimes imagine that others deceive themselves in the things which they think they know best, how do I know that I am not deceived every time that I add two and three, or count the sides of a square, or judge of things yet simpler, if anything simpler can be imagined?* (Descartes, 1911/1641, p. 8)

Here Descartes is interested in questioning if reason, even the most basic reasoning of arithmetic and geometry, leads to anything more substantial than ever-changing shadows of truth. If we are deceived even in this most simple thought, then Descartes (1911/1641) reasons that such a deceived state of being must result from a deception operating on a cosmic scale. He pushes this logic to its limit in his great project of doubt:

> *I shall then suppose, not that God who is supremely good and the fountain of truth, but some evil genius not less powerful than deceitful, has employed his whole energies in deceiving me; I shall consider that the heavens, the earth, colours, figures, sound, and all other external things are nought but the illusions and dreams of which this genius has availed himself in order to lay traps for my credulity.* (p.8)

Descartes' starting point is therefore consistent with a Platonic level of self-deception. What if we only see shadows? What if we are born into deception?

Through his meditations Descartes leads the reader to a quiet conclusion, often overlooked in favour of his *cogito*: subjectivity does not, after all, exist in a natural state of self-deception. This he proves by arguing that God exists and is supremely good; '*From this it is manifest that He cannot be a deceiver, since the light of nature teaches us that fraud and deception necessarily proceed from some defect*' (Descartes, 1911/1641, p. 19). In other words, God would not chain us to a cave. Descartes (1911/1641) thus ends his *Meditations* by dismissing the question of self-deception: '*I ought no longer to fear that falsity may be found in matters every day presented to me by my senses [...] For because God is in no wise a deceiver, it follows that I am not deceived*' (p. 32). In this way, Descartes quietly flipped a centuries-old philosophical tradition, and self-deception became something to fall into through error rather than to escape from through effort. Whereas Platonists assumed a certain amount of unknowability inherent to the world tied to ontological deception, Cartesians assumed an amount of knowability inherent to the world tied to a trust that such ontological deception is illusory. Though Christian theological contemporaries of Descartes disagreed with him regarding the nature of God excluding the possibility of widespread deception (see, for example, Pascal, 1995/1675), the Cartesian reversal of ontological self-deception took root, and self-deception became an indicator of individual failings rather than a natural state of being in-the-world.

After psychology's emergence as a discipline in the nineteenth century, self-deception as an action tied to individuals became something that could be studied through the lens of motivations and

intentions. Doing so, however, first involves confronting another paradox inherent to the concept; if to lie requires that one both knows the truth and distorts it with the intention to deceive, then to lie to oneself requires that one both knows the truth and intentionally distorts it to instead believe a falsity – that one simultaneously knows *p* but believes ~*p* (Baghramian and Nicholson, 2013). Can the deceiver and the deceived coalesce within an individual in this way?

Across both philosophy and psychology there are sceptics who reject the possibility self-deception based on this paradox, arguing that the concept is a logical impossibility better explained by related phenomenon like illusion, ideology or error (Baghramian and Nicholson, 2013). Derrida (2002, p. 67), for example, expresses doubt over the possibility self-deception, arguing that to lie to oneself is '*logically incompatible with the rigor of any classical concept of the lie [...]. To lie will always mean to deceive the other intentionally [...], while knowing what it is that one is deliberately hiding, therefore while not lying to oneself*'. Despite such criticism over the paradoxical convergence of deceiver and deceived, other theorists overcome the contradictory nature of psychological self-deception by relying on the concept of mental partitioning '*to explain how a self-deceiver holds contradictory beliefs simultaneously or brings about a false belief intentionally*' (Baghramian and Nicholson, 2013, p. 1020). Partitioning, which has origins in Freud's division of consciousness, is the theory that the mind is itself subdivided to an extent that '*the self-deceiver's beliefs can be contradictory but concurrent*' (Baghramian and Nicholson, 2013, p. 1020). Arendt interestingly discusses such partitioning within the self from a philosophical rather than psychological perspective. She argues that the self is not some unbroken unity. Rather, the self is divided and can also be placed in relation to itself; I can question my own choices, hear my own thoughts, ponder my own decisions, divide myself so as to recognise the difference within myself. This is what leads Arendt (1971) to conclude:

> *Human consciousness suggests that difference and otherness, which are such outstanding characteristics of the world of appearances as it is given to man as his habitat among a plurality of things, are the very conditions for the existence of man's ego as well* (p. 442).

Partitioning does not inherently pose a threat to selfhood, and it does not have to be understood from within the pages of psychology scholarship. Rather, such fragmentation is woven into the fabric of selfhood and is studied philosophically as well psychologically.

Partitioning in and of itself is not an indicator of self-deception. In fact, the ability to question one's own biases, beliefs or knowledge relies on partitioning and is an important way in which one can escape self-deception (Arendt, 1971). However, if the mental self is not a cohesive unity but instead a composite of parts, then perhaps there is no contradiction between the coalescing deceiver and deceived: '*There are a variety of dissociations between seemingly continuous mental processes that ensure that the mental processes that are the target of self-deception do not have access to the same information as the mental processes deceiving the self*' (von Hippel and Trivers, 2011, p. 6). Partitioning strategies assert that self-deception is not the logical impossibility that critics assume.

I suggest that such psychological self-deception within the partitioned self is of particular interest to information science and philosophy of information, as work at the intersection of psychology, behavioural science and cognitive science indicates that the self-deceptive potential of partitioning is tied to information processing. Psychologist William von Hippel and evolutionary biologist Robert Trivers (2011, p. 1) argue that '*what marks all [...] varieties of self-deception is that people favor welcome over unwelcome information in a manner that reflects their goals or motivations*'. In other words, psychological self-deception stems from motivated preference for information that confirms rather than confronts biases. While one may unconsciously or subconsciously recognise inaccurate or biased information processing, one's consciousness is willingly deceived into accepting low quality or biased information over quality or unbiased information (von Hippel and Trivers, 2011).

This rendering of individual, psychological self-deception is similar to recent work in information science by Reijo Savolainen (2022) on motivated reasoning. Motivated reasoning, proposed by Ziva Kunda in 1990, is a psychological theory which suggests that '*motivation can be construed as affecting the process of reasoning: forming impressions, determining one's beliefs and attitudes, evaluating evidence, and making decisions*' (Kunda, 1990, p. 480). It is connected to self-deception by scholars who see it as a path to self-deception, an explanation for the motivations behind becoming self-deceived (von Hippel and Trivers, 2011). Savolainen (2022) argues that motivated reasoning provides a fruitful framework for understanding why individuals accepted health-related misinformation during the Covid pandemic even when that misinformation had sometimes deadly consequences. My present examination of self-deception can serve to corroborate this line of research, building out a philosophical foundation to support future work on the stakes of such motivated deception.

As opposed to motivated deception, some work at the intersection of psychology and information science suggests that the acceptance of political misinformation '*may originate from a lack of analytical thinking, rather than the tendency to adhere to politically concordant information content supporting an individual's partisan beliefs*' (Savolainen, 2022). Psychologists Gordon Pennycook et al. (2020), for example, attribute individual acceptance of Covid-related misinformation to an absence of thought rather than to motivated reasoning, arguing that people accept information without taking the additional steps necessary to evaluate or authenticate that information. This line of reasoning is similar to Arendt's (1971, p. 417) own description of self-deception in relation to Eichmann; '*the only specific characteristic one could detect in his past as well as in his behavior during the trial and the preceding police examination was something entirely negative: it was not stupidity but a curious, quite authentic inability to think*'. A lack of thought is thus associated with accepting untruths. Can we assume, however, that this rendering of self-deception as the absence of thought is, in fact, divorced from motivation or intentionality? Could motivated reasoning and the motivated absence-of-reasoning be two similar, informational paths to self-deception? If so, what could motivate the refusal to engage in thought?

To answer these questions, I return to von Haben and Trivers (2011), who note distinct evolutionary advantages of self-deception, advantages which apply both to motivated reasoning and to a motivated lack-of-reasoning. The first advantage of self-deception '*is that by deceiving themselves, people can better deceive others, because they no longer emit the cues of consciously mediated deception that could reveal their deceptive intent*' (p. 4). This is an advantage also recognised by Arendt (1968) who attributes the modern lie to the proliferation of self-deceived deceivers. Today, we might similarly question if figures in power are motivated to self-deception in order to propagate systemic mendacity. In this way, the psychological self-deception of individuals may engender ontological self-deception among a citizenry though manipulating our entropic infosphere. The second evolutionary advantage of self-deception '*is that by deceiving themselves, people are able to avoid the cognitive costs of consciously mediated deception*' (von Haben and Trivers, 2011, p. 4). Again, I argue that this motivation to self-deception is seen in Arendt's (1968) analysis, specifically when she notes in Eichmann an un-critical complacency and lack of remorse when faced with his crimes in his post-war trial. Perhaps this self-deceived lack of thought stems from the motivation to avoid the cognitive costs of accepting moral responsibility for the systemic murder of millions. While this is an extreme example, philosophers of information today should likewise question the cognitive costs at stake in instances of psychological self-deception, whether such self-deception is a result of motivated reasoning or a motivated lack-of-reasoning.

In this section, I explored how self-deception transformed in philosophical literature from a passive condition of the many to an active shortcoming of the individual, a transformation which laid the foundation for the development of psychological self-deception. Psychological self-deception relies on partitioning in order to explain how one might know the truth and then

intentionally distort it in order to believe a falsity. Such partitioning and the self-deception it engenders connects to questions of information behaviour and motivated reasoning, concepts which are used to understand why one might accept misinformation in the face of quality information. I argue that a motivated lack-of-reasoning can also lead to self-deception; motivations to avoid critical thought and fall into deceit can include the desire to deceive more effectively and the desire to avoid cognitive load. Ultimately, psychological self-deception is beneficial for philosophy of information in raising questions of individual information behaviour and motivation, confronting the reasons for, variances in and costs of such deceit.

A concluding reconstruction: informational self-deception as ontological and psychological

This deconstruction thus creates an irresolvable tension between self-deception as ontological, passive and pervasive, and self-deception as psychological, motivated and individual, with both renderings of the concept contributing unique and beneficial viewpoints to philosophy of information. Which, then, is the correct path to take when studying such deception from an informational perspective? The answer, I argue, is both: informational self-deception is maintained by the aporetic structure of the two halves of this deconstruction.

In a way, this is the answer Arendt herself seems to assume. Though she never separates or labels these two different depictions of self-deception, she allows both ontological and psychological renderings of self-deception to entangle in her writing. For example, she describes '*the practice of self-deception*' as '*so widespread*' in Germany during the Nazi regime that it had become '*almost a moral prerequisite for survival*' (Arendt, 1963). In this way, information manipulation can lead to a '*complete rearrangement of the whole factual texture—the making of another reality [...] into which [modern lies...] fit without seam, [...] as the facts fitted into their own original context*' (Arendt, 1968, p. 253). Such passive and ontological self-deception bred a complacency that perpetuated extreme harms in the twentieth century. In other cases, however, Arendt (1968, p. 254) uses self-deception to call out specific governmental bureaucrats who willingly '*fall prey to [their] own fabrications*' in order '*to create a semblance of truthfulness*' for their entangled deceptions. In these areas of scholarship, Arendt assumes more of a psychological perspective towards self-deception, exploring specific motivations and consequences for falling prey to one's own deceit. I argue that this tension implicit in Arendt's writing opens space to explore informational self-deception in her work and case studies and to draw these theories into the diffuse systems of mendacity imbedded in today's infosphere.

Ontological self-deception is supported by Floridi's ontological portrayal of the infosphere as Being. Insofar as we, as beings, participate in an entropic infosphere, as Being, we are subject to a basic level of ontological self-deception that we must consistently strive to escape. Ontological self-deception places the responsibility to be critical of received semantic content on each individual regardless of ideology or political orientation. It includes the Socratic call to serve as a gadfly, continually questioning oneself and others. Additionally, ontological self-deception provides a philosophical explanation for the successes of contemporary conspiracy movements which use world-building strategies and the re-ontologising nature of ICTs to build alternative realities. The ethical and political stakes of fostering deception and encouraging complacency are merely introduced here, and a foundation is set for future, more in depth exploration of this topic. Ultimately, however, ontological self-deception does not explain variance in levels of self-deception, and it leaves out important questions surrounding intentionality, motivation and partitioning. For this, psychological self-deception is important. Rather than focus on how the many are unintentionally self-deceived, psychological self-deception focuses on the way in which specific individuals become intentionally self-deceived. This connects to existent work in information science on motivated reasoning while simultaneously introducing a motivated lack-of-reasoning as an additional path to psychological self-deception. Examining the relationship

between psychological self-deception, motivated reasoning and motivated lack-of-reasoning implicates those who propagate deceptions as well as those who succumb to deceptions, providing a foundation in philosophy of information for additional theorising on specific instances of self-deception.

Therefore, this deconstruction positions informational self-deception as, at the same time, ontological and psychological, the unintentional condition of the many and the intentional condition of the few. Though self-deception is a concept which haunts centuries of philosophical literature, philosophy of information is positioned to offer a new perspective on such mendacity, engaging the twenty-first century relationship between individuals, communities and our entropic infosphere.

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Theorising notions of searching, (re)sources and evaluation in the light of generative AI

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Abstract

Introduction. The introduction of publicly available large language models (LLMs) since 2022 has significantly challenged traditional library and information studies (LIS) core concepts. This paper argues that LIS needs to rethink aspects of its conceptual framework to address the challenges posed by the proliferation of AI-generated content and how this content is produced.

Analysis. The study employs a theoretical analysis to critically examine the LIS concepts of *search*, *sources* and *evaluation* in the light of an increasingly AI-infused information infrastructure.

Results. The main argument of the paper is that due to changes in the information infrastructure, sources are becoming increasingly invisible for people when they look for information. This has profound implications for how searching for and evaluation of information can be conceptualised.

Conclusion. The paper is concluded by offering conceptual insights on how to theoretically navigate the rapidly evolving information landscape.

Introduction

In his seminal monograph on cognitive authority, the late Patrick Wilson (1983, p. 13) writes, '*All I know of the world beyond the narrow range of my own personal experience is what others have told me*'. If we agree with Wilson, this is why access to and reliance on information sources, and the systems that enable people to find them, are so important. But what will the consequences be for society and individuals if '*what others have told me*' is increasingly generated by AI? I had Wilson's words in mind when I came across an article in the leading Swedish morning newspaper *Dagens Nyheter* in 2023. The article included the following conversation between Swedish pupils in the second year of a Swedish upper-secondary school:

> *- It feels like you get a more direct answer without having to search and scroll. It's like all of Google in one package, says [first pupil].*
>
> *- First you read books, then you googled and in the future you might use GPT to get information, adds [second pupil].* (Wasell, 23 June 2023. Translated from Swedish)

The article was one of many published on ChatGPT at the time. In it, ChatGPT is introduced as both a ghostwriter and a technology for searching, meeting mixed reactions in schools. The quoted pupils were asked to reflect on how they used ChatGPT in their schoolwork. The pupils seem to understand ChatGPT as a replacement for earlier information technologies, leaving the reader of the news article with a chronology of progress: the book, the search engine and ChatGPT. For me, the quote signals that library and information studies (LIS) need to discuss some crucial challenges that arise when AI-generated content becomes more important for people. My primary aim is to contribute to a conceptual discussion of search, sources and evaluation in an information infrastructure increasingly permeated by AI. This is relevant to LIS as a whole, but perhaps especially to subfields such as information behaviour, information retrieval, library studies and – in the particular focus of the paper – information literacy. My main argument is that changes in the information infrastructure make it increasingly difficult for people to recognise sources.

When Brian Campbell Vickery, in his classic 1961 monograph *On retrieval system theory*, distinguishes between finding '*information about documents*' and finding '*information recorded in documents*', he is referring to a distinction that is fundamental to not just information retrieval, but to LIS at large. Vickery uses the example of a person asking about the height of Mount Everest. The answer can be either: '*The height of Mt. Everest is given on page 900, volume 8, of Encyclopaedia Britannica*' or it can be '*The height of Mt Everest is 9,002 ft.*' (Vickery 1961, pp. 2–3). While the first answer points the person to a source, the second one gives the questioning person a direct answer. Vickery continues that he '*restrict[s] the problem of Retrieval to the first type of information – the provision of the documents themselves, or the information about documents*' (p. 3). A source like the *Encyclopaedia Britannica* can be evaluated based on what we know *about* the source and its trustworthiness, but the content of a direct answer is harder to evaluate if you do not know the subject in advance. While it may sound bold to compare the *Encyclopaedia Britannica* with contemporary technologies, the comparison is conceptually intriguing, a point to which I will return throughout the paper.

The next quote is taken from an interview 62 years after the publication of Vickery's monograph and concerns the development of AI-infused search engines. When the CEO of Microsoft, Satya Nadella, was asked how the search engine Bing would be powered by ChatGPT, he replied, '*It's not just a search engine; it's an answer engine — because we've always had answers, but with these large models, the fidelity of the answers just gets so much better*' (Patel, 8 February 2023). Nadella refers to a change in Bing's focus from providing links to web objects to answering specific questions. What happens when AI-infused information systems increasingly provide answers rather than directing people to sources? When and how are such answers stabilised as sources and embedded into the information infrastructure – if at all? How might this shift in focus affect the disciplinary

understanding of certain core concepts in the field – specifically the concepts of search, source and evaluation?

In the next section, I ground my discussion in a long ongoing, disciplinary conversation on the materiality of information. I then proceed to explore the topic in the context of search, sources and evaluation. The paper concludes with a discussion on the potential for human agency within society's increasingly AI-infused, corporate information infrastructure.

Information in its material form

A starting point for this paper is materiality of information, its organisation within social institutions and information systems and the various practices through which people interact with information. As Paul Dourish (2007, p. 205f) suggests, a material understanding of information should be seen in contrast to a decontextualised virtual understanding. Other researchers have used related concepts to emphasise similar understandings of information. Marcia Bates (1999) refers to '*recorded information*', Mikael Buckland (1991) writes about '*information-as-thing*' (Buckland 1991), and more recently Vivian Petras (2023, p. 581) suggests that information science should be understood as '*concerned with how information is manifested across time and space*'. In my understanding of the materiality of information, material is not necessarily tangible. The concept of materiality encompasses the inherent contextuality of information: how information is produced, communicated and used in various practices; how the structures and processes of information systems (in the broadest sense) constrain and enable people's interactions with these systems; and how these interactions are shaped by historical, geographical and political institutions.

An interest in the materiality of information in LIS can be discussed in relation to the documentalist tradition, which has its roots in the writings of Paul Otlet from the late nineteenth and early twentieth centuries (e.g., Buckland 1997), and was further developed by Suzanne Briet's theorisation of documents in the mid-twentieth century (Day 2008). In her famous description of the boundaries of documents as a concept, Briet points out that an antelope can be understood as a document if it is placed in the zoo to be informative. In other words, an object is a document if it is '*processed for informational purpose*' (Buckland 1991, p. 355). According to Briet, a document is '*any concrete or symbolic indexical sign [indicie], preserved or recorded towards the end of representing, of reconstituting, or of proving a physical or intellectual phenomenon*' (Briet in Day 2008, p. 155). Documents in this sense can be seen as sources of information from which others can learn and gain knowledge, or in the words of Mikael Buckland (1991, p. 354), '*The documentalist's approach was to use 'document' as a generic term to denote any physical information resource rather than to limit it to text-bearing objects in specific physical media such as paper, papyrus, vellum, or microform*'.

W. Boyd Rayward (1991) has pointed out that Otlet was a pioneer in emphasising the social dimension of information, in particular by highlighting the role of information systems and institutions in promoting unity and world peace. However, Otlet's writings also contain ideas that can be discussed in relation to our contemporary information infrastructure. In the documentalist tradition, facts play a central role. According to Otlet, facts can be extracted from a document by a professional documentalist and form a new, highly standardised, short document. Otlet refers to this process as *documentation*. Bernd Frohmann (2008, p. 82) argues that Otlet, through the process of documentation, '*wants to eliminate authorial subjectivity*'. In the idealistic era in which he worked, Otlet wanted to create what he called a '*Universal book of knowledge*', with all possible facts extracted from books, journals, statistics and so on. These facts '*will be recorded on separate leaves or cards rather than being confined in volumes*' and organised according to a standardised classification system (Universal Decimal Classification) (Otlet in Frohmann 2008, p. 79). Otlet's idea of extracting facts from documents conveys an understanding of facts as abstract, neutral and

decontextualised from authors as well as from a specific volume (or similar). Can Otlet's positivist notion of extracting abstract facts from documents (or information sources) be compared to the increasing trend of information systems to attempt to provide answers instead of sources? I return to this comparison further on in the paper.

I would like to expand the understanding of materiality to include the theoretical notion of *sociomateriality*. Sociomateriality refers here to how information, information systems, people, imaginaries and practices are constantly configured and made together, always in motion and never stable, without human agency necessarily playing a more important role than non-human agency (e.g., Haider and Sundin, 2024). There are a number of scholars from various disciplines across the humanities and social sciences who can be related to a sociomaterial understanding (e.g., Dourish, 2017; Introna, 2013; Suchman, 2007). Dourish (2017, p. 3) writes '*that the social world manifests itself in the configuration and use of physical objects and that the properties of those physical objects and the materials from which they are made [...] condition the forms of social action that arise around them*'. A sociomaterial dimension of information emphasises the need to understand how agency is made in the constant configurations of information infrastructures and practices (Barad, 2007, p. 141).

How can a sociomaterial understanding of information help us comprehend the increasingly AI-infused information infrastructure from the perspective of LIS? I will now turn to the role of sources in information seeking through search engines.

From providing documents to providing answers?

As long as there have been such things as information systems, libraries and similar institutions for organising information, principles and methods for presenting and finding information have played a fundamental role. There are bibliographies, lists, card catalogues, book indexes, OPACs, classification systems, thesaurus with controlled vocabularies, web portals, bibliographical databases, reference management systems and so on. These systems organise and control access to information sources. New and old technologies often merge. Web search engines rely on their index, which only contains part of the web. This means that when we use Google Search, we are searching in an index, not the online web, and the size and freshness of the index are central quality criteria (Lewandowski, 2023, p. 41). These systems of information always bring with them a particular perspective, a view of the world, whether it is the representation of topics in library catalogues (Olson, 2002), web search engines (Lewandowski, 2023, p. 265; Noble, 2018) or generative AI (Sun et al., 2024).

Just as a librarian can provide answers to direct questions, there have always been exceptions to the main focus on search engines providing sources rather than answers. For example, Shah et al. (2009) discuss social Q&A systems and relate them to (and argue for their difference from) library reference services. Rich Gazan (2011, p. 2302) describes how the 1999 TREC conference included a track on the evaluation '*of systems designed to retrieve answers within documents, not just documents themselves, in response to test queries*'. Despite these examples of the opposite, search engines such as Google Search have traditionally provided users with a list of links to information sources (or documents). Google Search was introduced in 1998 as a search engine designed to provide users with links to documents. The '*ten blue links*' on the search engine results page (SERP) became a coveted goal for web producers seeking to appear among them. A major change happened in 2012 when Google Search started to incorporate results from the so-called Knowledge Graph into visual Knowledge Panels placed on the right-hand side of the SERP (Sullivan, 2020). If someone searched for the height of Mount Everest, as in the example of Vickery (1961) searching for factual information, the user could find the content directly from a Knowledge Panel, with text and images coming from open sources, without having to click on a link. However, the content in the Knowledge Graphs have identifiable sources. According to Google (2024): '*Facts in the*

Knowledge Graph come from a variety of sources that compile factual information. In addition to public sources, we license data to provide information such as sports scores, stock prices, and weather forecasts.'

Another significant development occurred in 2016, when Google Search began providing users with extracts from documents displayed above the organic search results in response to a query (Strzelecki and Rutecka, 2020). Through so-called Featured Snippets, users could, for example, access a pancake recipe directly on the SERP rather than just links to documents containing the recipe. Knowledge Panels, Featured Snippets and similar features have made sources less visible. At the same time, users such as the pupils quoted in the introduction to the paper are not primarily interested in finding sources – they are simply looking for a quick answer to their question. Generally, people tend to trust Google to such an extent that they attribute the answers they receive directly to Google itself (Pan et al., 2007; Schultheiß et al., 2018). Knowledge Panels, Featured Snippets, and other forms of direct answers provided by search engines exemplify a shift towards delivering content in the form of answers to questions rather than directing users to sources. When answers to user queries are presented directly on the SERP, the need to click on a link and identify a source becomes redundant.

The expansion of generative AI in recent years has driven the development from searching for documents to searching for answers even further. When Open AI launched ChatGPT in autumn 2022, public interest in generative AI was awakened. Suddenly, AI production of text, images, code and other outputs became possible for the general public in many countries, and social media has since then been flooded with synthetic information. As illustrated by the opening quote, LLM applications can be conceptualised as a replacement for search engines. The possibilities of generative AI appear limitless, and public discourse has been (and continues to be) characterised by significant hype. However, critical voices have also emerged. Among other concerns, criticism focuses on the risks that arise when users treat the output of generative AI applications in the same way as search engine results (e.g., Bender et al., 2021; Shah and Bender, 2022, 2024). There is a fundamental difference between using a search engine and an LLM application: while search engines traditionally provide links to websites and other documents, generative AI chatbots generate content without a stable source other than the LLM itself. Shah and Bender (2022, p. 8) note: '*Generative systems provide a new kind of possibility for interaction, namely conversational chat. However, this comes at the cost of direct access to sources.*' In contrast to Otlet's decontextualised and highly abstract fact leaves, the output of generative AI is devoid of retraceable connections to sources. Where Otlet's idea of a Universal book of knowledge depended on the labour of many human documentalists, texts generated by LLMs are instead the output of a '*stochastic parrot*' (Bender et al., 2021, p. 611) that, as expressed by Emily Bender (2024) relies on the technique of '*statistical models of the distribution of words in text, set up to output plausible-sounding sequences of words*'. This is a significant break with the prevailing LIS tradition of constructing systems that provide the user with a source of information.

A sociomaterial understanding of search and web search engines emphasises the need to include both an analysis of the practices in which information is searched, mediated and used, and an analysis of the technical side of how infrastructures constrain people's activities, and how they are made together. One practice in which searching for information with search engines has long played an important role is school education. Louise Limberg and her colleagues (e.g., 2008) showed in a series of studies a couple of decades ago that information search in Swedish schools often involves fact-oriented questions; what Gary Marconini (2006, p. 42) refers to as look up searches. Limberg et al. (2008; see also Rieh et al., 2016) have paid attention in their research to the role of search engines in co-producing the focus of fact-seeking in schools. If the evaluation and analysis of information is increasingly outsourced to AI, it is an important research task for the future to investigate how the formulation of school tasks could change together with AI.

Generative AI, such as applications based on LLM, produces information without stable links to sources, although – as touched on in the next section – there is also an interesting merge of search engines and AI technology through Retrieval Augmented Generation (RAG). From the user's point of view, the above brief history of search engines shows that the development of getting an answer instead of a link to a source when searching for information is not new. However, from a technical infrastructure point of view, a web search engine and a pure LLM application work very differently.

Below I develop my argument as to why this increasing invisibility of sources is important and likely consequential. I also approach the question of if and when answers to questions can be stabilised and become a source.

Evaluation of information

The launch of generative AI applications for the general public in 2022 posed a major challenge to the tradition of information literacy, particularly in relation to the evaluation of information sources. Programmes for information literacy training can be found in numerous examples online, such as the Association of College and Research Libraries (ACRL 2015) *Framework for information literacy for higher education*. The first frame out of six is titled '*Authority is constructed and contextual*'. The text under this heading begins with: '*Information resources reflect their creators' expertise and credibility, and are evaluated based on the information need and the context in which the information will be used*'. Although it is not explicitly stated, the ACRL framework seems to understand expertise as a human characteristic. The text continues: '*Authority is constructed in that various communities may recognise different types of authority. It is contextual in that the information need may help to determine the level of authority required.*' Wilson (1983, pp. 166-169), who has devoted an entire book to cognitive authority, argues that '*the obvious basis for recognising the cognitive authority of a text is the cognitive authority of its author*'. The author may be a person or an institution, but in Wilson's writing, a text always has an author with an intention. Wilson also suggests two other factors that should be considered when assessing the cognitive authority: '*publication history*', which refers to the source of a text, and '*intrinsic plausibility*', which refers to how readers evaluate the content in relation to their previous experiences and knowledge. A significant challenge in the evaluation of information lies not only in the increasing invisibility of sources on search engine results pages (SERPs) or even the disappearance of traceable sources in generative AI, but also in the shifting understanding of what constitutes an originator – or, in the context of the ACRL, a creator. This shift fundamentally alters how we can assess the credibility, accountability and authenticity of information in the digital landscape. In relation to Wilson's (1983) argument, AI-generated content cannot be evaluated by assessing the author or publication history. Instead, we are left with *intrinsic plausibility*.

Most information literacy guides, models and methods include a discussion of the importance of analysing the originator of information: who the originator is, what the originator has previously published and so on. Another example is the SIFT (Stop, Investigate, Find, Trace) method, developed by digital literacy researcher Mike Caulfield. The method aims to train the user to ask the following questions in relation to the originator:

> *If the creator is a media outlet, are they reputable and respected, with a recognised commitment to verified, independent journalism?*
>
> *If it's an individual, what expertise do they have in the subject at hand (if any)? What financial ties, political leanings or personal biases may be at play?*
>
> *If it's an organisation or a business, what is their purpose? What do they advocate for, or sell? Where does their funding come from? What political leanings have they shown?* (Ruggeri, 2024)

Who is the originator of a ChatGPT output? As Bender et al. (2021) emphasise, is the generated text of an LLM produced by a '*stochastic parrot*', without links to a stable source and without an identifiable originator. In his well-known essay 'What is an author?' Foucault (1969) challenges the notion of the unique individual author. Instead, he advances the concept author function. The analytical comparison of Foucault's concept with the functions of generative AI is perhaps daring. Yet, the generative AI bots that we encounter do place a function rather than an author or other originators at the centre of their varying outputs. In the case of synthetic information, the function of the originator manifests as a configuration of an AI model, encompassing its algorithms, training data, fine-tuning processes, and – critically – the user prompts carried out within sociomaterial practices. What emerges is not the intention of an originator in the traditional sense, but rather a composite of the intentions of the LLM developers and the prompter – appropriating; perhaps exploiting – content produced by others, for others, at different times and for different purposes. Again, sources are becoming increasingly invisible or – in the case of LLM chatbots – nonexistent, making the evaluation of information quality exceptionally challenging.

A hybrid form of generative AI and web search is based on RAG technology. RAG integrates AI functionality into search applications such as Perplexity, Google Overview, and Bing Copilot, enabling a chatbot to summarise the content of top-ranked links. Although links to sources are provided, the summaries are presented in such an authoritative manner that it is reasonable to assume many users will find the summary sufficient and forego consulting the original sources. Google even states, '*Let Google do the searching for you*' (Reid, 14 May 2024). There are examples of how such summaries can lead to the spread of conspiracy theories, for example about the climate crisis (Haider, 27 August 2024) or '*scientific racism*' (Gilbert, 24 October 2024). Traditionally, a web search engine provides the user with sources via links that the algorithm interprets as relevant, and people tend to trust search engine rankings. AI-infused search engines based on RAG technology outsource not only the selection and ranking of sources but also their evaluation. While users are accustomed to relying on Google (or other search engines) to perform the searching, they are not accustomed to these platforms taking on the '*sense-making*' (Bender 2024) of content on their behalf. Haider (27 August 2024) describes this outsourcing of evaluation as an '*automation of media and information literacy*'. The quality of the summaries generated by these systems depends heavily on the quality of the sources identified by the search engine. In the examples by Haider (27 August 2024) and Gilbert (24 October 2024), the summaries became problematic because they were derived from low-quality sources. This issue parallels the problem of data voids (Golebiewski and boyd, 2018); however, the increasing invisibility of sources to users exacerbates the severity of the problem. For topics with few sources or sources of questionable quality, these voids can be exploited to amplify the spread of conspiracy theories and other forms of disinformation.

If users outsource their evaluation of sources to an AI-powered web search engine, as in the case of RAG, how do search engines evaluate synthetic information? According to Google, the search engine treats human-generated information no differently to synthetic information. The company argues that it focuses on the quality rather than the producer: '*Our focus on the quality of content, rather than how content is produced, is a useful guide that has helped us deliver reliable, high-quality results to users for years*' (Google, 8 February 2023). In a way, the idea of content without an identifiable originator can be related to Otlet's idea of extracting pure facts from documents and categorising them into a new context according to a classification system. When AI-generated output is incorporated into a technical manual, a social media post, a newspaper article or a school essay, the text is stabilised by a more traditional originator – such as a company, a newspaper and its journalists, a student or another individual – who then becomes accountable for the content. Just as decontextualisation and recontextualisation take place in documentation, if documents include AI-generated content, they are rearranged by the ranking of the sources in the search

engines. The content is assigned a source and search engine contributes to stabilising the source of the AI-generated content.

Conclusion

As Wilson (1983) reminds us, our understanding of the world depends on what '*others*' tell us. What if the '*others*' are AI? The pupils in the opening quote like ChatGPT because the application gives a '*more direct answer*' (Wasell, 23 June 2023). At the same time, LIS as a discipline – with concepts such as search, source and evaluation – emerged primarily from a tradition of documents, and systems for finding documents (including digital documents, of course). Vickery's distinction between finding '*information about documents*' and finding '*information recorded in documents*' plays an important role as a reference throughout the paper. Developments of Google Search (e.g., Knowledge Panels and Featured Snippets) have increasingly led to the answers to users' questions – the content – appearing directly on the SERP, as a complement to the prevailing LIS tradition, which has (with exceptions, of course) traditionally been about understanding how systems provide users with sources of information. As people begin to also use chatbots based on LLMs to search for (or rather produce) information, content is replacing sources. From a user perspective, this evolution appears gradual, if noticed at all; however, from a technical standpoint, the shift is dramatic. The link between content and sources is broken. Simultaneously, web search engines and AI are increasingly being integrated through RAG technology, which enables first the creation of search terms and then the summarisation of content from the top links on the SERP. I argue that the growing prevalence of generative AI applications based on large language models (LLMs), along with the integration of LLMs into search systems, is shifting the focus towards searching for content rather than identifying sources.

Increasing inbuilt AI support for searching and drawing conclusions from information sources may lead to de-skilling of searching for and evaluating information. Such de-skilling of information literacy transfers some of the previously required analytical skills from the user to the system. As a result, this transfer can also be seen as a transfer of agency in which the user has less control and becomes increasingly more dependent on the functions of the system – not only in the search as such, but also in evaluating and analysing the results. When evaluating and analysing generative AI output, verifying the originator becomes meaningless, as there is no originator with an intention, at least not in the traditional sense. But does it matter? Perhaps the focus should instead be on understanding how a LLM is trained, the role of fine-tuning in its moderation and how users formulate prompts? Prompting represents a co-construction of content, where the '*author function*' emerges through the interplay of users and AI systems within sociomaterial practices. However, once AI-generated content is incorporated and published somewhere, it becomes stabilised by its attribution to an originator's intent. As described earlier in the paper, stabilisation can be further reinforced by its inclusion in a search engine index.

This paper contributes to the conceptual discussion of searching, sources and evaluation within an increasingly AI-infused information infrastructure. Engaging in this discussion has prompted me to consider how meaningful conceptual contributions can be made when dealing with an information infrastructure that evolves so rapidly. The timeframe associated with academic writing, peer review, conferences and publishing is undoubtedly slower than the pace of technological change. My approach to addressing this challenge involves anchoring the discussion in the disciplinary tradition of LIS, and framing it through the overarching theoretical lens of sociomateriality. LIS, as a discipline, has decades of experience discussing information and researching information systems and their societal use. An important task for the discipline for the future is to create and communicate an understanding of the changing digital infrastructure, its impact on the role of sources and evaluation, and the increasing shift towards the search for answers rather than sources, all grounded in the analysis of specific practices.

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Towards informational social epistemology

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Abstract

Introduction. Luciano Floridi's claim that library and information science (LIS) and social epistemology (SE) are '*siblings*' sharing a common parent discipline in the philosophy of information (PI) invites reconsideration of how SE might evolve if grounded in PI. Such an approach would explicitly place information at the centre of SE, reshaping our understanding of its role in shaping epistemic environments and fostering collaboration between SE and LIS.

Method/analysis. The findings were obtained from a review and conceptual analysis of relevant literature in PI, SE and LIS.

Results. This paper introduces informational social epistemology (ISE), a framework that bridges the theoretical insights of PI with the shared concerns of SE and LIS. ISE integrates Sanford Goldberg's focus on epistemic dependence – how individuals and communities rely on others in social routes to knowledge – and extends this to our growing dependence on technologies, proposing that technologies can be understood as artificial epistemic agents in the framework of Floridi's theory of knowledge as accounted-for information.

Conclusion. ISE redefines the role of LIS from curating to engineering epistemic environments and places emphasis on accountability rather than traditional notions of responsibility when designing, evaluating and improving the technologies on which our epistemic activities depend.

Introduction

Social epistemology (SE) and library and information science (LIS) are distinct yet conceptually overlapping disciplines, each concerned with the processes and systems through which information and knowledge are acquired, organised and disseminated. SE traditionally focuses on the social dimensions of knowledge, while LIS – as traditionally conceived – is primarily concerned with the management of information: its creation, organisation, accessibility and preservation. Floridi (2002) critiques SE as a conceptual foundation for LIS, arguing that its focus on knowledge, while marginalising information, makes it too narrow to address the wider concerns of LIS, in which information plays a central role. Instead, he suggests that SE and LIS are '*siblings*', both grounded in the philosophy of information (PI).

This raises the question: what would an SE grounded in PI look like? To explore this, I develop informational social epistemology (ISE), a framework that combines PI's emphasis on information as a foundational epistemic object with insights from Goldberg's (2021) research programme in SE. Goldberg's work focuses on understanding '*the epistemic significance of other minds*'. It examines how our relationships with other epistemic agents differ from our interactions with non-agentive features of our environment and explores the epistemological dimensions of our dependence on technology, both as a source of evidence and as a product of the epistemic labour of other people.

Goldberg notes that the nature of our dependence on others is fundamentally different to the nature of our dependence on technology. The former entails epistemic agency and responsibility, whereas the latter reflects a design-dependence, acknowledging that technologies are products of others' epistemic labour, with responsibility resting on their manufacturers and designers rather than the technologies themselves. In this paper, I challenge Goldberg's position by arguing that technologies can be viewed as artificial epistemic agents: accountable for their epistemic impact but not responsible, as they lack intentionality. Drawing on Floridi's (2013) discussion of artificial moral agents and moral responsibility, I contend that technologies such as algorithms and search engines impact epistemic environments in ways that justify holding them accountable.

Assigning accountability to these technologies has practical implications, necessitating their evaluation to ensure their outputs align with prevailing epistemic norms. To frame this accountability and provide a deeper understanding of the role of technology in supporting knowledge acquisition, I employ Floridi's network theory of account (NTA), which explains how technologies form part of integrated information flow networks that account for information, enabling it to be transformed into knowledge. NTA offers a powerful framework for engineering epistemic environments by highlighting the interconnected and systemic nature of knowledge.

In the final section, I explain the relevance of ISE to LIS by arguing that it offers a conceptual framework through which it can articulate its epistemic role within the broader architecture of the infosphere. LIS actively participates in shaping and organising epistemic systems by fostering environments where information is more likely to be successfully upgraded to knowledge. This perspective positions LIS as the engineering of epistemic environments, ensuring accountability, promoting good information-seeking and sharing practices and addressing the informational needs of epistemic communities.

The paper proceeds as follows: first, it outlines the theoretical foundations of ISE, drawing on key concepts from SE and PI to establish a framework that situates information as a central epistemic object. Next, it examines the epistemic role of technologies, arguing for their recognition as artificial epistemic agents accountable for their contributions to epistemic environments. Finally, it explores the implications of ISE for LIS, highlighting how the discipline can leverage its unique epistemic role to address contemporary challenges in engineering epistemic environments.

Background: social epistemology and philosophy of information

Social epistemology

Social epistemology (SE) explores the social dimensions of knowledge, including its production, acquisition, certification, storage and dissemination within society (Goldberg, 2021). While SE has roots in library and information science (LIS) – with Egan and Shera (1952, p. 132) defining it as '*the study of those processes by which society* as a whole *seeks to achieve a perceptive or understanding relation to the total environment—physical, psychological, and intellectual*' and noting its shift in focus from the individual to the social – it has mainly been developed outside of LIS in academic philosophy. Perhaps the most well-known foundation work in SE is Goldman's (1999) *Knowledge in a social world* (1999), which he describes as '*a philosopher's contribution to the shaping of an information-rich society*' (p. vii). Goldman describes two dimensions of SE: the social, which focuses on the role of interactions with other agents in knowledge acquisition, and the veritistic, which evaluates how social practices promote true beliefs and reduce ignorance or error. For Goldman, SE is not merely descriptive but normative – seeking not only to assess but improve socioepistemic practices across domains like science, education and law.

A further development in Goldman's SE is the systems-oriented approach (SYSOR SE) which widens the scope of epistemic assessment to include not only individual epistemic agents but also social epistemic systems. Social epistemic systems encompass '*social practices, procedures, institutions, and/or patterns of interpersonal influence that affect the epistemic outcomes of their members*' (Goldman and Whitcomb, 2011, p. 13). Examples of such systems include science, education, journalism and legal trials, all of which share a core mission: to enhance their community's possession of truth, information, knowledge or justified beliefs. As I have argued elsewhere, libraries and information services can be considered social epistemic systems, given their role in organising and disseminating knowledge to support individual and collective epistemic goals, and shaping epistemic outcomes through their intentional design (Dixon, forthcoming).

Goldberg (2021) builds on Goldman's work arguing that the core project of SE should be to characterise the epistemic significance of other minds. He highlights how our relations to other epistemic subjects differ fundamentally from our interactions with other features of our environment such as technologies. Other minds possess intentionality, are accountable for the knowledge they convey and enable epistemic practices such as testimony and collaborative inquiry. For Goldberg, these features make other minds central to understanding how knowledge is distributed and assessed in social contexts.

To articulate this, Goldberg introduces three concepts: epistemic subjects, epistemic agents and epistemic communities. Epistemic subjects are entities capable of being ascribed epistemic states such as knowledge or justified belief. Epistemic agents, meanwhile, are epistemic subjects considered in terms of their active roles in epistemic processes, such as acquiring, transmitting and evaluating information. Epistemic communities consist of the practices, institutions and norms that structure interactions among epistemic agents, shaping the flow of information and the collective nature of epistemic processes.

Goldberg outlines several ways in which our relations to other epistemic subjects differ from our relations to other items in our environment, such as technologies. First, epistemic subjects stand in epistemic dependency relations with one another within a shared epistemic community. Epistemic dependency arises when the assessment of one subject's belief depends on the role another subject has played in acquiring or sustaining that belief. For example, if one person relies on another's testimony or expertise, the evaluation of their belief involves considering the reliability and contribution of the other person.

Second, our interactions with other epistemic subjects are governed by norms that regulate our expectations of them as epistemic agents. These norms underwrite the expectations we hold regarding the reliability, expertise and responsibilities of others in their epistemic roles. For instance, we expect doctors to be knowledgeable about best practices in their field, or research team members to communicate developments that affect shared work. These norms can emerge from professional standards, explicit agreements or implicit practices developed through repeated interaction. Importantly, these expectations are normative rather than merely predictive; they reflect what we are entitled to expect based on the prevailing epistemic norms and practices.

Third, the epistemic assessment of beliefs formed through social routes – that is, beliefs shaped by epistemic dependence on others – is fundamentally different to the assessment of beliefs formed independently. When beliefs are socially formed, their assessment must account for the social practices, norms and epistemic environment in which they were produced. This includes evaluating the reliability of the individuals, practices, systems and norms that influence the production and sustainment of these beliefs.

Goldberg (2021) argues further that for SE to be fully adequate, it must also provide a detailed account of our epistemic practices that explains the social dimensions of knowledge creation and dissemination. This includes examining the roles played by individuals and institutions, such as acting as experts, certifying expertise, setting professional norms. Importantly, SE must also investigate the role of technology in epistemic pursuits, recognising that technologies are not neutral tools but the products of epistemic labour, embedded in practices and reliant on the expertise of others. Finally, SE must address the question of the proper unit of epistemic assessment and determine whether it should focus solely on individuals or extend to groups, institutions and technologies, to fully capture the social nature of our epistemic activities.

Based on their shared concern with information and knowledge, some have argued that SE should serve as a philosophical or conceptual foundation for LIS (Fallis, 2000, 2007, 2013; Budd, 2004). However, the philosopher Luciano Floridi has critiqued this view, suggesting instead that LIS and SE should be understood as sharing a common parent in the philosophy of information (PI) and are thus '*more like siblings*' (Floridi. 2002).

Philosophy of information

Philosophy of information (PI) is the area of philosophy concerned with the nature, properties and dynamics of information. Floridi identifies the need for PI in response to the emergence of the infosphere, which he defines as the '*the whole informational environment constituted by all informational entities, their properties, interactions, processes, and mutual relations*' (2016, p. 41). In simpler terms, the infosphere refers to the world we now live in, where the boundaries between the digital and physical have blurred, and the distinction between on and offline has become increasingly irrelevant. For Floridi, this transformation not only influences how we perceive the world, make decisions and interact with others but also prompts us to reconsider who we are and what it means to exist in an age dominated by information (for a more detailed introduction to PI and its implications for LIS see Van der Veer Martens (2015)).

In practice, PI involves the '*critical investigation of the conceptual nature and basic principles of information, including its dynamics, utilisation, and sciences*' (Floridi, 2002, p. 140). It examines issues such as what information is and how it connects to related concepts such as knowledge, truth and meaning. In Floridi's view, information has risen to the level of other fundamental philosophical categories, such as being, knowledge, life, intelligence, meaning and good/evil. As such, he argues that PI is essential for making sense of reality and society in the information age.

PI encompasses both metatheoretical and phenomenological dimensions. The phenomenological aspect of PI focuses on answering fundamental questions such as: what is the nature of information? And how does it transform into knowledge? (Floridi, 2011). It seeks to clarify how information exists, evolves and interacts with the world, particularly within the infosphere. This involves examining how information affects the way we think, live and connect with others in an increasingly digital world.

Central to the phenomenological aspect of PI is Floridi's definition of semantic information as well-formed, meaningful and truthful data. In this context, well-formed refers to the syntactical correctness of data – its adherence to the rules of a given system, such as grammar or coding standards. Meaningful indicates that the data conveys significance or relevance within a particular context, rather than being random or incoherent. Finally, truthfulness ensures that the data accurately represents the state of affairs in the world that it describes, excluding falsehoods. By requiring all three criteria, Floridi distinguishes semantic information from misinformation, which is meaningful but untruthful, and from raw data, which may be well-formed but lacks meaning.

Floridi's (2011) network theory of account (NTA) expands on this by explaining how semantic information upgrades to knowledge. Knowledge, according to Floridi, arises when semantic information is embedded within a network of explanatory relations capable of answering '*how-come*' (HC) questions, such as why or how a particular fact holds true. This integration ensures that information is not isolated but instead interconnected within an explanatory framework. For instance, the statement '*Berlin is the capital of Germany*' transitions to knowledge when it is integrated into a network that explains why Berlin holds this role, such as historical, political and geographical contexts. Isolated facts are insufficient for knowledge; they must form part of a network where each piece of information is meaningfully linked to others.

Floridi uses network theory to model this process, where nodes represent pieces of information, and edges represent the explanatory links connecting them. A piece of semantic information upgrades to knowledge when the network is structured to answer HC questions completely and accurately. This emphasis on structured explanation avoids problems such as epistemic luck, where information aligns with the truth by coincidence but lacks the necessary justification, or, as Floridi describes it, when '*semantic information lacks the necessary structure of relations that allow different packets of information to account for each other*' (Floridi, 2012, p. 444).

NTA bears some resemblance to formal approaches to SE that utilise network theory to explore the dynamics of epistemic communities. While Floridi's focus is on the transformation of semantic information into knowledge through explanatory integration in an information flow network, network theory in SE models how beliefs, evidence, and testimony are shared within groups (Goldman and O'Connor, 2021). For example, philosophers of science have used network models to analyse the division of cognitive labour in scientific communities (Zollman, 2007), the propagation of false beliefs (O'Connor and Weatherall, 2021), and the persistent citation of retracted papers (LaCroix et al., 2021).

The metatheoretical aspect of PI investigates the conceptual and methodological principles underpinning the study of information. Drawing on insights from computer science and information theory, it develops frameworks that address the foundational characteristics and dynamics of informational systems and processes. Central to this is Floridi's (2011) method of levels of abstraction (LoA), which provides a systematic way to analyse complex systems by breaking them down into manageable layers, each representing a different level of detail or focus.

At its core, the method revolves around two concepts: typed variables, which hold specific types of information, and observables, which combine these variables with a specific feature of the system being studied. A level of abstraction is the set of observables chosen to model a system, and

the resulting model represents the system at that level. This approach ensures clarity and precision, avoiding misunderstandings that arise from ambiguities in how systems are represented.

Floridi (2019, p. 20) illustrates this with the example of asking the price of a second-hand car. If someone answers '5000' without specifying the currency, the information is incomplete and potentially misleading. Such ambiguity, Floridi notes, can lead to significant errors – such as NASA's infamous loss of the $125 million Mars Climate Orbiter due to mismatched metric and imperial units between teams. Employing LoA enables you to avoid such issues by specifying and defining relevant variables to ensure that that important details are clearly articulated to minimise potential ambiguity.

While the concept of LoAs might seem similar to the *lens* metaphor used in the social sciences, Floridi (2021) criticises the idea of the lens for being often too vague and relativistic. In contrast, LoAs provide a clear and structured way to focus on the most relevant aspects of a system or object of study, isolating and defining its essential components. This precision makes LoAs an effective tool for analysis and modelling a system or object of study, ensuring that efforts are directed toward the most relevant aspects of a system or problem.

Developing informational social epistemology

Floridi (2002) rejects SE as a foundation for LIS, due to its epistemologically prescriptive nature and narrow focus on knowledge rather than information. He argued that information, understood as meaningful data, plays only a marginal role in SE. But is this an accurate assessment? Goldman's work, particularly *Knowledge in a social world* (1999), suggests otherwise. Goldman frames SE as an inquiry into what he terms the '*mental infosphere*', which encompasses all informational states – including beliefs, whether true or not. For Goldman, the goal of SE is to maximise the transformation of these informational states into true beliefs or knowledge, making information integral to the process. He highlights the importance of fostering an '*information-rich society*' and positions the understanding of information-sharing and -seeking processes within social contexts as fundamental to his framework.

Similarly, Goldberg (2021) treats information as foundational to epistemic practices. In his work, he introduces the concept of epistemic dependency, describing how individuals rely on others to supply, validate and assess information within a shared epistemic community. For Goldberg, the norms governing information-sharing are fundamental to structuring epistemic environments and enabling belief formation. Systems of information exchange are necessary to support the pursuit of truth and the creation of knowledge.

It could be argued that both Goldman and Goldberg treat information as only instrumental to achieving knowledge; however, even if this is the case, this role is far from marginal. Information is a key component of how epistemic processes operate. As Goldberg points out, reliable information and well-regulated sharing practices are indispensable to the proper functioning of epistemic environments. He highlights the importance of norms that govern information-sharing and epistemic dependency within communities, stating that such norms '*enable us to solve complicated coordination problems we face as we seek to acquire knowledge in communities that exhibit a highly differentiated division of intellectual labor*' (Goldberg, 2021, p. 29). This challenges Floridi's claim by suggesting that information is not marginal but in fact central to SE.

Given Floridi's assertion that SE and LIS are '*siblings*' sharing a common parent discipline in PI, it is worth considering how SE might evolve if grounded in PI. Such an approach would explicitly place information at the centre of epistemic inquiry, reshaping our understanding of its role in shaping epistemic environments and fostering collaboration between SE and LIS. This forms the basis for what I call informational social epistemology (ISE), a framework that bridges the theoretical insights of PI with the shared concerns of SE and LIS.

As explained above, Goldberg frames SE as the study of the epistemic significance of other minds and emphasises the need to understand the nature of our epistemic dependence on other individuals and technologies. Floridi's PI offers conceptual tools to refine SE's focus, prioritising an understanding of the informational dynamics within epistemic environments. ISE draws on Floridi's NTA, which reconceptualises knowledge as accounted-for semantic information embedded within a network of relations to an informational source. Semantic information – defined as well-formed, meaningful and true data – becomes knowledge when situated within a network capable of answering *how-come* questions that account for the semantic information. This network of accounts link sources of information to the propositions they support via intermediate nodes that structure explanatory connections. Epistemic success, therefore, depends on the network's ability to transform disconnected pieces of semantic information into an integrated system of knowledge.

ISE challenges the anthropocentric bias found in epistemology by extending the class of epistemic agents to include technologies. While Goldberg views technologies as tools that facilitate human epistemic practices, he stops short of granting them epistemic agency, arguing that only humans can be attributed responsibility. However, Floridi's (2013) discussion of artificial moral agents (AMAs), provides the basis for a parallel argument about artificial epistemic agents. Floridi argues that technologies can exhibit functional agency at certain levels of abstraction (LoA), independent of their lack of normative understanding. Adopting this approach, we can argue that ICTs can exhibit functional epistemic agency at an appropriate LoA, focusing on their contributions to knowledge production rather than their inability to act normatively.

By treating ICTs as epistemic agents, ISE provides a deeper understanding of their role in inquiry. Floridi argues that extending the class of agents, particularly to include artificial agents, allows us to conceptualise agency in a more inclusive and functional manner, tailored to the specific contexts in which these agents operate. This approach avoids anthropocentric biases by focusing on the behaviours and contributions of entities at appropriate LoA, rather than their resemblance to human agents. It enables a more precise analysis of the accountability and significance of technologies within epistemic networks, acknowledging their ability to organise, validate and disseminate information to support knowledge acquisition.

Floridi's concept of LoA allows us to evaluate artificial agents based on their context-specific properties. At a relevant LoA, artificial agents such as ICTs can be analysed for their epistemic contributions, including their reliability, outputs and the role the play as informational sources in epistemic networks. For example, while a magnetic strip holding a knife to a wall cannot meet the conditions of agency at any LoA, an AI system generating scientific insights can be recognised for its functional contributions within a defined epistemic framework (Floridi, 2013, p. 158). Floridi illustrates this distinction through the example of HAL in 2001: *a space odyssey*. HAL can be considered morally accountable – though not responsible or blameable – if it meets the conditions of agency, which include the ability to perform state-transitions and exhibit behaviours characteristic of agents within a given LoA, where state-transitions refer to the ability to move between different states, such as processing a command or executing an action, based on predefined rules and inputs. However, as Floridi notes, HAL would only be responsible and blameable in a science fiction scenario where it possessed a mental and intentional life (Floridi, 2013, p. 158). This example serves to demonstrate that accountability depends not on normative capacities but rather on the specific functional contributions an artificial agent makes within a given context.

There are several advantages to this approach. First, it recognises that agency is context-dependent, allowing ICTs to be considered agents within specific LoAs where they perform epistemic tasks. This avoids conflating agency with human-like qualities while acknowledging the distinct contributions of artificial agents. Second, it shifts the focus from responsibility – requiring

intentionality and understanding – to accountability, which is better suited to evaluating the functional roles of technologies. Finally, it highlights the role of ICTs as integral components of networks that facilitate the transformation of information into knowledge.

Importantly, ISE also addresses concerns about human responsibility within these systems. By extending the class of agents to include ICTs, it does not dilute human oversight but rather clarifies the distributed nature of epistemic accountability. This ensures that our dependencies on both human and artificial agents are evaluated within well-defined roles, fostering greater transparency and equity in epistemic practices. As Floridi argues, extending agency to artificial systems allows us to conceptualise accountability in ways that align with broader ethical principles, enabling technological mediation to support rather than undermine the functioning of epistemic systems (2013, pp. 157–158).

Objections and responses

While ISE offers a novel framework for understanding epistemic dependencies on both humans and technologies in informational environments, and the role of ICTs in inquiry, it is not without potential criticisms. This section addresses three significant objections to the approach: the reliance on Floridi's NTA and the epistemic role of ICTs in epistemic inquiry.

Objection 1: NTA is only one theory of knowledge among many and is not the most widely accepted

One possible critique is that Floridi's NTA represents a specific and perhaps contentious theory of knowledge. Social epistemologists often avoid committing to a particular theory of knowledge by speaking of knowledge in the weak sense as true beliefs. This objection challenges the adoption of NTA in ISE, suggesting that relying on NTA may alienate those who do not share Floridi's conception of knowledge.

Response

While NTA is not universally accepted, its strength in ISE lies in its explanatory power. As Illari et al. (2013) note, one of the strengths of NTA is its emphasis on integration, which reflects the reality that knowledge rarely exists in isolation but rather exists within interconnected systems of knowledge. Integration, in this context, refers to the way knowledge depends on and is supported by related propositions, forming a coherent explanatory network. This is especially evident in scientific knowledge, where understanding a single fact often requires situating it within a broader theoretical framework. This focus on integration aligns directly with the systemic and networked nature of modern epistemic environments which are heavily dependent on ICTs.

Additionally, NTA's flexibility in allowing for degrees of knowledge and its responsiveness to revisions makes it particularly valuable for analysing epistemic systems involving ICTs. Illari et al. (2013) further observe that NTA allows for differences in the extent of one's accounting network. For example, two individuals may both know a fact, but one may know it *better* by having a stronger network of explanatory connections, which may include access to ICTs that allow them to provide a better account of the semantic information they hold.

Floridi also points out NTA's sensitivity to changes in the accounting network, highlighting how it facilitates quick identification and correction of flaws in epistemic networks. He describes how significant epistemic shifts, such as a Copernican revolution, demonstrate the capacity for substantial revisions in accounting networks to reflect improved understandings. This makes NTA particularly effective for evaluating and improving epistemic practices in rapidly changing informational environments, such as those mediated by ICTs. Thus, even if NTA is not accepted as the definitive theory of knowledge, its utility as a framework for analysing knowledge processes in practice makes it a valuable contribution to ISE.

Objection 2: NTA does not fully account for tacit knowledge

A further objection to NTA concerns its limitations in accounting for tacit or procedural knowledge, a challenge highlighted in discussions of tacit knowledge, such as those by Polanyi (1958). Critics may argue that because NTA focuses on semantic information as well-formed, meaningful and truthful data, it primarily explains explicit or propositional knowledge – the kind that can be articulated, shared and embedded in information flow networks. However, many forms of expertise, particularly tacit knowledge, are embodied in practices and social interactions rather than in discrete statements.

If NTA is limited to explaining how explicit knowledge is structured, revised and corrected over time, then it risks overlooking how tacit knowledge is formed, transmitted and sustained within epistemic environments. This limitation raises the question: can NTA fully account for knowledge that is enacted through practice rather than expressed in propositional form?

Response

ISE extends NTA by recognising that epistemic environments are not just sources of explicit knowledge but also sites where tacit knowledge is developed, sustained and applied through social practices. To understand this, we can draw on Goldberg's (2021) concept of epistemically engineered environments (EEEs), which are partially constituted by these practices and help structure the ways in which knowledge – both explicit and tacit – is transmitted and applied. Tacit knowledge is an essential part of what makes EEEs function effectively, as they embed norms, expectations and expertise that shape epistemic engagement. Rather than treating tacit knowledge as an obstacle to be overcome, ISE explains how it operates within environments that foster learning, refine skills and guide epistemic participation.

Collins (2013) helps clarify this by distinguishing different forms of tacit knowledge. Relational tacit knowledge (RTK) remains unspoken due to social or contextual barriers but could, in principle, be made explicit. Somatic tacit knowledge (STK) is embodied and learned through experience, making it difficult to articulate in propositional terms. Collective tacit knowledge (CTK) is the strongest form, as it is not fully explicable but depends on immersion in shared practices and epistemic communities. This distinction highlights that knowledge is not always reducible to explicit propositions but is often enacted through engagement in shared epistemic practices.

ISE can also explain tacit knowledge through epistemic dependence, the idea that individuals rely on others – whether people, institutions or ICTs — to acquire and apply knowledge. A doctor diagnosing a patient, for example, does not simply recall medical facts in propositional form but draws on experience, pattern recognition and professional training that have become second nature. Their ability to make judgements is shaped by prior interaction with mentors, case studies and medical institutions that encode and refine expertise over time. Similarly, a researcher navigating a classification system may not need to articulate its theoretical underpinnings but is able to work with it effectively because of its design and conventions and the norms surrounding its use. In both cases, knowledge is not simply an individual possession, but something sustained through epistemic dependence on structured environments and expert communities.

Thus, while NTA focuses on explicit knowledge as a network of explanations, ISE extends this model by showing how epistemic environments incorporate tacit knowledge through epistemic dependence, habitual engagement and established norms that give rise to normative expectations. Since EEEs cannot function without tacit knowledge, it follows that tacit knowledge is, in a meaningful sense, accounted for by ISE. The ability to engage with an epistemic environment is not just a matter of acquiring propositional knowledge but about participating in a community where knowledge is applied, shared and built upon through collective inquiry and practice.

Objection 3: ICTs lack agency and therefore cannot contribute meaningfully to knowledge networks

Another objection targets the role of ICTs within ISE. Critics may argue that ICTs lack the intentionality and epistemic agency required to contribute to knowledge systems. Technologies like search engines or digital repositories are often seen as tools, not participants, in epistemic networks. This critique raises concerns about whether ISE improperly inflates the epistemic significance of ICTs, undermining the human-centric focus of traditional epistemology.

Response

ISE does not attribute traditional epistemic agency to ICTs. Instead, it positions ICTs as functional nodes within accountable networks that facilitate the flow, organisation and accountability of information, focusing on their functional role. Floridi's NTA provides the conceptual framework for this understanding. In NTA, knowledge arises from embedding information within accountable networks that answer *how-come* (HC) questions. ICTs play a crucial role in structuring and delivering this information, even if they lack intentionality or agency.

This perspective aligns with Goldberg's emphasis, discussed above, on the design-dependence involved in our epistemic dependence on technologies. Technologies are not independent epistemic agents but extensions of human-designed systems. For example, in academic libraries, ICTs such as catalogues and search engines organise and transmit information in ways that enable users to assess its relevance and reliability. Their epistemic value lies in their functionality within networks governed by norms of accountability and reliability.

Far from diminishing the role of humans, this view highlights the interplay between human agents and ICTs in epistemic environments. ICTs are indispensable for managing the scale and complexity of modern epistemic environments, but their epistemic significance depends on their integration into accountable systems designed and operated by human agents.

Engineering the infosphere: the relevance of ISE to LIS

ISE offers a conceptual framework through which LIS can articulate its epistemic role within the broader architecture of the infosphere. ISE, building on Floridi's philosophy of information (PI), conceptualises knowledge creation as a networked process, dependent on the interplay between human and technological agents. Within this framework, LIS is reconceived not as a discipline narrowly focused on the management of information, but as a discipline focused on engineering epistemic environments to ensure their proper functioning. This reframing highlights LIS's role in resolving erotetic deficits – gaps in knowledge – by creating and sustaining environments in which information can be successfully upgraded to knowledge.

ISE not only challenges the custodial metaphor traditionally associated with LIS but also critiques the more recent curatorial perspective shaped by Floridi's PI and its influence on scholars like Fyffe (2015) and Bawden and Robinson (2018). While LIS was historically framed as a custodial discipline responsible for preserving and maintaining recorded knowledge, Floridi (2002, 2004) proposed that LIS should be understood as applied PI, emphasising its role in stewarding semantic environments rather than being directly concerned with knowledge itself. This shift was later reinforced by Fyffe (2015) and Bawden and Robinson (2018), who framed LIS as '*curating the infosphere*' to foster semantic flourishing. The shift from custodial to curatorial does imply a slightly more active role for LIS; however, ISE argues that both custodianship and curation remain fundamentally passive roles, limiting LIS to the management of information rather than actively shaping epistemic environments to support knowledge creation. In contrast, ISE reframes LIS as a discipline focused on engineering epistemic environments that support the transformation of information into knowledge by facilitating its integration into information flow networks that allow it to be correctly accounted for.

This engineering perspective aligns with Floridi's (2019) proposed '*rebooting*' of philosophy as conceptual engineering or design. For Floridi, the task of philosophy is not merely to interpret the world but to model and refine the structures through which meaning is created and shared. Similarly, LIS's engineering of epistemic environments involves designing conceptual and practical infrastructures that facilitate knowledge acquisition and dissemination. This alignment demonstrates the philosophical and methodological significance of treating LIS as a discipline engaged in engineering, rather than simply curating, the infosphere.

Conclusion

This paper has proposed ISE as a conceptual framework that bridges PI and SE, offering a novel approach to understanding epistemic practices in contemporary knowledge systems. By integrating Goldberg's focus on epistemic dependence with Floridi's NTA, ISE repositions information as central to epistemic inquiry, challenging Floridi's characterisation of information as marginal in SE.

ISE frames the epistemic roles of humans and technologies within accountable networks, recognising the functional contributions of ICTs at specific LoAs. This framework moves beyond the anthropocentric assumptions of traditional epistemology, highlighting the interplay between human agents, technological tools and the epistemic systems they co-constitute. In doing so, ISE shifts LIS from a curatorial perspective to one of engineering epistemic environments, with a focus on creating and maintaining systems that enable information to be appropriately accounted for and transformed into knowledge.

Future research in ISE could explore the practical implications of this framework for LIS. These include addressing epistemic injustices, operationalising accountability in hybrid epistemic systems and further evaluating the considerations of extending epistemic agency to artificial agents such as ICTs. Furthermore, interdisciplinary collaborations between LIS, SE and PI could enhance ISE's theoretical foundation and provide practical solutions to challenges such identifying and diagnosing socioepistemic dysfunctions (e.g., misinformation and algorithmic bias) and understanding the role of artificial intelligence in knowledge production.

Finally, as Goldberg (2021) observes, a limitation of SE is its primary focus on the normative dimension of knowledge, often overlooking the empirical details of socioepistemic practices. Future research can also examine how LIS research (e.g., information behaviour, user experience, and information literacy) can inform ISE by providing insights into the empirical realities of how people engage with information in practice.

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Singing in the rain: the role of umbrella concepts in library and information science

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Abstract

Introduction. This paper considers the function and use of *umbrella concepts* within the library and information science (LIS) discipline.

Method. This paper uses the example of information avoidance to examine how umbrella concepts shape LIS theoretical work, including how they impact the theorisation of an emerging discipline.

Analysis. We use on Hirsch and Levin's (1999) umbrella concept lifecycle to examine how umbrella concepts develop and, potentially, how they disappear.

Results. We suggest that while umbrella concepts provide a useful way to unite disparate or emerging strands of research, they can also constrain the development of a field when the label becomes a convenience rather than an invitation to continue the theoretical work needed to progress scholarly constructs.

Conclusion. We finish by considering how this examination of umbrella concepts plays into continued debates about the theoretical structure of LIS (or lack of it) as well as offering suggestions for future research priorities in this area.

Introduction

The umbrella concept, which is used to bring together or '*encompass and account for a set of diverse phenomena*' (Hirsch and Levin, 1999, p. 200), will be familiar to library and information science (LIS) researchers. Often used interchangeably with umbrella construct and umbrella term, the umbrella concept has been used to integrate new ideas into LIS as well as to unite disparate areas of study. Nonetheless, while *umbrella concept* is a common term in LIS research, we argue that there is a lack of awareness about what constitutes an umbrella concept and how it is brought into being. There has additionally been little consideration of the impact of the term within LIS, including how its use shapes theorisation. This short paper forms an initial attempt to interrogate the use of this term within LIS and to explore its connotations for ongoing research in this area. We will use the example of information avoidance to explore the value that umbrella concepts have to our field as well as to start a discussion about what the use of this framing device implies.

Use of umbrella concepts within LIS

Theories and concepts of major phenomena are defined as '*assumptions, definitions, and propositions which explain a group of observed facts or phenomena in a field or discipline*' (Busha and Harter, 1980, p. 13). These theoretical constructions represent mental images expressed as subjective thoughts around things encountered in daily life and form the foundation of the conceptual framework of the subject under investigation (Ikoja-Odongo, 2002, p. 86). Some of these constructions are defined as complex concepts that '*can be broken into basic concepts, so defined most or all of the time, with a degree of shared understanding suitable for the purposes of information science*' (Szostack, 2011, p. 2248). In its beginnings, LIS researchers relied on theories from other disciplines to interpret their findings. The formulation of umbrella concepts is part of the shift towards establishing conceptual frameworks that have been uniquely tailored to the needs of the field, or rigorously tested, refined and adapted for application within information science (Kuhlthau, 2005). While the elaboration of theory may have been limited by the applied dimensions of LIS (Sonnenwald, 2016, p. 2), conceptual work is key for the development of new understandings about information phenomena as well as more relevant practice and policy.

One of the first LIS papers to employ the term umbrella concept was Savolainen (2007a, p. 109), who positioned information behaviour and information practice as two rival umbrella concepts that, in drawing upon different discourses, suggest '*different approaches to metatheoretical and methodological issues*.' However, although Savolainen (2007a, p. 111) labelled the discourses that inform information behaviour and information practice as '*fragmentary and fuzzy*' and acknowledged that an umbrella concept unites disparate ideas, he did not go on to justify the use of the term. Along the same lines, his suggestion that boundaries between umbrella concepts may be '*elusive*' or less rigid than presumed (Savolainen, 2007a, p. 119) and that terms might become '*too broad*' (Savolainen, 2007a, p. 116) indicate that umbrella concepts occupy a useful theoretical role within LIS. Notwithstanding, his work remains firmly focused on the treatment of information interactions rather than their structuring devices. More recently, LIS authors have started to question the separation of information behaviour and practice into two separate umbrella terms, citing '*persisting vagueness*' (Dalmer and Huvila, 2020, p .96) about differences as well as confusion about the relationships between sub-concepts (Agarwal, 2022).

Beyond Savolainen, umbrella concepts have been used to refer to related LIS ideas, including big data (Hadi et al., 2018), and information literacy (Lloyd et al., 2013). Yakel (2007, p. 338) suggests digital curation could form an umbrella concept for the related areas of '*digital preservation, data curation, and digital asset and electronic records management*,' but other authors critique this neologism for being too imprecise (Stevens, 2013) or too far removed from professional practice (Dallas, 2016), providing a further indication of how umbrella terms are intricately entwined with the establishment and focusing of subfields of study. Other authors have used umbrella concepts to consider the LIS discipline: Ibekwe et al. (2019) examine how the umbrella concepts of

informatics and informatology failed to displace the narrower fields of library science, documentation and information science. Lor (2014) further expresses concern that umbrella concepts are too far removed from empirical research to benefit the field. However, while these papers indicate that umbrella concepts have value, including by facilitating ongoing reflection on the evolution of LIS, specific details of what this value may be are underexplored.

The example of information avoidance

The loose use of the umbrella concept within LIS is exemplified through a consideration of information avoidance (IA). Over the last few years, our research group has explored IA, a broad concept that is often discussed in LIS and other disciplines, yet which is subject to varying terminology and assumptions. Before we started this project, we assumed that we thought about IA in a similar way to other scholars. However, our deep dive into the concept showed us that researchers employ many terms and ideas to refer to what we understand as IA or aspects of it (Hicks et al., 2025). In effect, we had assumed that information avoidance formed an umbrella concept, yet, as we explain below, our research demonstrated that this was not the case. Like Savolainen (2007a, p. 110), our focus on IA acknowledged the need to raise a familiar concept as a '*legitimate object … of inquiry [that] should not be accepted without posing questions about [it] origins and legitimacy*'. Somewhat ironically, neither our group nor Savolainen turned this inquiry to the overarching umbrella concept construct. This oversight forms the basis of this short paper.

The lifecycle of an umbrella concept

We started our examination of umbrella concepts by turning to Hirsch and Levin (1999), two scholars who explored the construct within their discipline of organisational studies. They propose that umbrella concepts have both cognitive and political benefits, including allowing for the organisation of concepts into more ordered systems of knowledge; keeping a discipline connected and relevant to the practitioner world; and allowing researchers to make their research more visible and legitimised by linking it to an already institutionalised overarching concept. Hirsch and Levin (1999, p. 206) also propose that some fields are more likely to create umbrella concepts than others, arguing that the '*more a field lacks theoretical consensus, the more it will rely on umbrella constructs to tie together different research elements*'. They develop these ideas further by tracing umbrella concepts through four lifecycle stages: *emerging excitement*, in which the umbrella concept comes together; the *validity challenge*, in which the umbrella concept is seen as too broad, disparate or difficult to measure; *tidying up with typologies*, in which scholars aim to organise research into more useful ways of thinking; and *outcomes*, in which either the challenges to the umbrella concept are overridden and this may arise due to better theorising, the concept becomes a permanent point of discussion, or the concept undergoes construct collapse because it cannot be made coherent (Hirsch and Levin, 1999). Offering a useful framework through which to begin to draw out theoretical development within a discipline, this lifecycle also recognises the impact of stakeholders within applied fields of study.

Information avoidance as umbrella case study

The possibilities afforded by Hirsch and Levin's (1999) lifecycle model sparked our interest and we considered that IA could provide a useful example through which we could begin to explore umbrella concepts in LIS. Drawing upon a recent critical conceptual review of IA (Hicks et al., 2025), we judged that IA entered the first phase of the lifecycle model, *emerging excitement*, in the 1980s and 1990s when LIS scholars (e.g., Krikelas, 1983; Kuhlthau, 1991, Chatman, 1999) queried the absence of avoidance from the field's defining models and conceptualisations. This early work then led to an increasing number of empirical studies in the early 2000s (e.g., Savolainen, 2007b; Barbour et al., 2012), which eventually pushed IA into the second stage of the lifecycle, *validity challenge*. In this phase, authors questioned the naming of IA (Manheim, 2014) while further bringing new terms under the umbrella, including minimising (Vaillo et al, 2018), delegating

(Addison, 2017) and hedging (Hicks and Lloyd, 2022). We judged that this broadening of interest pushed IA into the third stage of the lifecycle, *tidying up with typologies*, in which researchers started to organise work in this field (e.g., Klaus, 2021). It was at this point that our research group became involved. However, rather than merely contributing to this tidying process, our critical conceptual review aimed to move IA towards the final *outcomes* stage in the lifecycle model.

Taking a step back, we realised that we needed to think more deeply about the relationship between the umbrella concept and our conceptualisation of IA. Reviewer comments for our critical conceptual review (Hicks et al., 2025) indicate that there is still some typology tidying to be done. However, our theorisation illustrated the value in moving away from an ever-increasing expansion of the umbrella to create a more theoretically dense construct. Reflection on our decision to reconsider the umbrella concept also helped us to think about the implications of our work within LIS. Noting that the umbrella concept expands the conceptualisation of the field, including by facilitating reflection, comparison and the introduction of new ideas, we also recognised that it forms a flexible rhetorical move, creating a discursive opportunity to '*lump*' certain things together, minimising differences while '*splitting*' them from other things and maximising the differences between what is inside and outside the umbrella (Zerubavel, 1996). For example, whereas Savolainen (2007a) employs the umbrella concept to distinguish information behaviour from information practices, Huvila and Gorichanaz (2024) use the same term to consolidate multiple areas of research, emphasising the commonalities and minimising the very distinctions Savolainen (2007a) seeks to maximise:

> *We use the term 'information behavior' as an umbrella … while acknowledging that different researchers and subfields prefer other terms and frameworks, including information practices, information experience, and health information seeking, to name a few. In this review, we embrace all these approaches as part of a shared vision rather than attempt to separate them.* (Huvila and Gorichanaz, 2024, p.216)

Gathering conceptual items together and distinguishing them from other things is an act of both classification and boundary-setting. As a discipline, we are deeply attuned to the ways that classifications have consequences (Bowker and Star, 1999); we know that uniting things prevents us from seeing the differences within and the similarities across categories. We also know that the bigger the conceptual category, the more flexible but less specific it is, with categories that become too big functioning as a label rather than a useful theoretical device. In our research, however, LIS scholars tend to group ideas as umbrella concepts, fixing them in place relative to one another with little examination of what the umbrella is for. In short, we use the term umbrella concept *as* an umbrella concept, a flexible and convenient category that we rarely engage with.

Conclusions

As authors, we have thought about what this might say about our discipline. The many critiques of LIS as atheoretical or poorly theorised suggest a desire for a precise, mature, finished discipline where there is both a theoretical consensus and a peaceful coexistence of its many origins. Our disciplinary model period, when numerous models of information seeking sought to systematise messy processes for translation into information retrieval systems, further indicates that we also like certainty and neat classifications. However, we suggest that using the umbrella concept, which echoes the iterative conceptualisation of relationships that is reminiscent of grounded theory, lets us deny, overcome or set aside the ambiguity that is inherent to our discipline. Instead, we encourage colleagues to reflect on what we mean when we employ umbrella concept terminology as well as why we use it. For example, what does the distinction between Savolainen (2007a) and Huvila and Gorichanaz (2024) signal about information practice as an umbrella concept? Does this represent a validity challenge or is it evidence that the discipline desires to tidy up typologies? We also encourage our colleagues to use the umbrella concept to think about the ambiguity and

emergence that characterise people's interactions with information, as we have done with information avoidance. This, we argue, can help us to embrace the dynamism of our discipline and acknowledge it as growth.

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The multispecies perspective in library and information science

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Abstract

Introduction. Library and information science (LIS) has predominantly focused on human-centric systems and organisations. However, a growing movement is now exploring the role of nonhumans in shaping the sciences and practices of information. This paper introduces the emerging field of multispecies information science, which expands LIS by recognising the contributions of animals, plants, landscapes and other nonhumans to information creation and transformation.

Approach. The theoretical foundation of multispecies information science is rooted in posthumanism, critical animal studies and multispecies ethnography. Influential scholars such as Donna Haraway have challenged human exceptionalism, promoting an inclusive approach to human/nonhuman and nature/society relations while addressing the complexities of researching in the Anthropocene. In the field of LIS, Marcia Bates's evolutionary perspective frames information as a thread woven through life, offering one of the most inclusive viewpoints towards other living species. The author also draws on their empirical research in human–companion animal information experiences to further expand the multispecies movement within the field.

Findings. Through the literature, there are stories not only of information scholars but also of the animals around them – stories that challenge, inspire and deepen their understanding of LIS. This manuscript highlights how other-than-human species, including antelopes, gorillas, birds, seeds, dogs and cats, have shaped LIS theories and practices.

Originality/value. This paper encourages interdisciplinary collaboration and challenges LIS to embrace a shift toward a multispecies movement that is inclusive, ethical and sustainable. It fosters a deeper understanding not only from a human perspective but also from larger assemblages that include humans alongside other beings.

The interconnected web of life and information

Library and information science (LIS) seeks to understand life through the lens of information. For over 100 years, it has primarily focused on documents, systems and, ultimately, humans. However, humans represent only a small fraction of life on Earth. They have long shared their existence with a vast array of others – animals, plants, fungi, microbes and landscapes. Together, these beings form larger assemblies of many species and materials, collectively referred to as the more-than-human.

Today, LIS is broadening its scope to include nonhuman animals (see Solhjoo, 2024; Solhjoo et al., 2023; Hartel, 2023; Lueg, 2024). This shift reflects a growing commitment to understanding the diverse beings that (in)form the world alongside humans – living, loving and learning together (Solhjoo, 2024). From Suzanne Briet's bold question, '*Is an antelope a document*?' (1951, English translation, 2006) to Marcia Bates' articulation of the '*red thread of information*' (1999), this paper introduces a new narrative of information science.

What is presented here is an intellectual voyage where the red thread of information weaves through the lives of all creatures, great and small. Through the collected stories of information scientists and their work alongside other species, this piece offers a compassionate perspective and inspires new avenues for thinking and working in LIS.

Foundations of the multispecies turn

The rationale for the turn towards multispecies information science stems from recent intellectual developments in the humanities and social sciences. These include the posthumanist thinking of Donna Haraway (2008, 2016) in defining concepts such as becoming-with, making kin, companion species and natureculture.

Multispecies studies fall under the posthuman research umbrella but focus specifically on the relationships and entanglements of multiple species. This field is related to the concept of '*becoming-with*' other species, which is pertinent for exploring the phenomenology of nonhuman animals (Pacini-Ketchabaw et al., 2016). While posthumanism provides valuable epistemological insights, it is not a blueprint for multispecies research. Instead, multispecies research offers a more nuanced approach, embracing the relational and ethical dimensions of human and nonhuman interactions (Taylor, 2012; Livingston and Puar, 2011). Notably, Donna Haraway's work, especially *When species meet* (2008), is foundational for understanding the animal turn in posthumanist thinking. Haraway challenges human exceptionalism, arguing that our existence is always intertwined with other species beyond mere utility. The multispecies turn represents an ethical and postlinguistic perspective, advocating for nuanced connections between the lived experiences of humans and nonhumans (Haraway, 2008).

The animal (species) turn in humanities, as a theoretical and methodological approach explored by scholars like Weil (2010), Kirksey and Helmreich (2010), and Livingston and Puar (2011), centres on how various organisms, including humans, co-create social worlds. This approach goes beyond the human-centric view, treating animals and other nonhuman beings as active participants and agents in the creation of social and ecological networks. It recognises the agency of nonhuman species and seeks to understand the mutual ecologies and co-becomings that arise from human-nonhuman interactions (Pacini-Ketchabaw et al., 2016). The multispecies perspective, as a metatheory, has already developed in disciplines like anthropology, education, feminism, psychology, health, geography, social work and urban design. It challenges the notion of humans holding exclusive pivotal roles within sociocultural systems and instead advocates for equal attention to broader, more-than-human entities.

LIS, as a meta-discipline, serves various areas ranging from the arts and humanities to the sciences, from academia and professions to everyday life and leisure activities. When LIS scholars and

professionals focus on specific domains or subjects, they integrate them into the research and practices of libraries, archives, museums and systems to address the needs of social worlds more effectively. However, there have been many privileges in information literature and practices. Most of the developments in research and practice have been tailored for employed, non-Indigenous, able-bodied, heterosexual men. Informed by theories of queer studies, disability studies, critical race theory and postcolonialism, recent information studies highlight the importance of many other life forms as fundamental to LIS research and practice.

Theorists in LIS, such as Marcia Bates (2002, 2005, 2022), have laid the groundwork by incorporating evolutionary perspectives and examples from the animal world into discussions of human information behaviour. In the contemporary information world, there are areas of established systems and services that acknowledge the interconnectedness between human and nonhuman entities, blurring the lines of human/animal/plant taxonomies in various contexts such as cities, zoos, farms, universities, hospitals, labs and more. Jenna Hartel (2019) identified seven '*turns*' that have taken place in LIS. What is interesting is her reflection: she imagined what the next turns would look like, and she thought of the animal turn and family turn. She was proposing exploring information literature and practices not only from a human perspective but from larger assembles that includes humans with others. Yet, the multispecies turn has been slower to manifest within the information disciplines compared to other social sciences.

Multispecies information science has argued for an animal turn to explore new frontiers in information, its use and design (Solhjoo et al., 2023). It is an emerging metatheory that goes beyond the human-centred focus of LIS and instead highlights the interconnectedness of humans and more-than-human agents in shaping information ecosystems. However, there remains a gap in recognising and defining the multispecies approach to navigate new directions in LIS. There is a need to embrace and explore this perspective to better advocate for equal attention to broader, more-than-human entities within a variety of natureculture contexts.

For all readers, what this paper hopes to accomplish is a shift in perception. It provides a multispecies story for engaging with an inclusive and holistic universe of information, one that recognises the diversity of species and materials and their intricate relationships with us, as human animals.

The contribution of antelopes, gorillas, birds, seeds and many others

It is fascinating to examine how nonhuman species have shaped the theories and practices of LIS, particularly through the lens of documentation. By exploring the interplay of natural, cultural and informational dimensions throughout history, scholars have expanded the understanding of documents and the processes that shape them. One can trace a lineage of thought from Suzanne Briet's iconic '*antelope*' metaphor to contemporary investigations of multispecies interactions within LIS, challenging human-centric notions of text and broadening the scope of what constitutes a document.

Briet's 1951 work, *What is documentation*? set the stage for reimagining documentation by proposing that a wild antelope becomes a document once it is captured and contextualised within an institutional framework such as a zoo or museum. This notion emphasised that documentation is not inherent in an object but arises from its integration into systems of knowledge and inquiry. Just as a wild antelope transitions into a document when removed from its natural habitat and placed within systems of human classification and study (e.g., zoos or museums), documentation is shaped by the contexts in which it is situated.

Building on Briet's ideas, scholars such as Robert Pagès, Mike Buckland, Donald F. McKenzie and Marc Kosciejew have examined how nonhuman entities – animals and plants – serve as a more active participants in the documentation process.

- Donald F. McKenzie (1931-1999) was a New Zealand expert in historical bibliography. According to Buckland (2018), McKenzie's *Dog-Stone* highlights how objects tied to cultural narratives, such as an Aboriginal Australian stone associated with legendary territorial dogs, acquire documentary significance. McKenzie's work, like Briet's, challenges the boundaries of what qualifies as documentation by incorporating nonhumans and their associated narratives as valid texts.

- Michael Buckland expanded upon Briet's ideas in his influential theory of '*Information as Thing*' (1991), drawing inspiration even from nonhuman entities. The presence of dead birds in a museum prompted him to reflect on how such objects could be considered documents and make connections between museums and libraries (Buckland, 2017). His dead bird libraries analogy showcases the transformation of objects into repositories of knowledge through human interpretation.

- Robert Pagès, a student of Briet, built on her framework with greater specificity. In his thesis, *Transformations documentaires et milieu culturel* (1947), Pagès elaborated on the idea of the 'autodocument,' referring to entities like gorillas, which inherently speak for themselves. He distinguishes between unique objects and specimens representing a type. A gorilla is a primary document when viewed as an individual, but it becomes a specimen representing its species when seen through the lens of classification. This duality highlights the tension between individuality and classification, as animals can be seen in multiple ways depending on the context.

- Ron Day (2018, 2024) proposed that nonhuman entities are active participants in documentation processes, possessing expressive and communicative capacities. This approach shifts the focus from human-centred documentation to recognising agency in nonhumans. By focusing on '*powerful particulars*', or entities that inherently serve as self-evidential signs, Day emphasises that animals and other beings possess expressive and communicative capacities, making them active participants in documentation processes.

- Marc Kosciejew (2020) developed seeds as '*natureculture*' documents, combining genetic information with human cultural practices. He highlights how seeds, preserved in seedbanks, can serve as both evidence of a plant's past existence and guidelines for future growth, adaptation and use. By materialising genetic information, seeds embody time in a physical form, making future ecological and agricultural possibilities tangible. This connection between time, genetics and information is what makes seeds an active agency in the documentation process.

- Geir Grenersen (2016) has commented on the human–animal relationship through information lens, in the case of the Indigenous knowledge way of knowing and doing of Sámi people and reindeer herds in northern Norway. He explains how information activities and knowledge transfer between humans and reindeers are crucial in sustaining the Sámi way of life.

Together, these scholars highlight the impact of nonhuman species on LIS. Through their interactions and contributions with other species, the distinction between human and nonhuman entities becomes increasingly blurred, emphasising the active role of animals and other species in the creation and transformation of knowledge. Whether through cultural narratives, museum collections or ecological interactions, these scholars argue that the boundaries of documentation extend far beyond traditional written texts to encompass the living, material world around us.

As an empirical study on information experience, I adopt a multispecies perspective to explore the everyday lives of multispecies families (Solhjoo, 2024). I have studied families that consider cats and dogs as family members and investigated the relationality between humans, nonhumans and space through visual digital ethnography, utilising live videos, walking interviews with animals and animal photo diaries. My findings reveal how animals and humans become informed by one another through: 1) cognitive process, as intersubjective ways of knowing; 2) affective and emotional information flows in emplaced environments; and 3) embodied interactions (Solhjoo et al., 2024).

These findings underscore the profound ways in which animals and humans mutually inform and transform one another's lives, challenging traditional anthropocentric views of information and knowledge creation. The evolution of these ideas has paved the way for a deeper understanding of the intricate and dynamic relationships that define multispecies information science.

Discussion: a call for ethical and inclusive information science

The key contributions of the multispecies turn include its timely exploration in LIS, the solid and profound research it presents, and the support and validation from prominent authors and theorists in the field. It clearly compares itself with other theoretical standpoints (including embodiment, sociomateriality and posthumanism), and plays a role in introducing boundary-pushing ideas into the literature and practices of LIS:

- Multispecies information science illustrates how interactions between humans and other life forms have historically influenced the development of information theories, practices and epistemologies.

- Drawing on diverse disciplines, including information behaviour, documentation, information technology and knowledge organisation, multispecies information science expands as a metatheory, offering a new lens in LIS.

- The multispecies turn reframes how we define information actors and agency, as all entities within an environment become companion species that provide and use information. It also aligns with Indigenous knowledge systems, which emphasise the interconnectedness of all living beings and are rooted in the understanding of humans' deep connection to their land and water.

- The multispecies turn highlights alternative approaches to understanding subjectivity, showcasing studies that inspire creativity, participatory methods and sensory engagement in research methodologies.

- A multispecies perspective explores the ethical dimensions of diversity, equity and inclusivity in information practices, drawing attention to the need for care ethics and compassionate approaches that transcend species boundaries. It has philosophical roots in questioning the moral status of nonhumans and advocating for compassion based on the whole of nature's capacity to suffer.

As an emerging turn, the multispecies paradigm invites LIS scholars and practitioners to engage in a collective reimagining of the discipline. This emerging subfield underscores the urgency of addressing the ecological and ethical challenges of our time while enriching the theoretical and practical foundations of LIS. By expanding the discipline's scope to include multispecies perspectives, the animal turn not only advocates for a more inclusive and compassionate approach to information but also opens new frontiers for interdisciplinary research and innovation. As this turn continues to evolve, it calls on the LIS community to embrace its potential to address the complexities and opportunities of living and learning in a more-than-human world.

Conclusion

This piece traces the footprints of animals in LIS and highlights the growing recognition of the interconnectedness between human and nonhuman species within the field. By examining the contributions of scholars who have expanded the scope of documentation beyond human-centred frameworks, the paper demonstrates how animals, plants and other nonhuman entities actively participate in the creation and transformation of knowledge. As the field continues to evolve, the integration of the multispecies perspective offers new opportunities for interdisciplinary research, ultimately fostering a more compassionate and comprehensive understanding of information in the world around us.

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Opposing book bans: a resilient and subversive information practice

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Abstract

Introduction. In this paper, we discuss the concepts of censorship, resilience and information precarity. We explain the framework of information precarity and emphasise the agentic responses of marginalised communities, then show that book bans restrict vital access to valuable information. Yet marginalised communities respond through resilience and subversive practices to oppose book bans.

Method. Reflective, conceptual essay; no empirical data.

Analysis. The paper utilises prior research to demonstrate how marginalised communities respond agentically to information precarity (as illustrated, in this paper, with book bans).

Results. Opposing book bans through subversive and proactive actions is a form of resilience demonstrated by marginalised communities.

Conclusion. Censorship, particularly through book challenges, is one way that people attempt to maintain inequity and information precarity. When marginalised communities oppose book bans, they are working to preserve access to diverse books. This approach needs to be critically examined in future work.

Introduction

Information precarity is a framework for recognising both the systemic information barriers and the agentic ways in which marginalised communities resist and overcome those barriers. Espinoza Vasquez and Oltmann (2025: p. 505) defined information precarity as

> *the politically induced, systemically enforced conditions through which marginalized populations experience unstable, insecure and unreliable access to and literacies of information, exacerbating their underlying/existing social, political, legal, and economic vulnerability and exacerbating inequity.* (see also Stewart-Robinson, 2022).

The institutions that surround us in daily life – such as governmental agencies and nonprofit organisations, as well as the regulations, policies and guidelines that are the foundation of these institutions — shape our actions and perspectives. Importantly, we must recognise that these institutions were created by and for the dominant members of society, and they inherently privilege the dominant groups (Butler, 2009).

For example, in many federal government agencies in the US, paperwork, rules and directions are available only online and only in English, despite the fact that over 350 languages are spoken in the US (usa.gov, n.d.) and approximately twelve per cent of people lack *any* access to the Internet (the figure is much higher if we consider irregular access to the Internet, slow connections and those reliant on smartphones for access) (Goldberg, 2024). This digital inequity disproportionately affects racialised, minoritised and low-income people (as does the language divide), meaning that Communities of Colour often have significantly less access to governmental information and websites than the dominant (White) community in the US. This affects access to an incredibly wide array of government resources. In this way, we can see how the interconnectedness of institutional systems, humans and organisations both creates and perpetuates inequality. Similarly, during the height of the Covid-19 pandemic, much K-12 education pivoted online for one to three semesters (depending on the school district). In households with no, low or unreliable access to the Internet, children were often unable to complete their schoolwork, placing them behind their peers in education. We can thus see how the constellation of institutional decisions, economic forces, social relationships and actions together exacerbate inequities.

In addition to helping us understand that inequality is reinforced by the interdependence between humans, institutions and organisations, this information precarity framework recognises that those who experience information precarity have agency and take concrete actions to better their lives and challenge systems of institutional inequity (Espinoza Vasquez and Oltmann, 2023). Marginalised communities may take defensive, proactive or subversive actions in response to information precarity (Espinoza Vasquez and Oltmann, 2023). Defensive actions often occur when people initially experience new barriers and do not '*know the nature and extent of the barrier*' (p. 8; see also Kitzie et al., 2020; Greyson, 2018). With a proactive response, individuals anticipate precarity and utilise community knowledge to overcome or respond to it. A subversive response to information precarity means that individuals '*skillfully and purposefully took actions that challenged the status quo, to counteract barriers which perpetuated their precarity*' (Espinoza and Oltmann, 2023, p. 10). These different responses are deployed tactically and purposefully in daily life as people and communities encounter informational barriers.

Barriers to information access: book bans

Modern life, for many people, contains many barriers to accessing information. These are often most pronounced for various marginalised communities because, as described above, institutions and systems are designed by and for the dominant groups, often at the expense of traditionally marginalised groups. Furthermore, dominant groups (such as White people) often benefit from the

lopsided systems of information access; thus, challenges to these systems are frequently met with opposition.

To make this discussion more concrete and immediate, we turn to the problem of book bans in public and school libraries. (While our paper focuses on book banning in the United States, book bans are increasingly common across many national contexts.)

Book challenges in America have been steadily on the rise over the past several years; the American Library Association (ALA) reported a 1553 per cent increase in book challenges from 2020 to 2023 (ALA, 2024). Furthermore, ALA estimates that 85 per cent of challenges may go unreported, meaning that the actual number of book challenges could be much higher. The books most frequently challenged during this time span nearly always have authors or protagonists who are People of Colour and/or members of the LGBTQ+ community (ALA, 2023). This point is worth emphasising: the sharp escalation of book challenges in the US has focused almost exclusively on books by and about marginalised communities.

As far back as 2014, Lo (2014) noted that book challenges often targeted books with diverse protagonists (see also Oltmann, 2017; Knox, 2019). This trend has expanded as the number of challenges nationwide has expanded. For example, in 2023, ALA reported that books featuring LGBTQ+ and BIPOC individuals were targeted in 47 per cent of censorship attempts (ALA, 2023). Spoon and Langrock (2024) reported that 59 per cent of the book bans reported by PEN America were '*children's books featuring diverse characters or nonfiction books about historical figures and social movements*' (para. 5). Similarly, Goncalves et al. (2024) examined over 2,500 books banned in 2021-2012 and reported that banned books were more likely to be written by People of Colour and feature People of Colour.

Alter (2024) reported that, '*Censorship efforts have become increasingly organized and politicized, supercharged by conservative groups like Moms for Liberty and Utah Parents United, which have pushed for legislation that regulates the content of library collections … Many of the targeted titles feature L.G.B.T.Q. characters, or deal with race and racism*' (see also Harris and Alter, 2023).

When people challenge the inclusion of certain books in a library, typically they are concerned with the content and the way(s) the content is presented; after analysing challengers' discourse, Knox (2019) concluded that '*what the challengers want is a sanitized view of diverse peoples' stories—one that does not take into account what it means to have a non-dominant identity in American society*' (p. 34).

Challenges to books, in the US, have gone beyond the stereotypical image of concerned parents in a local library. For example, in 2022, a pastor in Tennessee burned a dumpster full of books that he deemed '*demonic*' (Sung, 2022). In 2024, a political candidate in the state of Missouri used a flamethrower on books that she viewed as controversial in an ad, with the implicit promise that she would further attack libraries and their collections if elected (McMunn, 2024). The state of Utah declared thirteen books forbidden in school libraries and said the books had to be destroyed (Hanson and Bedayn, 2024), and South Carolina similarly banned seven books statewide (Hall, 2024). Many public and school libraries in the US have dealt with angry patrons and parents at board meetings. Such patrons may become very aggressive, engaging in name-calling and pulling book passages out of context to increase shock and discomfort. As Stroshane (2021: p. 20) writes:

> *Combative disruptions have also been taking place at public library board meetings over books, displays, and programs. Just as with school boards, public library board elections are seeing heavy conservative political influence opposed to promoting racial equity and gender inclusivity.*

Librarians have lost their jobs, and funding for libraries has been cut drastically (Jensen, 2024). Legislative attacks against libraries in the US have increased, as well (ALA, 2021). For example, a bill in Idaho would prohibit librarians from making materials available to minors, if the material includes homosexuality or sexual intercourse (Kottke, 2024; see also Alter, 2024).

These attacks against libraries and their collections are part of broader campaigns to control societal narratives about who belongs and who is worthy. Book bans are one vector of this campaign, along with state and federal bills to limit discussion of topics like critical race theory and LGTBQ identities. DeVenny (2023) articulated the underlying purpose of these attacks:

> *Characterizing discussions of race, gender, and LGBTQ+ experiences as 'anti-American,' as some lawmakers have done when introducing these measures, begs the question of who gets to be an American … what becomes clearer each day is that there's a well-coordinated and increasingly prominent effort seeking to narrowly define what it means to be an American and who gets to lay claim to Americanism — in a thinly-veiled attempt to maintain and exacerbate a power stronghold over historically marginalized groups (para. 2).*

This excerpt demonstrates that book bans (and many proposed laws, often suggested in parallel with book bans) are driven by a desire to keep marginalised communities marginalised. Attacks against libraries and their collections are part of broader campaigns to control societal narratives about who belongs and who is worthy. As marginalised groups tell their stories without sugarcoating, dominant groups have become increasingly hostile. We argue that attempts to ban books – particularly books by and about People of Colour and the LGBTQ community – are a way of creating barriers to accessing vital, valuable information, thus perpetuating marginalised groups' vulnerabilities. In turn, this can affect the information practices and choices of these (and other) communities.

Access to information – including information in diverse literature – matters. Practically speaking, access in a library can translate to enhanced education, job opportunities and professional development, improved health and overall development, and so on. More broadly, books and other forms of information can help individuals build a sense of belonging and develop a sense of their own self. In her foundational piece, Rudine Sims Bishop explained the importance of diverse literature:

> *Books are sometimes windows, offering views of worlds that may be real or imagined, familiar or strange. These windows are also sliding glass doors, and readers have only to walk through in imagination to become part of whatever world has been created or recreated by the author. When lighting conditions are just right, however, a window can also be a mirror. Literature transforms human experience and reflects it back to us, and in that reflection we can see our own lives and experiences as part of the larger human experience. Reading, then, becomes a means of self-affirmation, and readers often seek their mirrors in books (1990, p. ix).*

Botelho (2021) elaborated on these points, noting that '*Texts as mirrors reflect how society is organized through language use (discourse). As windows, books offer a panoramic view of how power is enacted through words and images*' (p. 123; see also Oltmann, 2017; Cahill et al., 2023). For example, LGBTQ youth may suffer from isolation, uncertainty and negative stereotypes regarding their sexuality and acceptance from friends and family, but reading about teens with similar experiences can improve their self-esteem and support systems. It '*creates opportunities for individuals to reflect on their own experiences, often gaining more self-awareness and understanding. It allows individuals to see themselves as part of the world they inhabit*' (Oltmann, 2017: p.414). In addition, books as windows provide '*the opportunity to learn how to function in a culturally pluralistic world*'

(Naidoo, 2014, p. 6). Himmelstein (2021) explained that '*books can dispel stereotypes and offer a more balanced view of the world to kids who grow up in homogeneous environments*' (p. 23).

Betsalel and Shechtman (2017) suggested that, '*through identification with story characters, children connect to their own difficulties and find solutions to personal problems*' (p. 474). Their research focused on Israeli youth who experienced parental loss or absence and lived in foster homes; the research shared superhero stories with these children:

> *The assumption was that treating them with superhero stories may empower them and provide them with hope for their future. Superhero stories were chosen because superhero myths are metaphors of one's journey to find meaning in life through the service of others in need. Furthermore, [many] superhero stories are based on parental loss experienced at an early age, and involve patterns of surviving trauma through becoming a superhero…Building on the strength of superheroes, children are offered options of developing optimism, hope, love, forgiveness, courage, and creativity (pp. 474, 476).*

In the superhero stories, youth were able to see examples of redemption, motivation and resilience, which led many of them to develop new, focused, positive goals for their future (such as academia, sports and military service; p. 485). These superhero stories, then, served as sliding glass doors for the youth in the study. They were able to enter new (fictional) worlds and viscerally experience the emotional growth of the main characters, which in turn affected their own growth.

Importantly, McNair (2016) noted that we all have complex, multi-faceted identities, and thus there are multiple ways that we can feel seen or reflected in literature; a particular book may be a mirror for some parts of our identity, while serving as a window in other ways (see also Hughes-Hassell, 2013). Likewise, it is essential to note that Bishop developed these metaphors of mirrors, windows and sliding glass doors as rationales for including diverse, multicultural perspectives in schools and libraries. O'Donnell (2019) said that Bishop's approach calls for '*more culturally relevant practices*' in schools and libraries (p. 18), such as purposefully seeking out materials that portray racial and ethnic minorities in accurate, relevant and positive ways, in contrast to stereotypical, narrow and negative perspectives.

Resisting precarity, challenging book bans

Despite the recent surge in book bans, information by, about and for People of Colour and the LGBTQ community continues to grow and be celebrated. As described above, marginalised communities have agency and actively respond to counteract the information precarity they face. Rather than being perceived as faceless, hapless victims, marginalised individuals should be seen as agentically challenging barriers and inventively solving problems. To the best of our knowledge, there is no systematic documentation of how marginalized communities are responding to ongoing book challenges, but we can point to several examples of agentic responses; in particular, we recognise both proactive and subversive responses to attempts to ban books.

In 2021, for example, the school district in York, Pennsylvania, instituted a *quiet* book ban: without a formal announcement, the school board voted to ban hundreds of items on a list compiled by a diversity committee to serve as a resource guide in York schools (Paz and Cramer, 2021). A student group, the Panthers Anti-Racist Union, led successful student protests to overturn the ban. As Pendharkar (2023) explained:

> *the protests in Central York are among at least a dozen examples nationwide of students organizing to resist books bans in recent years as the restrictions on works housed in school libraries and classrooms have spread across the country. The student resistance is a small,*

> *but growing trend as districts continue to limit students' access to books and other materials*" (para. 6).

These students, along with supportive parents, teachers, and community members, are subversively challenging so-called quiet book bans. Rather than acquiescing to censorship, these students are agentically pushing back and demanding equitable access to stories by, about and for marginalised communities (which are, often, reflective of these students).

At least six US states (California, Illinois, Maryland, Minnesota, Vermont, and Washington) have passed laws that effectively ban book bans in libraries and/or schools. These can be seen as proactive steps to protect access to information in libraries. Karnowski and Cataline (2024) described the benefit of such laws for marginalised individuals:

> *The move to quash book bans is welcome to people like Shae Ross, a queer and out Minnesota high school senior who has fought on the local level against bans on books dealing with sexuality, gender and race. Ross, 18, said she is encouraged to see her governor and leaders of other states are taking the fight statewide (para. 2).*

In our view, these book ban challenges are an example of collective resilience - a powerful way that marginalised individuals and communities navigate information precarity. They are subversive political information practices through which marginalised groups actively resist oppressive structures.

Although defined many ways in the literature, many individual-focused conceptualisations of resilience focus on it as '*a dynamic, interactive process that supports positive outcomes in the face of acute and/or chronic stressors*' (Theron et al., 2017, p. 493; Brooks, 2006). Resilience is understood to be problem-based: that is, there must be some risk or adversity that a person experiences; then the individual works to overcome or solve the adversity through creative and meaningful deployment of their inner resources. Tilliot et al. (2022) noted that '*resilience is multifactorial, and seemingly influenced by environmental, familial, biological, interpersonal, cultural and community factors*' (p. 135). Key components of resilience include traits such as '*the ability to control temperament, exhibit friendliness, elicit positive attention from family members, and maintain a positive self-concept and self-esteem … initiating autonomy with tasks, developing independence, taking a proactive approach to problem solving, maintaining persistence and concentration with jobs and taking pleasure in novel experiences*' (Tilliot et al., p. 136). Similarly, Richards et al. (2016) defined resilience as '*achieving positive outcomes despite challenging circumstances, successfully coping with trauma, and evading negative paths associated with risks*' (p. 1; see also Zolkoski and Bullock, 2012; Richards, 2006).

Many researchers have studied how to develop resilience, particularly in youth; data demonstrates that resilient youth are more likely to overcome adversity, avoid risky behaviours and achieve personal success (see Richards et al., 2012). '*Resilience-based interventions*' try to identify and evaluate '*both internal and external resources and assets*' that can be developed or utilised by individuals experiencing adversity (Richards et al., p. 2). Within this body of work, several scholars have studied how storytelling can aid in building resilience. For example, Mayaba and Wood (2015) found that stories could instil a sense of hope and perseverance in children. Markland (2024) reported that '*storytelling builds essential emotional and cognitive skills that equip children to navigate life with resilience, empathy, and self-assurance*' (p. 41). In a two-year study, Beaudoin et al. (2016) tracked over 350 children and found that narrative therapy and writing their stories helped youth to develop the skills of resilience. In an extensive review of the relevant literature, Ramamurthy et al. (2024) reported that

> *storytelling methods/interventions do influence resilience in children … Storytelling provides a way for individuals to make sense of their hardships, find meaning in them and recount their stories of difficulty and adversity* (p. 537; see also East et al., 2010).

In their study, Theron et al. (2017) used African folktales (first recounted by African elders) to help build resilience in South African youth. Theron et al. (2017) explained, 'We asked African elders across South Africa to tell us stories that they remembered hearing when they were children and that encouraged them to *keep going* when life was challenging' (p. 494; emphasis in original). These folktales were then vetted by psychologists to select ones that had 'resilience-promoting potential' (p. 494). These stories, the authors suggested, were '*respectful of the constructive cultural norms, values and expectations*' (p. 502) of the children specifically because the stories were African in origin and nature. In Bishop's (1990) terms, we might say these stories served as windows and mirrors for the youth: they were able to see themselves and their worlds reflected in the stories, and they looked through *windows* to learn about resilience.

Nonetheless, resilience has been widely criticised as a concept, because it can inadvertently perpetuate systemic inequities by placing the burden of adaptation on marginalised communities, rather than addressing underlying structural issues (Borges-Mendez and Caron, 2019; Smith et al. 2022). In other words, resilience has the potential to implicitly assign responsibility for systemic issues to vulnerable populations, thus normalising inequity and diverting attention from the structural changes necessary to address root causes of marginalisation.

Too often, conceptualisations of resilience have '*fundamental shortcomings including a superficial understanding of the structural nature of inequality and power with respect to how social relations and political interests guide decision-making and opportunity for any entity (e.g., community, institution, household)*' (Borges-Mendez and Caron, 2019, p. 6; see also Vale, 2014). Likewise, Bene et al (2014) criticised the concept of resilience for its '*inability to appropriately capture and reflect social dynamics in general and issues of agency and power in particular*' (p. 606).

For example, some families lacked adequate Internet access during the Covid-19 pandemic, affecting their children's ability to complete schoolwork online. Resourcefully, these families turned to free Wi-Fi available through nearby fast-food restaurants (Ebrahimji, 2020). A simplistic, individual-focused resilience approach would applaud this innovation and likely stop the analysis there, rather than examining the structural inequities that prevent these families from accessing affordable Internet and that have persisted post-lockdown (for a more systemic approach to this problem, see Ali, 2021). Complex socio-political and economic factors, along with systemic, institutionalised racism and classism, all played a role in creating such situations.

Therefore, in this paper, we advocate for *resilience* as defined by Borges-Mendez and Caron's framework (2019), as a collective and transformative process. We see this process as enabling communities to confront systemic inequities – specifically those rooted in political, social and religious impositions that affect access to information. Borges-Mendez and Caron described four advanced to *decolonising resilience*: this approach recognises that local actors are capable of collective action to enact self-reliance; emphasises local and indigenous learning and institutions; encourages the inclusion of previously excluded communities; and emphasises '*horizontal micro-connectivity, deliberative practices, and coordination between organizations in civil society and communities*' (p. 8).

By decolonising resilience (Borges-Mendez and Caron, 2019), we can attend to both individual and systemic levels, identifying that structural inequities often create the precarious situations that

require resilience. Furthermore, decolonising resilience appreciates that resilience is *already happening* at the individual and community levels, as marginalised folks agentically solve problems and persist in their daily lives. From this perspective, then, finding ways to recognise, celebrate and promote resilience can be seen as both a proactive and a subversive approach to precarity.

For example, People of Colour are continuing to tell their stories – stories by them, about them and for them. The Cooperative Children's Book Center (CCBC) in Wisconsin has documented how many children's books it receives (from publishers) that are by and about BIPOC individuals, as well as other aspects of identity (including disability, LGBTQ and religion). The number of books by BIPOC creators and about BIPOC characters has been increasing since 2015; the number tripled from 2015 to 2020, although the rate of increase has since slowed somewhat. In 2023, 49 per cent of children's books documented by the CCBC had a primary or significant secondary character who is BIPOC; furthermore, 40 per cent of books were by a Person of Colour. Of the books the CCBC received in 2023, 7 per cent featured a primary or significant secondary character / human subject with a disability or were about one or more disabilities, 7 per cent featured LGBTQ+ themes or characters, and 4 per cent featured a minority religion.

The Panthers Anti-Racist Union adopted a community-driven approach to knowledge access rather than succumbing to censorship. Their collective and self-reliant actions did not depend on external advocacy organizations or policymakers. By standing against the ban, students made sure that their own stories, identities and experiences were included in the curriculum, which helped make literature about marginalised populations more accessible. The policy changes achieved by the Panthers Anti-Racist Union and the changes tracked by the CCBC illustrate how resilience and subversive information practices can lead to significant systemic change.

About the authors

Author bios:

Dr. Shannon M. Oltmann's research focuses on access to information and how it is often curtailed or restricted. Her collaborative work has frequently studied censorship and book banning in many contexts. In addition, she utilises the framework of information precarity, with colleagues, to investigate lack of access and agentic responses.

Dr. Espinoza Vasquez's research examines how marginalised communities and activists leverage Information and Communication Technologies (ICTs) to combat inequities. Her transdisciplinary and participatory approach involves collaboration with stakeholders and emphasises the importance of broader social, technological and environmental contexts when underserved communities create their own support systems.

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Exploring *culture war* related attacks on public libraries: results from a pilot study on information activities of the far-right

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Abstract

Introduction. This paper reports initial findings from a research project focusing on how information activities of the far-right promoting ideologically motivated pressure and threats against cultural institutions develop, spread and unfold, the logic governing these attacks and how they affect public libraries and librarians.

Method and analysis. The project employs the theoretical framework of practice theory and a netnographic approach. The paper outlines the project and reports the outcomes of a pilot study using data-driven digital methods and content analysis to analyse digital interactions from a Swedish far-right media outlet.

Results. The findings from the pilot study indicate that online information activities of the far-right display a view of public libraries as leftist and as potential threats to the nation, echoing ethnic nationalism and authoritarian views commonly associated with the far-right.

Conclusions. Indications that librarians, as civil servants, are increasingly the target of ideologically driven threats and antagonisms warrant further scholarly attention. The pilot study reflects how quantitative procedures are necessary for the analysis of large amounts of data, but the functionality of the digital methods need to be tested and adjusted according to context, and qualitative approaches are necessary for a nuanced and contextual understanding.

Introduction

The growing influence of the far-right have turned libraries into political symbols in an emerging *culture war* (Hanell et al., 2023; Harding, 2022; Usherwood and Usherwood, 2021). These conflicts are linked to the global phenomenon described by Inglehart and Norris (2016) as a cultural backlash, wherein conservative voices resist and challenge progressive cultural change. Although the conflict between these opposing perspectives is nothing new, it has become increasingly pronounced and has adopted a more antagonistic form, arguably reinforced by the affordances of digital technology and algorithmic governance (Törnberg and Törnberg, 2024). However, whereas previous research indicates that far-right activities on digital forums and social media play a significant part in orchestrating ideologically motivated threats and confrontations directed at libraries (Carlsson et al., 2023), little is known about how these attacks develop and unfold, as well as the relations between online information activities and offline events (cf. Scrivens et al., 2020).

This paper presents initial findings from a planned research project aimed at providing in-depth insights into the development, dissemination and unfolding of practices that drive ideologically motivated pressure, hate and threats against cultural institutions, including public libraries and museums. In Sweden, which is the country of focus for the study, the above-described development is expressed in mounting political pressure, hate speech and public threats directed at these institutions and their employees, particularly when advocating for plurality, democracy and the rights of minorities (Hanell et al., 2023; Hanell et al., 2024; Engström et al., 2024). Librarians report facing demands from politicians and segments of the public to cancel LGBTQI-themed events or to limit the acquisition of books in languages other than Swedish (Carlsson et al., 2022; Alm Dahlin, 2023). Moreover, both museum employees and librarians provide accounts of harassment and threats characterised by racist and sexist undertones, in both face-to-face encounters and digital contexts (Palm, 2023). Hence, Sweden provides an interesting case for studying far-right hostility targeting libraries and museums.

The proposed project examines the sociotechnical mechanisms underpinning far-right hostilities and their implications for libraries' capacity to promote free formation of opinions and the dissemination of knowledge. Hate, harassment and abuse not only cause significant personal suffering for the individuals affected; in the long run, they also pose a threat to democracy, as fear risks leading to self-censorship. Previous research (Hanell et al., 2024) and reports from the Swedish trade union DIK indicate that public cultural institutions have, in some instances, cancelled events in response to criticism and undue pressure, while so-called *controversial* content is often excluded to avoid the risk of hate and harassment (Palm, 2023; Alm Dahlin, 2023). This situation, in which civil servants, out of fear, conform to undue pressure and threats, should be regarded as a threat to the democratic society. Sweden therefore represents an interesting case for studying the organisation of hate and threats towards professionals mandated to promote democracy and plurality, and the subsequent impact of these threats on individuals, institutions and society. These events occur at a point in time when fundamental democratic values are increasingly challenged (cf. Mounk, 2018; Norris and Inglehart, 2019), which is a matter of concern not only for Sweden but also for other countries.

The aim of the project is to understand the interplay between the far-right's antagonistic information activities online and on-site attacks on cultural institutions and their democratic consequences. While existing research has often studied these aspects separately, cultural institutions and the online *culture war* discourse offer a compelling starting point for exploring the interrelatedness of on-site experiences and hostile online information activities. To this end, we apply an innovative interdisciplinary approach that draws on perspectives from library and information science, digital humanities and linguistics, combining data-driven methods and the text analytical capabilities of large language models with qualitative approaches using practice theory as a unifying theoretical framework. Through this novel mixed-methods approach, an

important component of the project is to further the methodological development necessary for understanding the complex nexus of entangled on-site and online antagonistic activities, as well as global and local relations that both constitute and enable these attacks.

This purpose of this paper is twofold: to present and reflect on the design of the subproject *digital information activities*, exploring the utility of employing a mixed-methods approach, and to advance our understanding of how public libraries are understood in far-right online discourse by presenting tentative results from a pilot study using both data-driven digital methods and qualitative content analysis.

Two research questions guide the inquiry:

1. How can digital methods be utilised for studying digital information activities of the far-right and their effects on the democratic mission of public libraries?
2. How can digital information activities of the far-right inform our understanding of how public libraries are understood and constructed in far-right rhetoric?

In answering these research questions, the paper seeks to contribute to method development relevant for furthering our knowledge of far-right information activities focusing on libraries, and to begin to chart how these activities unfold. By providing such knowledge, the paper contributes to empirical research and methodological advancement and practice within the library sector as well as other public institutions that uphold and promote democracy. The paper proceeds with an outline of the planned research project before results from the pilot study are presented. The paper concludes with reflections on possibilities and challenges for further studies, based on the implications of the results from the pilot study.

Situating the pilot study

In this section, we present previous research on online activities of the far-right, sociotechnical aspects of these activities, and far-right mobilisation directed at cultural institutions. Central components of the planned research project, to which the pilot study contributes, are then outlined to further explain the context of which the pilot study forms part.

Previous research

There has been considerable scholarly attention directed at the online activities of the far-right. Existing research is of an interdisciplinary character and has focused on discursive representations and rhetoric in far-right online contexts (Wahlström et al., 2021, Cervi et al., 2023); social interaction and far-right group formation in online communities (Åkerlund, 2021; Scrivens, 2021); and how far-right ideology is perpetuated, re-packaged and normalised in online environments (Tuters and Hagen, 2020; Åkerlund, 2022). While these studies make up an important foundation for the proposed project, they often remain confined to online discourse and fail to investigate wider ramifications in offline settings.

The normalisation of far-right ideology is by some researchers attributed to the sociotechnical enablement of digital technologies (Munn, 2020; Gaudette et al., 2021). Explanations for this process are then found in certain affordances of social media platforms, which provide anonymity (Urman and Katz, 2022; Törnberg and Törnberg, 2024) and enhance the creation, spread and persistence of different types of content (Sakki and Pettersson, 2016). Additionally, studies indicate the remarkable adeptness of the far-right in capitalising on these opportunities (Munn, 2020). While we build on the growing body of research pointing to the implications of this development for traditional media (Haller and Holt, 2019; Holt, 2020) and formal politics (Roberts, 2020; Heft et al., 2023), there remains a shortage of systematic investigations into the extent to which the pervasiveness of far-right discourse has ramifications for other institutional and professional contexts.

Furthermore, far-right online discourse and offline mobilisation or incidents are, with a few exceptions (Önnerfors, 2020; Wahlström and Törnberg, 2021), not studied together. Little is thus known about the relationship between far-right digital information activities and real-life incidents (Scrivens et al., 2020; Wahlström et al., 2021). Through studying far-right mobilisation focused on cultural institutions, the planned project is designed to increase our knowledge of this double dynamic.

When it comes to the nature, and implications, of far-right mobilisation directed at cultural institutions, previous research has examined far-right cultural policy programmes (Lindsköld, 2015) and the challenges that cultural policy as a political area faces as a result of the strengthened position of the far-right (Niklasson and Hølleland, 2018; Bonet and Zamorano, 2021; Hanell et al., 2023). Recent studies have also analysed the use of cultural policy and cultural institutions as ideological pawns in conflicts associated with culture war issues (Harding, 2022) and as political symbols in the establishment criticism of the far-right (Usherwood and Usherwood 2021; Hanell et al., 2023). However, there is a significant lack of research that investigates the role digital media plays in the construction of cultural institutions as ideological symbols for the far-right.

The rationale of the planned research project

The planned research project aims to fill the gaps in previous scholarship identified above through three subprojects: *digital information activities*, *on-site experiences*, and *exploring interconnections* (see Figure 1). While the subprojects manifest the interdisciplinary nature of the research project, they are unified through the adoption of a joint theoretical framework: practice theory (Shove et al. 2012). This framework is suitable for the proposed project as it provides an analytical tool for approaching discourse and action, as well as knowledge, meaning and material artefacts, as a composite analytical unit of interconnected elements: practice. As a cultural theory, practice theory views practice as the main unit of analysis for studying social life, instead of studying either text, social interaction or individual thought (Reckwitz 2002). Through practice theory, the situatedness and the specifics of place, technology and culture can be considered both as a unified whole and as parts forming a practice. By analytically framing public cultural workers' experiences of hate and threats and the online information activities of the far-right as distinct yet interconnected manifestations of a singular practice, we can elucidate the various forms of interconnectedness between online discourses and physical events within cultural institutions.

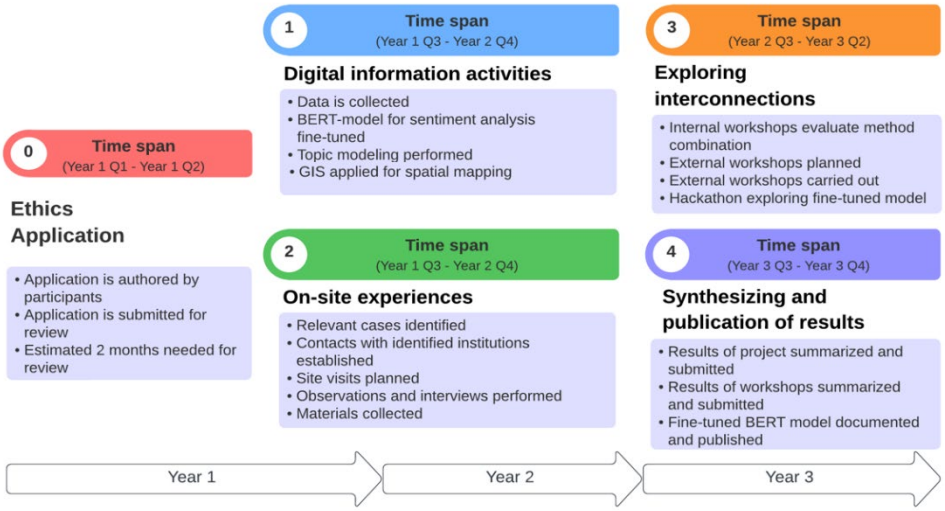

Figure 1. Overview of the planned research project and the three subprojects.

The pilot study presented in this paper forms part of the first subproject, *digital information activities*, which will be further explicated below.

Digital information activities

The first subproject focuses on exploring and classifying far-right interactions online to investigate the connection to real-world events, using a netnographic approach. Netnography is a research field and a methodology with specific methods for doing ethnographic Internet research (Kozinets, 2020). It provides coherent directions for doing qualitative studies of social interactions online while also providing strong connections between quantitative and qualitative approaches (see Hanell and Severson, 2023). Netnographic material is produced in several ways: from social media traces, interactions, interviews and researcher experiences. Kozinets (2020) describes three main procedures for data collection: *investigation*, *interaction* and *immersion*. *Investigative data-collection operations*, the process of selectively saving online traces from social interactions, is combined with *interactive data-collection operations*, the result of interactions between researcher and participants, and *immersive data-collection operations*, recording comprehensive descriptions and reflections in fieldnotes. Combining these procedures, the subproject is operationalised through a netnographic study in two stages. Tentative results from a pilot study comprising these two stages are presented in this paper.

Stage 1 focuses on investigative data-collection operations. Traces from social interactions are collected from multiple digital venues to explore and analyse far-right information activities connected to cultural institutions. Sentiment analysis and topic modelling are used to analyse large quantities of interactions offering broad understandings of the activities. Topic modelling draws on the co-occurrence of terms across the interactions, using them to define recurring topics. Sentiment analysis makes use of words carrying positive or negative connotations to label interactions as expressing mainly negative or positive sentiment. Through collecting online interactions, categorised according to the expressed sentiment and the topic of said sentiment, connections between sentiment, topic and any physical space mentioned within the digital interaction can be made. This will allow insights into which topics are the targets of negative discourse directed at cultural institutions, and how those topics and sentiments relate to events taking place at physical places. Web scraping is used to gather online comments, which are then pre-processed. Both sentiment analysis and topic modelling will draw on pre-trained BERT (Bidirectional Encoder Representations from Transformers) models. The KB Lab Megatron zero-shot model (Sikora, 2023) is used for sentiment analysis. Zero-shot classification makes use of the information present in the language model to classify text according to provided labels, in this case positive or negative. This is especially useful in online language contexts, where the language used might prove difficult for more traditional methods, such as lexicon-based sentiment analysis. Lexicon-based approaches make use of a static collection of words that have been annotated with positive or negative weight, which is then used to calculate the sentiment of a text accumulatively. Due to the nature of online language use, these methods can produce problematic results if sentiment-carrying expressions from the online context are not included in the lexicon.

The BERT approach will be complemented by a more traditional method of topic modelling relying on Latent Dirichlet Allocation (LDA), which assigns topics based on frequently co-occurring words. Selected materials classified according to the distribution of re-occurring topics by the topic model are then subjected to a qualitative post-classification. The computational topic model can then be evaluated based on the qualitative post-classification in terms of which topics are of interest for the current project. The documented researcher experiences, including detailed descriptions and reflections recorded in fieldnotes by the researchers, will complement the quantitative data with qualitative and reflexive data.

In Stage 2, the netnographic data from Stage 1 is used to produce a qualitative content analysis of selected far-right information activities concerned with libraries and museums. The material and

insights from these analytical stages will be used to guide the selection of cultural institutions for the subproject *on-site experiences* focusing on interactive data-collection operations and the interplay between online information activities and offline events. Building on results from the subproject *digital information activities*, traces from digital information activities are to be collected from social media accounts of selected libraries and museums. Pride week, in June, constitutes one temporal period of this planned part of the study.

Results from the pilot study

The pilot study, focusing on far-right information activities connected to public libraries, applies a data-driven approach informed by Sentiment Analysis (SA) and Topic Modelling (TM) based on BERT models made available by the Swedish Royal Library. Following previous studies of user comments on online news websites (Landert, 2014), the dataset of the pilot study was created in August of 2023 and contains 561 comments taken from 138 different articles published between 2019 and 2023 on the SamNytt website, the main media outlet for the Swedish far-right (Palmgren et al., 2023). The articles were selected by using the search term *bibliotek* (Swedish for library) in the site's search function. The comments were made by 338 different user accounts, with a low number of individual accounts making more than five comments. The quantitative analyses, reflecting the data-collection operations of Stage 1 described above, were then followed by a small-scale content analysis as outlined in Stage 2. In this analysis, the comments from the most commented article were structured in themes through a conventional qualitative content analysis (Hsieh and Shannon, 2005). Adding confidentiality for users (franzke et al., 2020), all quotations have been translated from Swedish into English by the authors. However, it is important to note that the methods used are relying on the original Swedish for producing results such as the topic representations, meaning that the translations must be understood as interpretations made by the authors rather than direct representations of the actual output.

In the following, we present some key findings from the pilot study that indicate both challenges and opportunities of the selected approaches. While it is important to emphasise that the data and analyses are tentative, as accurate results with BERT require several iterations including manual assessment, the preliminary results still provide interesting findings. The results also point to several issues in need of further attention before the study can be scaled up.

Topic	Title	Preamble
0	Malmö's government refuses to comply with the obligation to report illegal immigrants	The government and the Sweden Democrats announced this week that they are moving forward with the proposal to require authorities and municipalities to report illegal immigrants, and no exceptions will be made. In addition, they are investigating possible measures against those who refuse to follow such a law. In a press release, Malmö's government made it clear that it will not comply with such an obligation. …
1	Liberal promised to crack down on gangs - now dresses up as a drag queen	Prior to last year's election, he was identified as '*the gangs*' *worst enemy*' by the Liberals. Now he dresses up in women's clothing and heavy makeup to promote drag queens who read stories to young children. It was in September 2022 that the Liberal Party's campaign ad was spread on Stockholm buses. This is what he looks like. …
2	Sweden Democrat wants to ban story hour sessions with drag queens for children	For some time now, Swedish municipalities have adopted the controversial American phenomenon of so-called drag queens, men who dress up as women, holding story hour sessions for children. A Sweden Democrat believes this is inappropriate and wants to stop more children from being exposed. At Kalmar City Library, *Lady Busty* and *Miss Shameless* hold story hour sessions for children …

Table 1. Topic, title and preamble of most commented articles (translated from Swedish)

Table 1 shows the three most commented articles, attracting 37-38 comments each. The most commented article (Topic 0) concerns how leading politicians in the South-Swedish city of Malmö, governed by a centre-left coalition led by the Social Democrats, have requested that professions that work in healthcare, schools, libraries and social services should be excluded from the nationally proposed law that would require all public servants to report unauthorised immigrants to the authorities. The proposed legislation is part of the political platform of the right-wing coalition that has governed the country since the national elections in 2022 with support from the Sweden Democrats, a far-right party known for a strong anti-immigration position (Dal Bó et al., 2023). Table 2 shows the BERTopic key with the generated topics and their representations translated into English, and the number of comments. The TM shows that several relevant descriptive words have been identified, but additional work is needed to create stable topic categories based on both the terms included in each topic as well as the articles indicated as representative for each individual topic.

Topic	Count	Name	Representation
0	38	0_they_will_such_obligation to report	['they', 'will', 'such', 'obligation to report', 'comply', 'possible', 'in addition', 'those', 'moving', 'measures']
1	37	1_he_up_2022_heavy	['he', 'up', '2022', 'heavy', 'buses', 'enemy', 'last year's', 'gangs", 'worst', 'campaign ad']
2	37	2_holding_story hour sessions_children_American	['holding', 'story hour sessions', 'children', 'American', ' phenomenon', 'adopted', 'Kalmar', 'for some', 'time', 'controversial']

Table 2. BERTopic Key, key terms (translated from Swedish; see Appendix I for original output in Swedish)

Table 3 shows the most upvoted comments per topic (Topic 0-2), showcasing what comments have received the most tangible positive feedback from other users of the comment section of the respective article.

Topic	Comment	Upvotes
0	Ok? I think that it is unethical to pay such high taxes ... Can I then just skip paying them? Would be nice! MP [The Green Party] a party for idiots led by idiots!	9
1	When reality surpasses fiction. How the h*** can any normally functioning person in Sweden vote for the Liberals? No, I thought so. But there are apparently about 4 per cent mentally retarded people who think it's a good idea to vote for these freaks of politicians.	9
1	I expect him to go to the suburbs dressed up and 'educate' the newly arrived Swedish children in LGBTQ tolerance.	9
2	Children should not be subjected to sexualisation at all.	8

Table 3. Most upvoted comments per topic (translated from Swedish)

In Table 4, a selection of the SA of user comments for Topic 0 is shown, with the four strongest positive sentiments first and the four strongest negative sentiments below (see Appendix II for the full table). This analysis, utilising the KB Lab Megatron zero-shot model (Sikora, 2023), indicates that the model suffers from a lack of contextual understanding associated with previous lexicon-based approaches. For example, the comment from User 15, '*If you have certain values then it is apparently something positive to break the law*', is assigned the sentiment '*positive*' with a very high probability. Irony and sarcasm, which appear frequently in the material, prove difficult to the BERT model. The top three positive sentiments are all assigned to comments thematically categorised as *Irony* (see Table 4).

User code	Comment	Sentiment label
User 32	'Victory is Here' says Stefan the Ass !!! hohohoho	(positive, 0.9880883097648621)
User 38	Open your hearts and don't build any walls around Sweden ! Immigrants enrichens Sweden and raises Sweden's standard and economy. Everyone who has immigrated to Sweden are well-educated and create new jobs. It has never been more safe living in Sweden than now. Regards The Politically Correct Elite. The batik witches The idiots	(positive, 0.9095330238342285)
User 15	If you have certain values then it is apparently something positive to break the law.	(positive, 0.8953573107719421)
User 20	Let's withdraw all the equalisation subsidies to Malmö. Then they can rely on themselves.	(positive, 0.812720775604248)
User 21	Now the shamed big driveller Stjernfeldt Jammeh is at it again. It is not reporting crimes/illegal immigrants that increases the shadow society, it is the pouring-in politics in Sweden and Malmö that increases the shadow society. Without the pouring-in we wouldn't have had any illegal shadow society. As long as the formerly Swedish city Malmö is led by the law-rattling, enemy to the people, and islamist activist Katrin the city will bathe in social misery, crime, Islamism and antisemitism.	(negative, 0.9636296033859253)
User 14	All of Malmö is an asshole that really would need to be cleaned up from all the shit but instead the leaders want to do the opposite and at every cost remain a slum city.	(negative, 0.9629205465316772)
User 18	If Malmö was a flowering city with law and order and low criminality then they would maybe have a point with their soft method, but Malmö is the direct opposite to good order, a shocking example plain and simple.	(negative, 0.9592908024787903)
User 32	Then just GETINTO THE UNEMPLOYMENT LINE !!! FIRE THEM AT ONCE, refusal to work !!! Without any f*** severance pay or similar parachutes	(negative, 0.9540340304374695)

Table 4. Selection of Megatron model sentiment analysis of user comments for Topic 0 (translated from Swedish).

Despite the considerable advancements that BERT models have brought to natural language processing tasks, applying them to informal and colloquial language found on social media and online discussion forums poses significant challenges, as indicated by the generated topics (see Table 2) and the strong positive sentiments assigned to sarcastic comments (see Table 4). Models like BERT, primarily trained on formal and grammatically correct text, may struggle to appropriately interpret and extract meaning from informal and dynamic language. In the present case, additional challenges are presented by the scarcity of models trained on Swedish. To address these issues, it is necessary to incorporate robust post-classification analysis, to identify and rectify misinterpretations or misclassifications. Post-classification analysis may involve the integration of additional layers of context-specific fine-tuning or the implementation of ensemble techniques to enhance model performance in capturing the intricacies of colloquial expression. Adding a robust post-classification analysis will be an important part of the planned research project as a whole.

Moving from quantitative procedures to qualitative, the content analysis of the pilot study (see Appendix II) is focused on the comments from the most commented article (Topic 0). This stage of the analysis serves to complement the quantitative analyses with a qualitative sample of how far-right information activities concerned with issues related to public libraries unfold, and connects to the second research question concerning how digital information activities of the far-right can inform our understanding of how public libraries are understood and constructed in far-right rhetoric. Table 5 shows an overview of the identified themes, indicating different categories of information activities.

Theme	**Number of comments**
Law and order	18
Malmö as a symbol	14
Critique of *mainstream* politics	11
Resentment against politicians	10
The cost of immigration	9
Irony	7
Penalise public servants	5
Nationalism	4

Table 5. Overview of identified themes.

Given the topic of the article, concerning how '*Malmö's government refuses to comply with the obligation to report illegal immigrants*', it is not surprising that the themes collecting the highest number of comments are *Law and order* and *Malmö as a symbol*. In the comments, Malmö, a city with a large part of the population having an immigrant background, is often used as a symbol for what is believed to be wrong with Sweden today, and the comments categorised as *Malmö as a symbol* are in most cases also categorised as *The cost of immigration*. *Critique of* 'mainstream' *politics* is another theme collecting high numbers of comments, and the theme often overlaps with *Resentment against politicians* and *Law and order*. The most upvoted comment (see Table 3) combines these three themes, as well as *Irony*:

> *Ok? I think that it is unethical to pay such high taxes ... Can I then just skip paying them? Would be nice! MP [The Green Party] a party for idiots led by idiots!* (*User 37*)

Penalise public servants is the theme that most clearly relates to public libraries, as librarians is one of the professions discussed in relation to the proposed legislation, something that has been criticised by both professional organisations (DIK, 2023) and researchers (Engström et al., 2022). Not surprisingly, the theme collects comments that are also labelled *Law and order*, as exemplified in the following comments:

> *Very simple, fire all the communists that refuse to follow the law. (User 33)*

> *Then we'll just have to bring out the boots in Malmö, boot them out, there are lots of people who can replace this cadre. (User 27)*

In the former comment, the common trope that librarians, as well as other professions associated with the welfare state, are left-leaning is echoed (see Carlsson et al., 2023). The latter comment reflects a tendency in far-right discourse to invoke violent imagery as a counterpoint to mainstream political rhetoric, a practice that can instil fear in political opponents and perceived enemies (cf. Engström et al., 2024). For some comments, the theme *Penalise public servants* also overlaps with *Nationalism*, as well as *Law and order*, as shown in these two examples:

> *Put them in prison so they can think about their crimes, I believe these people are dangerous for Sweden and the Swedes (User 5)*

> *But then it's just a matter of locking them up for disobedience and betraying our country! (User 7)*

These comments connect to nationalistic ideas often found in far-right discourse where nations are seen as the main arenas for collective identity and culture, and where Sweden as a nation and Swedish culture are believed to be threatened by the quick, unnatural change attributed to multicultural society (Håkansson 2023). In this rhetoric, representatives of the state and the political elite are considered to be agents working for a multicultural and globalised society, in strong opposition to the interests and wishes of *the people*. For these reasons, the overlapping of the themes *Penalise public servants* and *Nationalism* is not surprising, as librarians are framed as representatives of misguided politically correct governance at odds with popular opinion.

Concluding remarks

There is a significant lack of research that investigates how cultural institutions are constructed as ideological symbols for the far-right through use of digital media. By showcasing results from a pilot study conducted as part of the subproject *digital information activities*, this paper has answered the first research question by showing how digital methods can be utilised for studying digital information activities of the far-right, paving the way for further studies of how these interactions may affect the democratic mission of public libraries, an area in need of further studies as suggested by previous research (Carlsson et al., 2023). Contributing to method development relevant for advancing our understanding of antagonistic information activities of the far-right focusing on libraries, this paper has shown examples of how digital technologies mediate the interactions that are the object of our inquiry, but these technologies are also important actors in the netnographic research process. Several methodological issues remain to be solved; for example the issue of how BERT models can be applied to Swedish data comprising rapidly evolving and informal Internet language. Issues related to how BERT models, primarily trained on formal and grammatically correct text, struggle with data including irony and sarcasm as well as colloquial language call for robust post-classification analysis to be developed as the scale of the study is increased. Additional trials using other models, such as the multilingual large multimodal model GPT4-o, will also be relevant to consider.

Ethical issues warrant consideration; for example, the collection and analysis of digital interactions and the confidentiality of participants. For the pilot study, we have added confidentiality for users through translating quotations from the original language (cf. franzke et al., 2020). For the next stage of the project, where the interconnectedness between online discourse and physical events at cultural institutions will be explored, additional layers of ethical considerations are added, for example concerning the confidentiality and safety of public servants tasked with promoting certain aspects of democratic society. However, we argue that an investigation concerned with how digitally mediated hatred and threats against cultural institutions interact with public servants' work to promote democracy call for research strategies combining data-driven digital methods and qualitative case-studies of selected institutions in their specific local settings, dealing with specific issues, such as promoting the rights of minorities.

As suggested above, previous studies have shown that digital forums and social media are key components when ideologically driven threats and antagonisms are directed towards public libraries (Carlsson et al., 2023). Through an analysis of comments from the SamNytt website, utilising both quantitative approaches and qualitative content analysis, we are offered new insights into how public libraries are currently understood and constructed in digital discourse from comments written on articles of the main media outlet for the Swedish far-right. When it comes to the second research question and the effort to begin to chart how far-right information activities focusing on libraries unfold, the findings from the pilot study indicate that online information activities of the far-right display a view of public libraries as leftist and as potential threats to the nation. This view of public libraries echoes ethnic nationalism and authoritarian views commonly associated with the far-right (Rydgren and Van der Meiden, 2019; cf. Inglehart and Norris, 2016). The far-right framing of public institutions as part of a perceived elite is well-known (cf. Usherwood and Usherwood, 2021). However, analysing comments from the most commented article shows how librarians are more explicitly drawn into this framing. The theme most directly related to public libraries is *Penalise civil servants*, relating to librarians' protesting against a proposed law requiring civil servants to report unauthorised immigrants. This indicates that librarians are increasingly targeted in their capacity as civil servants using arguments that may fuel both online and on-site hostility and induce self-censorship among librarians. This development is concerning and warrants further scholarly attention.

Furthermore, until recently, previous research has shown a high degree of correspondence between national cultural policies and local politics (Harding, 2022), and that opposition between local and national political levels in the context of libraries concerns national policies protecting the rights of national minorities and persons with a native language other than Swedish (Hanell et al., 2022). These previously identified instances of opposition between political levels have been related to political discussions on the local political level conflicting with national policy. The findings from the pilot study presented in this paper suggest a new type of political tension between national policy and local politics, reflecting how Sweden since the national elections in 2022 has been governed by a right-wing coalition depending on support from the Sweden Democrats, a far-right party associated with nationalism and anti-immigration politics (Dal Bó et al., 2023).

To conclude, the pilot study reflects how quantitative procedures are necessary for the analysis of large amounts of data (Kozinets, 2020), but the functionality of the digital methods need to be tested and adjusted according to context. Furthermore, qualitative approaches are also essential, as shown by the results from the pilot study where irony and sarcasm, as well as the nature of specific contested topics such as the proposed legislation that would require public servants to report unauthorised immigrants to the authorities, call for methods that offer a nuanced and contextual understanding.

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Appendix I: BERTopic Key, key terms in Swedish

Topic	Count	Name	Representation
0	38	0_man_kommer_sådan_anmälningsplikt	['man', 'kommer', 'sådan', 'anmälningsplikt', 'efterleva', 'eventuella', 'dessutom', 'dem', 'går', 'åtgärder']
1	37	1_han_ut_2022_kraftigt	['han', 'ut', '2022', 'kraftigt', 'bussar', 'fiende', 'fjol', 'gängens', 'värsta', 'valreklam']
2	37	2_håller_sagostunder_barn_amerikanska	['håller', 'sagostunder', 'barn', 'amerikanska', 'företeelsen', 'anammat', 'kalmars', 'tillbaka', 'tid', 'utskällda']

Appendix II: Conventional qualitative content analysis of comments from Topic 0

Theme	User code	Comment	Sentiment label
Resentment against politicians; Irony	User 32	'Victory is Here' says Stefan the Ass !!! hohohoho	(positive, 0.9880883097648621)
Critique of *mainstream* politics; Irony	User 38	Open your hearts and don't build any walls around Sweden ! Immigrants enrichens Sweden and raises Sweden's standard and economy. Everyone who has immigrated to Sweden are well-educated and create new jobs. It has never been more safe living in Sweden than now. Regards The Politically Correct Elite. The batik witches The idiots	(positive, 0.9095330238342285)
Law and order; Irony	User 15	If you have certain values then it is apparently something positive to break the law.	(positive, 0.8953573107719421)
Malmö as a symbol;	User 20	Let's withdraw all the equalisation subsidies to Malmö.	(positive, 0.812720775604248)

The cost of immigration		Then they can rely on themselves.	
Resentment against politicians;	User 10	A striped blimp and a pink cloth sheet are pining after young immigrant boys or what?	(positive, 0.72750324010849)
Law and order; Irony	User 36	One exception after another for mena [Middle Eastern and North African] people. Why not skip laws also for us Swedes?	(positive, 0.6458326578140259)
Malmö as a symbol; The cost of immigration	User 28	Perhaps Malmö wants more equalisation subsidies from the state.	(positive, 0.6160332560539246)
Malmö as a symbol; The cost of immigration; Law and order	User 30	I don't feel like financing Malmö and other 'do good' municipalities through the tax sheet. Since Malmö does not 'want to' approve the new law I suppose it is OK if I deduct 5–10 % as tax deduction for things I don't 'want to' pay! Or another sum that is waaaaay higher that is about financing the oo so cherished multiculturalism.	(positive, 0.59110426902771)
Law and order; Penalise public servants	User 27	Then we'll just have to bring out the boots in Malmö, boot them out, there are lots of people who can replace this cadre.	(positive, 0.5768081545829773)
Critique of mainstream politics; Law and order	User 2	Sweden should be a decent country, the MP-politican says. Out with illegal immigrants perhaps would be a route to try then.	(positive, 0.5206326842308044)
Resentment against politicians; Critique of mainstream politics; Law and order	User 21	Now the shamed big driveller Stjernfeldt Jammeh is at it again. It is not reporting crimes/illegal immigrants that increases the shadow society, it is the pouring-in politics in Sweden and Malmö that increases the shadow society. Without the pouring-in we wouldn't have had any illegal shadow society. As long as the formerly Swedish city Malmö is led by the law-rattling, enemy to the people, and islamist activist Katrin the city will bathe in social misery, crime, Islamism and antisemitism.	(negative, 0.9636296033859253)
Malmö as a symbol	User 14	All of Malmö is an asshole that really would need to be cleaned up from all the shit but instead the leaders want to do the opposite and at every cost remain a slum city.	(negative, 0.9629205465316772)

Malmö as a symbol; Law and order	User 18	If Malmö was a flowering city with law and order and low criminality then they would maybe have a point with their soft method, but Malmö is the direct opposite to good order, a shocking example plain and simple.	(negative, 0.9592908024787903)
Law and order; Penalise public servants	User 32	Then just GETINTO THE UNEMPLOYMENT LINE !!! FIRE THEM AT ONCE, refusal to work !!! Without any f*** severance pay or similar parachutes	(negative, 0.9540340304374695)
Resentment against politicians; Critique of mainstream politics; Nationalism	User 9	All these d**** values-women… So d**** inadequate for the task and lost in historyless, crackpot ideas of the day. Appearance, idiocy, and treachery to the nation.	(negative, 0.9473562240600586)
Malmö as a symbol; Critique of mainstream politics	User 17	Malmö is the stronghold of criminality and rabble You know the reason That's right quisling parties rule	(negative, 0.9468349814414978)
Resentment against politicians; Critique of mainstream politics;	User 23	And then these parasite politicians/people ask why the situation and state of Sweden is as it is.	(negative, 0.9417688846588135)
Law and order; Penalise public servants; Nationalism	User 5	Put them in prison so they can think about their crimes, I believe these people are dangerous for Sweden and the Swedes	(negative, 0.9165231585502625)
Resentment against politicians	User 3	Childless ugly women who believe refugees are their children.	(negative, 0.9134753942489624)
Malmö as a symbol; The cost of immigration;	User 24	No, they certainly don't have to!!! Not a penny in equalisation subsidies!!!	(negative, 0.887950599193573)

Law and order; Penalise public servants; Nationalism	User 7	But then it's just a matter of locking them up for disobedience and betraying our country!	(negative, 0.8879429697990417)
Malmö as a symbol; The cost of immigration;	User 34	Malmö wants more money from other municipalities. Can a municipality be declared bankrupt or under guardianship, the current government apparently does not have what it takes	(negative, 0.8579277992248535)
Malmö as a symbol; The cost of immigration;	User 13	Build a wall around Malmö, it's already like a third-world country ...	(negative, 0.8512347936630249)
Law and order; Nationalism	User 16	If it doesn't suit you to follow Swedish law, then you can go with those whom you so eagerly want to protect, WHEN WE SEND THE SCUM HOME.	(negative, 0.840070903301239)
Critique of mainstream politics; Law and order	User 11	Sweden cannot continue on the same path with incompetent politicians who are out of touch with their voters. Politicians should not be allowed to obstruct law and order by helping illegal immigrants in the country to stay and hide in Sweden. If they cannot handle the task, they need to resign, like Åsa Romson.	(negative, 0.8290839791297913)
Resentment against politicians; Critique of mainstream politics; Law and order	User 6	But Jammeh, no one should have any kind of work relationship with an illegal immigrant? A trust relationship should not even be able to arise? Only the apprehension of the person concerned and guidance during the deportation process can involve law-abiding Swedes.	(negative, 0.808050811290741)
Critique of mainstream politics;	User 29	[The Liberal Party], aren't they in the government? Don't they have a party leader who can tell how things should be done?	(negative, 0.7992346286773682)
Malmö as a symbol; The cost of immigration;	User 25	For Malmö's socialist leadership, 'multiculturalism' is much more important than Swedish senior citizens. This is evident when they, despite the fact that the municipality is actually bankrupt, repeatedly spend millions on various Muslim cultural projects!!! Then economically prosperous and well-managed	(negative, 0.7756912708282471)

Critique of mainstream politics		municipalities are forced to pay for Malmö's multicultural excesses!!!	
Critique of mainstream politics; Law and order; Resentment against politicians; Irony	User 37	Ok? I think that it is unethical to pay such high taxes … Can I then just skip paying them? Would be nice! MP [The Green Party] a party for idiots led by idiots!	(negative, 0.757798969745636)
Malmö as a symbol; Resentment against politicians;	User 26	No wonder Malmö would rather take care of the crap from MENA than Swedish senior citizens in need. For crying out loud, the chairman of the municipal board herself has brought home a ---------- from Ghana or wherever she found the sorriness.	(negative, 0.7526752352714539)
Law and order; Irony	User 22	Why doesn't the police authority stop reporting crimes as well, then they save some money so they can hire more staff. Alternatively, evict a few thousand cellmates.	(negative, 0.6925574541091919)
Resentment against politicians;	User 8	Fire the batik witches, they have destroyed Sweden enough.	(negative, 0.6610947251319885)
Malmö as a symbol; The cost of immigration;	User 12	Form a ring of armor around Malmö. Cut off all economic aid. No one in, no one out.	(negative, 0.6454769372940063)
Law and order	User 19	An illegal immigrant does not belong to the weak in society, he does not exist in society.	(negative, 0.6361880302429199)
Penalise public servants; Law and order	User 33	Very simple, fire all the communists that refuse to follow the law.	(negative, 0.6219813227653503)
Irony	User 31	OTC Some people write books, while others burn books. August wrote The Red Room. Fjodor wrote The Dead House. So what? I don't know …	(negative, 0.5626118183135986)
Malmö as a symbol;	User 35	In Malmö's case, the answer is simple: reduce the municipal equalisation. Every fourth crown comes	(negative, 0.5285810828208923)

The cost of immigration;		from somewhere else, they can afford an opera house for a billion, unicorns for 300,000. The list can be made long.	
Malmö as a symbol; Law and order	User 4	I think more than half of Malmö's population should be reported.	(negative, 0.5120136141777039)

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Small acts to make safe space: a case study of the Queer Liberation Library as a queer space

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Abstract

Introduction. This paper examines small acts from the Queer Liberation Library (QLL) that makes it a *queer space* as defined in previous research. This emphasises the need for access to those with multiple minority identities, and the ways in which other libraries not focused on exclusively queer literature and membership can take these small changes to make a big impact.

Method. Using QLL as a case study, this paper focuses on the creation of queer space as a heterotopic mirror to normative space, refusing the unqueer spaces that attempt to enforce binaries through critical librarianship. Phenomenology is used to describe individuals' orientations towards the normative, queer and unqueer spaces mentioned above.

Analysis. The analysis takes a broad look at the purpose of QLL and other queer-focused libraries before narrowing the topic to look at three small acts on QLL's part that build the queer space of this library: the quick exit function on their website, the lists and collections they curate monthly and QLL's policies (collection management and membership).

Conclusion(s). Though there is much that could, and should, be done to build queer space into public libraries, especially for multi-minority individuals, this paper argues that small acts can and should be implemented before tackling larger tasks that require excess manpower, funding and time. Though these small acts do not replace the need for larger change, they can be implemented quickly and work to make public libraries safe spaces while larger changes are slowly implemented.

Introduction

The Queer Liberation Library (QLL), like many grassroots queer libraries, came about as a handful of individuals saw a need that was not being fulfilled. As the founder, or *idea-haver*, states in the history of the QLL, '*I learned that there are very few [queer libraries] in North America. So I daydreamed for a few years about making one myself*' (*About*, n.d.). They were more equipped to develop a project like the QLL, which is much more expansive than equivalent grassroots libraries that are significantly smaller operations, due to their MLIS and other connections. Maçãs (2022) and the QueerIST library developed by engineering students is a great example, where all the people included were '*volunteers with no previous knowledge in library science*'. This library, though revolutionary in its own right, does not have the scale that QLL has, focusing on a small community rather than the entirety of the United States. This paper considers the ways in which QLL acts as a queer space across a large population, navigating the nuances of multi-minority identities with care from the team members to the users. The QLL team makes big differences through small actions in their creation and implementation of the QLL such as their *quick exit* feature, the curated lists they provide, their active awareness of inclusion and diversity and, perhaps most importantly, policy. While not directly applicable to all public libraries, these small acts can be translated into physical spaces in a variety of ways. This concept of small changes to implement safe spaces is a great way to move the theory of critical librarianship into practice, despite '*the difficulty of creating change when up against the status quo*' (Foster et al., 2022, p. 66). This sentiment, shared by interviewees in Foster et al.'s (2022) study, is a feeling many librarians feel in the face of academia and critical librarianship (Foster et al., 2022; Drabinski, 2019). Suggesting small changes that can snowball into larger shifts in the status quo is a way forward from this stagnation.

Theory

Terminology

In this analysis, language is incredibly important. The QueerIST library acknowledges this in the development of categories with the word '*interest*', which

> *is used to indicate that, while in some cases the identity of the characters in a book is never made clear and is only suggestive, those themes represented in the book are considered to be consistent with queerness and of interest to queer people.* (Maçãs, 2022)

Defining *queer*, *queer space*, *unqueer space* and *normative space* is vital for understanding the ways in which QLL creates queer space, especially as these terms do not equate to queer-only spaces. This paper builds off understandings of these terms developed in my thesis *Defiantly queer spaces: queer exploration, becoming, resistance, and joy in* Ministry of Utmost Happiness *and* No One Can Pronounce My Name (Coltman, 2022).

Definition, however, is too strict a word for what I argue for *queerness*, as it is more of a boundary-setting than strictly defining one way to be *queer* other than simply *non-normative*, though it is inherently that. Instead, I am concerned with the *foundations* of queer identities and behaviours, which include '*consent, agency, self-determinacy, and safety*' (Coltman, 2022, p. 13). This prevents actions such as murder or paedophilia from being categorised as *queer*, as they disrupt all of the foundations queerness is bound by. By using the term *non-normative* in this pseudo-definition, it also belies a certain amount of reliance of the individual circumstances within which said queerness exists, rather than making a broad generalisation without acknowledging the hegemonic structures that queerness responds to.

Now knowing what *queer* is, we move on to the definitions of space: rather than putting another false dichotomy on the concept, I argue for a way to categorise space into layered meanings. First, there is normative space and queer space. Normative space is space which is oriented towards the hegemonic centre. This is space that enables easy existence for people with normative identities

and behaviours. Queer space acts as a heterotopic mirror to normative space, reflecting and subverting the hegemonic centre for people to exist in non-normative ways (again within the bounds or foundations of queerness mentioned above). Within both spaces, indeed all space that is not perfectly theoretical, there is '*The enforcement of normative labels, traditions, and expectations*' which '*creates an unqueer space*' (Coltman, 2022, p. 2). Using these three terms to navigate the different spaces in society helps move towards the orientation of the self within these spaces.

Critical librarianship

Critical librarianship is at the heart of most social justice efforts in libraries, as

> *Critical librarianship, influenced by a variety of critical theories, is a movement within LIS that asks us to consider the library's role in systems of oppression and to work with our communities to dismantle hegemonic structures that maintain power and perpetuate harm.* (Foster et al., 2022, p. 54)

This kind of dismantling is core to creating queer spaces by clearing new phenomenological paths. The unqueer space that is hegemonic enforcement is challenged and contested of the queer space of libraries, a heterotopic response to the community, culture and norms the library exists within. Critically engaging with sources of power, including the library as a source of power, is the only way to appropriately address and rectify these hegemonies that perpetuate harm to everyone, and to marginalised people the most. While this is the case, critical librarianship is best practiced, rather than theorised, as '*academic research around critical librarianship can also focus too heavily on theory while, at the same time, be elitist and exclusionary*' (Foster et al., 2022, p. 68). This paper uses critical librarianship and many of the theoretical underpinnings behind it to engage with the power structures it discusses, but more so urges the readers and librarians to engage critically with the suggestions and practice critical librarianship in the reading and implementation of the strategies suggested. As Drabinski (2019) states in her keynote speech at University of the Arts London:

> *It is simply not enough, not ever and certainly not in this urgent moment, to develop a critique, and then head to the pub for a pint. We must first locate the structures of power available to us – our labor unions, our cataloging and classification schemes, our electoral system – and begin to use those structures as ladders, bridges, staircases for building better worlds.*

The theory is well-discussed, but the practice, which will be highlighted throughout this paper, is more powerful than any words can be and often unique to the individual and the individual library (McElroy, 2017). Librarians can and should wield their power thoughtfully and with care for their communities, and QLL practises this kind of care in spades.

Orientations

While research on physical space in libraries may not consider phenomenologist perspectives as key to aiding their discussion, many still use concepts aligned with phenomenology. Bain (2022), for example, discusses the psychology of perception in her paper 'Queer affordances of care in suburban public libraries':

> *Gibson (1979) coined the term 'affordance' to refer to the possibilities for action that humans and other animals could see in the different objects they oriented themselves to in their lifeworlds.* (Bain, 2022, p. 2)

This idea of affordances is precisely the orientations that phenomenologists like Merleau-Ponty (1964), Heidegger (1996) and (queer phenomenologist) Ahmed (2006) are concerned with when discussing their orientation towards parts of their lives. In this, I particularly draw upon Ahmed's

spatial construction of society as paths more and less travelled, as well as paths not yet formed (Ahmed, 2006). In creating these novel paths, or re-treading the less-travelled paths, the queer becomes easier and easier to access (Ahmed, 2006). I posit that building signs and spaces, like Ahmed's (2006) queer dining room table, to 'support' queerness but also to acknowledge queerness and reject unqueerness, is vital for queer people to explore and become themselves. This allows for queer resistance and joy, both together and separate.

QLL, among other queer library spaces accessible to the masses, acts as both a queer space and a place oriented towards the non-normative. It is a heterotopia that is the product of national unqueerness in familial, local and regional politics. While some queer people may not have their own queer families and support structures that help show them these un-trodden paths, QLL highlights the potentiality for these queer orientations '*Online and accessible to anybody with a computer or smart phone*' (*About*, n.d.). Adding to this, anyone with access to a public library with Internet (its own issue which is discussed in other works) can access QLL. It creates a visible community accessible to anyone with an address in the United States.

The QLL librarians, actively using phenomenological understandings of orientations or not, create new paths and patterns for queer people to access and follow, especially as they act as a public library for any and everyone within the United States. QLL began with the '*idea-haver*' witnessing a path being cleared for queer people via the *Out on the Shelves Library* in Vancouver, BC (*About*, n.d.). He and his friends found this library to be a space where they could '*breathe the air of a room where we could truly relax, even if just for a moment*' (*About*, n.d.). This kind of atmosphere exemplifies the heterotopic '*queer surface*' or space which Ahmed (2006) emphasises as important;

> *It is not only that queer surfaces support action, but also that the action they support involves shifting grounds, or even clearing a new ground, which allow us to tread a different path.* (Ahmed, 2006, p. 170)

QLL was born out of the reaction to this queer surface of society: the founders saw a need for '*more of these spaces and resources*' (*About*, n.d.). Freely accessible information for and about queer people, especially those most marginalised in society, is the kind of clearing of grounds which functions for queer people as allowance for understanding, exploring and feeling safe while doing so. As such, QLL being a public library further enforces the phenomenological queer space.

Purpose

This orientation highlights the purpose of QLL, which was over five years in the idea phase (*About*, n.d.). Kieran, the founder, states that there are not enough of these kinds of spaces and resources with queer and other marginalised people in mind, but it was not until they were working in digital libraries that he came up with the concept of a digital library (*About*, n.d.). Studies back this up in both Canada and the United States, even just considering if libraries are actively working on being *safe spaces*. In a study of 29 libraries in and around Toronto, only one had worked towards active inclusion for queer people with a positive space committee, which

> *leveraged the launch to forward a broader organizational agenda of LGBTQ+ inclusion that also involves a variety of initiatives: an annual financial commitment to build the LGBTQ+ collection and monitor its circulation; special occasion booklists and Pride displays; gender-inclusive new client registration; and the designation of all-gender washroom.* (Bain, 2022, p. 4)

Other than studies, from the Texas-based research of Spencer et al. (2017) to Santos Green et. al.'s (2022) book on policies, programmes and practices, *LGBTQIA+ inclusive children's librarianship*, there is a lack in the active production of queer space in public libraries, but Bain's (2022) study exemplifies this in the greatest detail. While the committee mentioned above is a *best-case* scenario, even half of what the library above did would have made the other libraries also *safe space*

certified, but no others did. (Bain, 2022) Priorities for public libraries do not tend towards queer inclusion, unless during Pride month or if they have critical librarianship principles in place and are actively working against unqueer space. Therefore, QLL and other queer-specific libraries become all the more vital for queer and questioning individuals.

Quick exit

One key aspect of queer space is that it is a '*semi-permeable*' heterotopia (Coltman, 2022). This is for the safety of those who require the queer space, especially if they have a lot of unqueer space around them. Computers and browsers track a lot of data that is easily accessible to anyone who can get onto the browser or computer. While there is not a lot that can be done about this data tracking, QLL offers a '*quick exit*' solution for individuals who cannot be seen oriented towards *queer* sites, which is at the top of every page on the website (*Queer Liberation Library*, n.d.). Not only does this button take the user to weather.com, but it also prevents the backspace button taking a user back to the QLL website (*Queer Liberation Library*, n.d.). Ensuring this semi-permeability give the users privacy that encourages them to use the site. As Maçãs (2022,, p. 21) states, '*patrons have the right to use the library service with confidentiality and discretion if they choose to*'. Going to the neutral site of weather.com allows for this confidentiality and discretion, which protects the user from being targeted by others trying to enforce unqueer space and block those queer paths. Though it seems a small part of the website, the quick exit button is vital in aiding the users of QLL in both feeling and being safe while accessing the queer space.

To integrate a similar button, a version of the code given by Will Myers' team (2024) can be used with alterations that can be customised to the individual library. Where the HTML code indicates 'newWindow =' the library can input the library's homepage whenever there is a page which contains information someone may not want to be discovered looking for. This is not only relevant to queer information, but also can be used for people looking for aid around domestic abuse, sexual assault and more. In fact, having this button at the top of all catalogue pages may help patrons feel more comfortable with searching for books on these, or any, topics as well.

```
<!-- Quick Escape Button -->
<a id="quick-escape">
  <span class="text"> EXIT SITE </span>
</a>
<script>
  function quickEscape() {
    let newWindow = 'https://www.amazon.com/';
    let replaceURL = 'http://google.com';
    window.open(newWindow);  // Open New Tab
    window.location.replace(replaceURL);  // Replaces Current Page
  }

  document.querySelector('#quick-escape').addEventListener('click', quickEscape);
  document.body.addEventListener('keyup', (e) => e.keyCode == '27' ? quickEscape() : null)
</script>
```

Figure 1. The functioning HTML code (without custom css formatting) for a quick escape button which both opens a new window and redirects the old window (Website 'Quick Escape' button | Will Myers | Squarespace Plugins, 2024).

Similarly, libraries can consider *privacy covers* for books patrons feel are of a sensitive nature. Offering basic book jackets of varying size can provide some measure of security for patrons. Though this will not completely protect the patron's privacy, it is a small step that is easy to implement to make public libraries safer spaces. This will also uphold the ALA's Library Bill of Rights point seven:

> *All people, regardless of origin, age, background, or views, possess a right to privacy and confidentiality in their library use. Libraries should advocate for, educate about, and protect people's privacy, safeguarding all library use data, including personally identifiable information.* (Library Bill of Rights | ALA, 2019)

Allowing for library use data to be physically hidden from people who happen to be in the library or where patrons are reading gives more privacy to those who are reading books on sensitive topics.

Curated lists and collections

QLL also curates lists and collections of books for library patrons and website visitors alike. While these are most easily found on their Libby app, they can also be found in the Blog portion of the website under each of their collection updates (*Queer Liberation Library*, n.d.). These lists offer a great place for people unfamiliar with queer literature as well as those with niche interests in queer literature, but they also respond to national events. For example, there were two curated lists for November; the first highlights Native American Heritage Month through '*North American centered Native and Indigenous queer reads*' because '*Decolonization is a queer issue*' (*November Collection Update*, 2024). This highlights the focus on diversity and people who hold multiple minority identities, which is particularly important in larger queer spaces that attempt to be space for every queer person as those with multiple minorities tend to be most disenfranchised and in need of queer space. The second was in response to the elections in the US, where Trump was elected president after a long campaign of anti-LGBTQIA+ sentiment; this one was named '*Words for resilience, community care, and survival*' (*November Collection Update*, 2024). The ability to include national issues of inclusion and be responsive to politics is a perfect example of the heterotopic nature of queer spaces on the part of QLL as well as a small way of showing care month to month for their patrons. Considerate and consistent inclusion of diverse lists underlies each of these collections.

Public libraries can and do create similarly diverse *collections* with endcaps and book displays and through book lists (on bookmarks, paper or online). These spaces already exist and are utilised in different ways throughout different libraries, and librarians can use critical librarianship to emphasise minority identities in these spaces as much as possible throughout the year. McElroy (2017) mentions how working in spaces which employ critical librarianship processes was not difficult for people who lacked knowledge of different minority groups;

> *I didn't have to have a deep understanding of white supremacy or know the full history of segregation in public schools in order to help build a display about the Chicano student walkouts in 1970s Los Angeles.* (McElroy, 2017, p. 8)

Librarians, even those not specialised in particular topics, know how to find the information needed for patrons just as well as they are able to search for diverse book recommendations to include in book displays. Including recommendations from diverse librarians and readers is a great start to building these lists; even if a library does not have a varied staff, there are many online resources available to discover these kinds of diverse books. Further, creating a comprehensive collection of the different temporary book displays will allow users future access to these otherwise temporary displays. This could be an excel spreadsheet or simply a printout of each, and will also help librarians quickly reference which books are on display in larger libraries. This process of engaging in critical librarianship around book displays can include policy that requires a percentage of books on each display to be from minority writers, encouraging diversity through the promotion of diverse voices year-round.

Policy and practice

'*Queer books! That's it. That's the policy*' (*Collection Development*, n.d.). Though this line simplifies the nature of their policies and practices, it does get at the heart of QLL's goals; queer literature for queer folk, free to access. Their policy does not end, but begins, there. Foundations set, they discuss two key aspects of their collection management policy: the assortment of content from '*romance to horror, sci-fi to memoir, and everything in between*' and '*curating a collection that reflects the diversity of queer lives and imaginations*' (*Collection Development*, n.d.). This kind of policy, similar to the public library Bain (2022) discussed setting aside specific funds for queer content, can easily be transformed to fit any public library's collection policy. An emphasis on diversity in collection management is key for critical librarianship, and putting policy in place ensures inclusivity long-term. QLL's membership policy furthers the requirement for inclusion and diversity, ensuring an actively safe space for members.

Inclusion and diversity

While the curated lists are a definite aspect of inclusion and diversity within QLL's practice, the policy integrated into their collection management ensures diversity and inclusion is maintained as a core tenet. Through a single paragraph, they emphasise the reasoning behind this choice;

> *We actively work to ensure BIPOC voices are not just represented, but are core components of our collection. We also know that, historically, some facets of our community are underrepresented. It is a simple fact that more books have been published about cis gay men than aromantics or intersex people, for example. Knowing this, we will actively seek out materials from all parts of the LGBTQ+ community, to resist replicating the historical and ongoing bias within the publishing world.* (*Collection Development*, n.d.)

From the outset, the terms *core component* and *underrepresented* stand out immediately as action and reaction. This *active* work on the part of QLL is to resist the historic and ongoing bias that queer people still see perpetuated as unqueer space, mainly the centring of cis gay men. Focusing on the less represented serves two functions: the first, to uphold queer space for multi-marginalised individuals and the second, to fill a queer niche many libraries not focused on queer content specifically would likely miss. It is unlikely that a library not specifically catering to queer people will build a collection based off the popular, which will more likely than not contain the works that are more popularly published, especially through mainstream publishers. QLL instead focuses on those that are often missed in these collections: aromantics, intersex people and BIPOC queer people.

This echoes the policy recommendations Maçãs (2022) highlights where evaluations should include queer voices, local voices, queer and gender diversity, ethnic and ability diversity, cultural and geographical diversity, format diversity, age targeting and ensuring positive representation. While local representation is difficult to establish when the locale of the library is digital across an entire country as big as the US, the focus on diversity is most definitely at the forefront of their collection policy. Here is where localised public libraries can truly excel. In developing language in their collection development policies carefully like QLL, these libraries can assure diversity as *core* rather than a *bonus*, and by employing Maçãs's (2022) evaluation recommendations, public libraries can evaluate their current collections and the future potentials for their collections.

Membership policy

QLL's membership policy is not just a policy for the members to uphold, but also policies around how they manage membership data (*Membership Policy*, 2023). This ensures members can feel safe in the knowledge that they are respected just as much as they are expected to respect everyone in the space. This fulfils the same function as another community-based queer library's '*Statement of patrons' rights and responsibilities*' where '*the first item is that all patrons shall have an equitable*

treatment, with respect for their own person and identity' (Maçãs 2022). It is key that all libraries pledge just as much respect and safety as they expect from patrons.

The second aspect, of the respect QLL expects from its patrons, can be summarised in one section of the membership policy;

> *All of QLL's events, campaigns, and social media feeds are hate-free zones. QLL does not permit homophobia, transphobia, racism, sexism, ableism, colorism, xenophobia, or any other type of discrimination or hate speech.* (*Membership Policy*, 2023)

This concise explanation of intolerance for hate of any type of discrimination similarly emphasises QLL's intent to be a queer space for those most likely to struggle to find space to exist as themselves. Through two small sentences, they highlight the emphasis on BIPOC inclusion. This can easily be implemented in public libraries, and is in many cases, even if not upon signing up for a card.

Conclusion

In the *purpose* section, I highlighted how intensely one public library fought for inclusion of queer people to create a safe space. Indeed, often this kind of intensity is required to work against a system that is rife with unqueer spaces and tends to be a tenant of critical librarianship as Foster et al. (2022) state in their title: '*They don't necessarily play nice with power structures*'. However, small acts also often make a huge difference and can be employed from an individual employee level to a policy level in public libraries. Maçãs (2022, p. 21) argues '*If the library is not specialized in queer subjects, one of the most important decisions it can take is to implement a queer section or queer corner*'. Dedicating a small space in a library to queer content for queer people is a good way to start small, as well as individual librarians becoming *safe surfaces* for people to come to with questions and requests. Similarly, implementing changes in membership and collection development policies that emphasise safety and representation for their patrons most in need of both things would help provide safe space for them. Examining QLL's multiple small acts and how they made big changes in the creation of the library as a queer space can aid other libraries to overcome the '*tensions between reality and theory*' (Foster et al., 2022, p. 67) of critical librarianship.

About the author

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Creating space for climate justice in library and information science

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Abstract

Introduction. We already live with the consequences of climate change, although such changes are experienced by humans, non-humans and the more-than-human world in vastly different ways, even within the same geographical regions. Climate change underpins, intersects and is the context in which our everyday lives and our work takes place. While libraries and library organisations have been discussing and addressing climate change for years, in this paper, we advocate for the field of library and information science (IS/LIS) to directly acknowledge climate change and create space for climate justice across our teaching, research and practice.

Method. Building from our own experiences in these areas, we offer four entry points to provide examples and inspiration for IS/LIS researchers, educators and practitioners to consider climate justice in their work by: (1) investigating connections between informational and environmental injustices, (2) exploring intersections among heritage, memory and cultural climate justice; (3) disaster planning and pedagogy, and (4) imagining aspirational futures.

Results and Conclusion. Using these four entry points to create space for climate justice in IS/LIS, we offer three propositions: embed climate justice across the IS/LIS curriculum, develop a climate justice research stream, and collaborate across sectors to build community and to imagine just alternative futures.

Introduction

The United Nations Environment Programme's *Emissions gap report* 2024 is stark about what is required for the world to prevent catastrophic planetary warming:

> As *greenhouse gas emissions rose to a new high of 57.1 gigatons of carbon dioxide equivalent in 2023, the cuts required from today are larger*; 7.5 *per cent must be shaved off emissions every year until 2035 for 1.5°C. Current promises are nowhere near these levels, putting us on track for best-case global warming of 2.6°C this century and necessitating future costly and large-scale removal of carbon dioxide from the atmosphere to bring down the overshoot.* (United Nations Environment Programme, 2024, p. XI)

According to the Climate Action Tracker, an independent research group, 20 countries including China, the United States, India and the European Union were responsible for 83 per cent of global emissions. However, when carbon emissions are measured per capita rather than by total, a different picture emerges. The top five per capita carbon emitters are Saudi Arabia, Australia, the United States, Canada and Russia (Paddison and Choi, 2024). The simple act of focusing on different information – total versus per capita carbon emissions – can shape political discussions about climate. Countries like Canada and the United States promise to commit to lower *total emissions* when '*China and India*' do, even though China's and India's *per capita emissions* are, respectively, half and less than one-eighth of those of Canada and the United States.

Despite the clear goals and objectives laid out in the UN's *Emissions gap report* 2024 to avoid the *best-case scenario* of 2.6°C degrees of warming by the end of this century, and that climate change is already experienced by all communities across the planet (although unevenly), perspectives differ about who is responsible, most affected, to what extent, who is to be trusted, and what constitutes effective action. When insights that a climate justice lens provides are absent from these perspectives, the general public, '*others*,' or *all* of humanity who '*lack the will*' to take action are blamed (Floridi, 2023; Noor and Milman, 2024). In other perspectives, visions of climate mitigation and adaptation are limited by the rhetorics of imminent technological interventions and individual actions such as '*eco*' consumption (Barendregt and Jaffe, 2014). More pernicious are binary perspectives that pit humanity against nature or economic survival against transformational change and ignore the devastating and ongoing experiences of climate change that have, are and will continue to occur, such as Floridi's '*terrible hope*' that '*the catastrophic slap from Mother Nature*' will be '*small, effective, and well-intentioned*' (2023, p. 4). This perspective of climate change erases the concept of justice entirely and ignores the catastrophic climate tragedies that have already occurred in places such as New Orleans (United States) and Karachi (Pakistan), to communities that are devalued by globally dominant political epistemes. Blame for climate change is (and should be) ascribed to economic structures, powerful vested interests and climate obstructionists (e.g., some governments, individuals, policymakers and industry). These entities (1) *fight* to maintain the status quo, (2) place the onus on individuals for collective problems and change, (3) *actively* and *violently* oppose transformative change through disinformation campaigns, and (4) are *protected* by money, power, policy, social systems and the state (Beeson, 2019; Huber, 2022). Too often, dominant perspectives of climate change ignore the interlocking systems of oppression and marginalisation that render some people, non-humans, and the more-than-human world more vulnerable to climate change *and* ignore the intergenerational resilience and leadership of Black, Indigenous, and racialised communities, and women in enacting and imagining just transformational futures (Powless, 2012; Thomas, 2022).

In addition, many frame climate change as a moral issue. They recognise that those who are least responsible for causing it are disproportionately affected, bear the greatest burden and have the least ability to access resources to respond and adapt (e.g., Sultana, 2022). Climate justice scholarship, therefore, positions us to recognise the ways climate change is rooted in extractive

and racial capitalism, settler colonialism and colonialism, imperialism and other interlocking systems of power, discrimination or exacerbated privilege (Crenshaw, 1989; Gonzalez, 2021; Malm, 2016; Reibold, 2023). Climate justice, then, requires:

- 'the recognition and respect of diverse identities, experiences and forms of knowledge;
- the redistribution of resources;
- and the representation and meaningful participation of women and marginalized groups in climate related decision-making' (Turquet et al., 2023, p. 12); alongside
- accountable and collectivist action.

The field of IS/LIS is well-positioned to contribute to climate justice scholarship and action because of the many shared concerns: respect for knowledge, knowledge systems, representation, information practices, appreciation of the power of information, knowledge and representation in people's lives, and an orientation towards social justice and inclusivity. Additionally, IS/LIS is tied to, and can learn from, fields of professional practice and institutions in the galleries, libraries, archives and museums (GLAM) sector that respond to climate change by providing access to and redistributing resources, serving as local, community-based organisations and institutions that respond to unique local conditions, and by connecting to other local, national, and international organisations that are in the same field (e.g., the American Library Association) or engaged in related, broader work serving the public good (e.g., UN Sustainable Development Goals). These shared concerns among IS/LIS, climate justice and the GLAM sector all serve to foster and support resilience as well as collectivist action.

Climate justice in LIS practice and organisations

For decades, practitioners in the GLAM sectors and associated organisations have undertaken extensive and multi-faceted projects to address and prepare for climate change, including climate mitigation, actions to reduce or prevent greenhouse gas emissions, and climate adaptation, actions that can be taken to reduce vulnerability to current and expected climate change. Climate justice in libraries asks a fundamental question: '*How might libraries, whether public, academic, or special, help their unique communities deliberate and navigate the climate crisis in socially just ways*' that accounts for local knowledge, '*coping, resilience, and adaptation processes*' (Sinnamon et al., 2024, p. 2–3)? In LIS organisations such as the International Federation of Library Associations and Institutions (IFLA), climate justice is centred in special interest groups; for IFLA, as a founding member of the Climate Heritage Network, and as a participant in COP29 (International Federation of Libraries and Institutions, 2024). The American Library Association (ALA) passed resolutions on climate change and libraries (2017), sustainability as a core value of librarianship (2019), and in 2023 joined the Sustainable Libraries Initiative to help create a national strategic plan for library professionals to address climate change (American Library Association, 2024). In Canada, the Canadian Federation of Library Associations, Ontario Library Association and British Columbia Library Association (BCLA) each host a Climate Action Committee that advocates for collective action and capacity building, with BCLA explicitly centring justice, equity and rights in their *Climate action statement* (British Columbia Library Association, 2023; Canadian Federation of Library Associations, n.d.; Ontario Library Association, 2022).

In IS/LIS specific associations and organisations, however, the lone research-focused climate group is the iSchools Climate Action Coalition, whose purpose is to '*promote collaborative, intersectional, interdisciplinary, and impactful climate action-oriented information research*' (2024, para. 1). There is no corresponding climate group or statement at the Association for Information Science and Technology (ASIS&T). Similarly, the Association for Library and Information Science Education (ALISE) supports SIGs (Special Interest Groups) for equity and social justice in LIS education and innovative pedagogies, yet there is no specific emphasis on climate justice. There are opportunities for IS/LIS researchers from around the globe to build community and share ideas about climate-related research, teaching and service.

Situating climate justice in the field of IS/LIS

IS/LIS has much to contribute in enacting climate justice in ways that both *build* on work already underway in the field and *create space* for a multiplicity of interventions – from the need for robust and actionable information and data about climate change (Guldi, 2021), resilient communication systems, information infrastructure (Patin, 2021a; Scholl and Patin, 2014), and cultural heritage institutions (Lerski, 2022), to considering the needs of people – their information practices (Choo, 2022), epistemic communities, information and climate literacy including identifying and resisting climate mis- and disinformation (Mann, 2021), to upholding the '*mechanisms for open civic deliberation to support learning, enable informed decisions, build trust, and contribute to social cohesion and equity*' (Sinnamon et al., 2024, pp. 2-3), to name but a few. Climate justice has not been taken up extensively in IS/LIS outside of computing (Becker, 2023; Finn and Rosner, 2019), yet concerns about justice are core to the field such as data justice (D'Ignazio and Klein, 2020), social justice (Cooke et al., 2016; Mehra et al., 2007), knowledge justice (Leung and López-McKnight, 2021), epistemic injustice (Oliphant, 2021b, Patin et al., 2021c) and information ethics/justice (Shultz and Abdi, 2017). Approaches in IS/LIS that '*unsettle*' practices that privilege the researcher over community partners (Nathan et al., 2017), that centres anticolonial and anti-violence feminist methodologies (Allard and Ferris, 2015), Black feminisms (Gray, 2020) and Indigenous knowledges and epistemologies based on cultural values of relationality, consent, trust, accountability, reciprocity, social priorities and relationship to the land also align with climate justice (Littletree et al., 2020; Sakakibara et al., 2020; Whyte, 2020a).

In this paper, we take inspiration from libraries and library organisations to ask how might IS/LIS take up *climate justice* in our research, teaching and practice? We offer four entry points based on our areas of research and teaching expertise to enact climate justice across the field of IS/LIS by: (1) examining the intersections of the informational and environmental injustice in IS/LIS to resist eco-authoritarianism in the field, (2) introducing climate justice to cultural, heritage and memory records, archive and document practices, (3) disaster planning and pedagogy that centres climate justice, and (4) a reflection on creating space for imagining aspirational futures.

Climate justice for IS/LIS research, education and praxis: four entry points

Entry point 1: countering eco-authoritarian informatics

To pursue climate justice, IS/LIS must support and centre work that illuminates the intersecting positionalities that structure informational (Leung and López-McKnight, 2021) and environmental injustices (Nixon, 2013; Parsons, 2023; Pellow and Brulle, 2005; Waldron, 2018) and further elaborates the connections between them. It must also orient itself to prevent further tragedies where possible. Recognising genocide and epistemicide – the deliberate killing of knowledge and knowledge systems (Patin et al., 2021c) – solely in retrospect is of limited value. Drawing on the focus Black Lives Matter gave to anti-Black police violence, David Pellow (2016) placed environmental racism on a continuum with other forms of state-sanctioned violence. This insight challenges us to recognise historical and contemporary precedents indicating how the violence of unequally distributed climate impacts may be leveraged in service of further state-sanctioned violence, like '*sacrifice zones*' (Juskus, 2023), '*economic shock therapy*' (Klein, 2007), policing and incarceration, as resource availability shifts, infrastructure is disrupted and peoples are displaced. IS/LIS must develop capacity and praxes for anticipating and countering methods by which authoritarian entities may use knowledge and information to facilitate these and other forms of violent control over '*Indigenous and racialized bodies, space, and knowledge systems*' (Waldron, 2018) and to justify this violence using a triage logic as climate impacts worsen. Eco-authoritarian triage logic persists in more (Cagle, 2019; Hardin, 1977) or less (Floridi, 2023; Lovelock as cited in Hickman, 2010; Potts, 2017; Logan as cited in Whyte, 2020b) explicit forms, combining narratives of imminence and crisis (Whyte, 2020a) with the historical and contemporary devaluation of specific

bodies, communities, lands and cultures (Pellow, 2016) in order to control the urgency and nature of climate action.

Information collection and management is implicated in both ecological and authoritarian trajectories. Not only has increased monitoring and data collection failed to facilitate better climate governance and prevent fossil fuel extraction; oftentimes the complexity and quantity of accumulated scientific data has been instrumental in organised climate malinformation, these characteristics exploited to promote the perception of scientific uncertainty (Howe, 2014; Oreskes and Conway, 2010). At other times the mere practice of collecting environmental data is used to maintain and legitimise continued harmful industrial activity (Dubé, et al., 2022; Dunbar-Hester, 2023). In sociopolitical systems, information work has empowered the oppression of marginalised and Indigenous communities overseas (Aly and Roth, 2004; Byler, 2022; Loewenstein, 2023; McCoy, 2009), often prior to importing *field-tested* methods into so-called North America to police labour activists and ethnic minorities (McCoy, 2009) as well as migrants and Indigenous communities internally and along colonial borders (Crosby and Monaghan, 2018; Lamdan, 2019; David as cited in Martinez and Schreiber, 2018; Dauvergne, 2020). Meaningful engagement with climate justice demands that IS/LIS identify and articulate the ways these harmful epistemic and informational practices are entangled and normalised, and investigate, design and trial alternatives.

Entry point 2: heritage, memory and cultural climate justice

From monuments and artefacts to landscapes and buildings, expressions of cultural heritage and cultural memory play a central role in processes of collective remembering, identity formation and historical truthmaking shaping past and present knowledge of ourselves. Climate crises threaten future continuations of these processes. Indeed, the epistemicide of ongoing human-driven climate change poses an existential threat for the durability of the cultural record. Consider the preservation of culturally significant documents:

> *Climate change is one of the greatest contemporary threats to archival repositories and the records in their custody. Increasingly severe disasters like hurricanes, floods, and wildfires pose immediate dangers* (Tansey, 2015, p. 1).

More worrisome is the innate potential for the subsequent destruction of cultural heritage resulting from climate catastrophe (Cazenave, 2014; Fatorić and Egberts, 2020; Marzeion and Levermann, 2014; Veltman, 2023). Despite this threat, Tansey (2015) observes how '*there is little professional discussion or guidance that specifically considers the major threats posed by climate change to the continuity of records and repositories*' (p. 2). Further, energy challenges from data centres (Jones, 2018), training large-scale computational models (Strubell et al., 2019), and AI industrialisation (Crawford, 2024) demands us to consider the consequences of technocapitalism, and to what extent emerging modes of digital access actually equitably mediate climate-conscious preservation of the documentary cultural record.

Together, the destruction of tangible, intangible, natural or digital expressions of heritage-memory from climate change is culturally catastrophic: the absence of products for anchoring group narratives can disrupt processes of collective remembering and cultural meaning-making and destabilises identities (Modrow and Youngman, 2023, p. 668). While there is no shortage of dialogue on environmental sustainability related to cultural heritage preservation and library/archival information services (e.g.: Abbey, 2012; Antonelli, 2008; Connell, 2010; EIFL, ICA, OCOM, IFLA, & SAA, 2020; Jones 2014; Mazurczyk et al., 2018; Wolfe, 2012), established memory institutions (galleries, libraries, archives, museums) and emerging information professionals alike must prioritise institutional and interpersonal cultural climate justice efforts. For LIS research and practice, Orr et al. (2021) point to pertinent streams of inquiry:

> *The challenges facing cultural heritage in the face of climate change are real and complex, requiring research to produce knowledge and insight that can be transformed into practical management strategies and tangible recommendations for policy and practice* (p. 451).

Public programming, information resources and community engagement practising and advocating for climate justice – while emphasising attention to local histories and sharing interpersonal narratives of sustainable living contributing to community wellbeing – may catalyse a commitment to responsible stewardship and inspire collectives to advocate for passing on what matters most to future generations.

Entry point 3: evolving disaster planning and pedagogy to consider climate justice

Historically, disaster planning in libraries has been criticised for being too inwardly focused because many plans only considered responding to building-level incidents such as fires, infestations, water damage or even emergency events like active shooters (Patin, 2021a). Over the last twenty years, we have seen disaster planning for libraries evolve into planning for and considering community-wide events such as hurricanes, tornadoes and civil unrest (Rahmi et al., 2019). The *Community resilience framework* (Norris et al., 2008) pushes for disaster planning to consider rapidity, redundancy and robustness around four capacities (economic development, community competence, social capital, and information and communication) to build a more resilient community. This is a useful frame for LIS to consider the roles we can play in wider community support throughout a disaster. There is a need again, for us to continue to evolve how we think about disaster planning in IS/LIS and work to incorporate support for climate justice. As the climate continues to change, our communities will become even more vulnerable, necessitating a comprehensive and collective approach (Pogue, 2021).

Very few IS/LIS programmes are preparing the next generation of information professionals to be ready to respond to disasters and climate change, pointing to a curricular injustice (Patin et al, 2021c). In a review of course offerings at the intersection of ALA-accredited schools and/or departments that are also part of the iSchools consortium, there are only ten courses offered around library disaster management or crisis informatics out of *sixty-five programmes*. With over 85 per cent of the schools offering no courses in this area, this is an area of improvement for IS/LIS. We need to move beyond having one or two lectures or readings about disaster management and climate change to ensure our students have the opportunity to study these issues, and we need to create other learning opportunities for current librarians, directors and managers so that they can be proactive rather than reactive in a crisis situation.

Entry point 4: creating space for imaging otherwise

Despite the vast quantity of research, reports, declarations, manifestos and protests focused on the climate crisis, for many academics it is still difficult to hold on to awareness of this crisis while juggling an overwhelming amount of pressing responsibilities. It too easily slips from the mind as faculty attempt to fulfil the ever-growing expectations of academia within contemporary, WEIRD. (Western, Educated, Industrialised, Rich, Democratic) institutions of '*higher*' learning (Henrich, 2020): developing and managing research programmes, preparing for class, grading student work, supervising theses, evaluating peers for tenure and promotion, reviewing papers, writing papers and travelling to present papers. We rarely stop to consider how our activities are intertwined with the climate crisis. As professionals enmeshed in the information fields and contemporary digital information systems, every day we perpetuate the practices and benefit from the forces that contribute to this crisis. This statement is not to lay blame, certainly not to suggest that anyone is individually responsible for the state of things, but to point to the incredible difficulty of extricating

ourselves from the norms and expectations of our professional lives and contemporary society long enough to imagine different ways forward.

There is also a reluctance to appear alarmist in the face of this crisis. Academics' fears, our fears, of professional and public censure are part of why the issue slips from the mind (Brysse et al., 2013; Hansen, 2007; Marshall, 2015). The privileges and stature of academic life are aligned *against* disruptive change. Yet, avoiding the implications of climate research (that drastic changes are just beginning) should call into question the very purpose of the academic enterprise (Alexander, 2023). How might we face the many uncertainties in more generative ways, looking for opportunities to create information systems (broadly defined) that support healthier communities? For example, in our learning environments, how might we create space to consider and develop the skills, capacities and ways of thinking that will help information professionals navigate uncertain futures together? As IS/LIS educators, how might we acknowledge the ever-present fear and despair of climate change in our classrooms, while resisting solutionist or fatalistic tropes that offer either false hope or none at all? How do we design opportunities to imagine, with our students, futures that are not only liveable, but are less oppressive than current realities for far too many folks? How might our research contribute to efforts to steward information systems while navigating extreme weather systems, unreliable infrastructures and feelings of grief and despair? There are so many generative, pressing questions to explore, if we have the courage to recognise that climate change is a literal *hot topic*, and it isn't going away. This is so much more than an argument for a *new* area of research, teaching and service. It is time to reconsider the future of our field in the face of (ongoing) climate change. It is time to imagine otherwise.

Discussion and conclusion: three propositions for climate justice in IS/LIS

The climate crisis is totalising, overwhelming, unsolvable and '*unthinkable*', in that human minds are unable to grasp its full scope (Morton, 2013). Climate change and its impacts are entangled with both local and global social, political and economic contexts. It is exacerbated and perpetuated by powerful and protected entities such as governments, policymakers, wealthy individuals, industry and colonialist and capitalist social and economic structures. As noted in entry point 4, as individuals and as members of our institutions we are embedded in geopolitical contexts and systems that exacerbate the climate crisis, we are emotionally and materially affected by it, and we are complicit in perpetuating it. Many of our universities and GLAM institutions are directly, indirectly or partially funded by fossil fuel profits or taxes. Our positions may not exist without this support. One could argue in the same vein as some politicians, that even if LIS as a whole discipline worked alongside their communities for climate justice, potentially little impact on climate change and its catastrophic effects would be made.

And yet. These conditions ignore the power that has been ascribed to information and the possibility that we are, in fact, capable of reorienting our current infrastructures to better serve our communities. Even though we are implicated in the climate crisis, that the crisis is unsolvable in the conventional sense, and that individual action is limited, IS/LIS is well-positioned to centre, enhance and contribute to climate justice research and scholarship, tangible and practical strategies to foster community-wide resilience to climate change, and to connect to broader social movements. A climate justice lens foregrounds and provides a framework for understanding the interlocking systems of power, discrimination and privilege that maintain and perpetuate the climate crisis (Crenshaw, 1989; Malm, 2016). A climate justice lens also reveals how these same systems of power can *negatively disrupt* and *discourage* calls for local action and broader social change. We offer three propositions – embed climate justice across the IS/LIS curriculum; create space for an IS/LIS climate justice research stream; and work alongside different communities and across the GLAM sector – to advocate for a shared commitment to climate justice in IS/LIS research, teaching and practice. Our propositions put our four entry points into action alongside

climate mitigation and adaptation practices undertaken by LIS organisations and in professional practice. We further elaborate how our propositions for the IS/LIS field are rooted in the local but can potentially be connected to broader social struggles against powerful forces that perpetuate the climate crisis.

1. Embed climate justice across the IS/LIS curriculum.

Each entry point supports our first proposition that *climate justice be embedded across the IS/LIS curriculum* in our programmes, bespoke courses, course topics, assignments, reading lists and pedagogy. Some ways to begin include: examining the ways that *ecological injustices and inequity are explicitly entangled with unjust information practices and structures* as well as exploring '*epistemic and informational alternatives*' as called for in entry point 1; identifying and discussing curricular injustices in IS/LIS (entry points 2 and 3); advocating for the creation of bespoke courses in IS/LIS that centre climate justice (entry points 3 and 4); and thinking about ways that we can be generous, generative and expansive with ourselves and others while doing this difficult work in our classrooms and in our own lives (entry point 4). IS/LIS can make space for climate justice by building upon long-standing work in the field that has a social, epistemic or informational justice orientation and make explicit connections from this work to *ecological injustices and inequity* (entry point 1). As an example, applying a climate justice lens to information and data literacy helps to identify and resist climate mis- and disinformation *and* enables a deeper understanding of how scientific uncertainty and scholarly communication practices are leveraged to promote doubt about climate change. A climate justice lens applied to information and data literacy surfaces the systems of power, discrimination and privilege that perpetuate climate change such as harmful industrial activities and state-sanctioned violence. It also provides a framework to think about how information structures can obscure what is actually at stake (e.g., money, land and sovereignty, rights, etc.), who profits (literally and figuratively), who is negatively affected (e.g. the most vulnerable) and, conversely, how to move towards informational and data justice.

Teaching and learning about climate justice in IS/LIS is difficult work. Information realities such as epistemicide, multi-faceted forms of violence as it relates to humans (e.g., epistemic, racial, and gender-based violence) (United Nations Human Rights Office of the High Commissioner, 2022), the human violence visited upon non-humans and the more-than-human world, and facing our own complicity and entanglements are just some of the challenges. However as evinced in entry points 2 and 3, the field perpetuates curricular injustice '*when educational resources are not available to help support epistemic growth*' and participatory injustice when people are excluded '*from participation in their own epistemological development*' (Patin et al., 2021d, p. 1308). Entry point 2 focuses on how climate change poses an existential threat to cultural heritage and memory, and how the lack of preparedness to consider climate change in cultural heritage practices and activities is a curricular injustice. Entry point 3 suggests that there is a curricular injustice in the field of IS/LIS when ALA-accredited programmes do not prepare LIS professionals to think about, contend with or plan for the reality of disasters and climate change and their ongoing impacts on their institutions, collections and communities.

To begin addressing this injustice, entry points 3 and 4 advocate for developing bespoke courses on climate justice for different geographical and cultural regions such as the University of British Columbia's Information worlds of climate justice and to expand course offerings across information-related programmes (e.g., crisis informatics and disaster planning). These courses might focus on specific local contexts such as learning about long-standing Indigenous data sovereignty efforts across British Columbia, and how data sovereignty simultaneously supports land stewardship and Land Back efforts and Canada's federal ratification of the *Declaration on the Rights of Indigenous Peoples* (DRIPA). A climate justice lens allows us to identify critical gaps in the IS/LIS curriculum, connect epistemic and informational injustices in the field to ecological injustice and understand who and/or what is being served by our informational structures and

practices. Importantly, making space for climate justice in teaching and learning is a powerful way to connect with different fields and scholars, imagine otherwise and engage in action.

2. Continue to build and enact commitments to climate justice by creating space for an IS/LIS climate research stream.

Underpinning each of our propositions is the recognition that IS/LIS pedagogy, practices, theories, epistemology and ontology are not neutral. They can serve to resist *as well as* uphold climate (in)justice in IS/LIS research and practices in ways that further oppress marginalised groups, Indigenous peoples, labour and environmental activists, immigrants and many others through data and information collection and management, genocide and epistemicide as pointed out in entry point 1. A climate justice research stream in IS/LIS will also '*necessitate inviting complexities and complications back in through empirically-grounded insights, rich theoretical interventions, and inventive methodological approaches*' (Finn and Rosner, 2019, p. 2). Central to making space for climate justice in IS/LIS research is engaging with critical theory to identify, analyse and resist the structures that uphold injustice in IS/LIS and climate – colonialism, racism, heteropatriarchy, capitalism and White supremacy – as well as relevant theory from other disciplines such as critical geography, environmental economics, Indigenous studies, computing and social movements, among others (Tang et al., 2020). Climate justice research in IS/LIS invites a wide range of methodologies and varied methods, including participatory action research and research creation. Local histories, unique geographies and an intergenerational lens can help guide our research.

Varied methodologies and methods are also necessary for IS/LIS research in climate justice if we are going to address '*feelings of grief and despair*,' '*hope*,' and '*fear*' that accompany climate change as pointed out in entry point 4. Climate emotions such as grief, guilt, blame, hope and compassion are often viewed as genuine expressions and reactions to the significance and severity of the crisis *but they are also* weaponised to paint the entire movement as irrational (Neckel and Hasenfratz, 2021). Certain subfields of IS/LIS have a long history of examining information interactions and affect (e.g. information overload, information pathologies). However, a key difference is that rhetorical moves in climate change discourses portray people who care about, fight, contest or resist powerful entities that perpetuate climate change as *irrational* precisely because they express their emotions. These discursive moves are also evident in other contexts such as sexual assault, and serve to dismiss and undermine claims that are being made and maintain the (White, capitalist, heteronormative patriarchal) status quo. A climate justice research stream in IS/LIS presents the opportunity to deeply explore and expand our knowledge and theories about information and affect as well as the opportunity to experiment with methodological approaches.

IS/LIS climate justice research, similar to other research with a social justice orientation, is concerned with making change. Entry point 2 notes that climate justice research in IS/LIS requires actionable outcomes: '*research to produce knowledge and insight that can be transformed into practical management strategies and tangible recommendations for policy and practice*' (Orr et al., 2021, p. 451). In addition, climate justice knowledge mobilisation in IS/LIS might include artwork and exhibits, poetry, policy development and participation in social movements, among other approaches. Practically, a climate justice research stream in IS/LIS could also offer sustainable and innovative options for conference participation, including hybrid participation, connecting regional hubs and meeting in person with virtual platforms to connect with others from around the world. Creating lower-cost, air travel-free conference options would enable a broader range of scholars to participate in IS/LIS knowledge sharing.

3. Centre local knowledges and work across the GLAM sector to build community and imagine just alternative futures.

Individual actions in the climate crisis are important for personal meaning-making and for implementing some of the propositions and entry points we have offered. More importantly, *we advocate for centring local knowledges, working across the GLAM sector to build community and image just alternative futures to enact climate justice in* IS/LIS and to facilitate collective action. Although the concept of community is frequently used in IS/LIS scholarship, it is a difficult concept to define, operationalise and theorise (Buschman and Warner, 2013). Our entry points discuss *community* at multiple levels, referring to different communities such as Indigenous, racialised and marginalised communities and using the term *community-wide* to refer to humans, non-humans and the more-than-human in a geographical location such as a neighbourhood, municipality or (unceded) territory (e.g. Indigenous lands). Community-led research upholds the ideas inherent in the phrase '*No research about us, without us*' in that it prioritises community knowledge, understands community members as co-creators, leaders and partners, views the community from a strengths-based (e.g. community knowledge, cultural practices, and worldviews) rather than a deficit-based (e.g. what is missing) perspective, and prioritises putting findings into practice in ways that benefit participating communities.

In IS/LIS, many of our programmes continue to align with professional practice in GLAM institutions and organisations. For decades, GLAM institutions and practitioners have been addressing and preparing for climate change, mitigation and adaptation – often by taking a community-led approach. The result is that many library organisations across the globe and at the local, provincial/state, national and international level (e.g. IFLA, ALA and BCLA, among others) have developed frameworks and action plans that centre climate justice. Further, libraries continue to be ubiquitous in North America (although under siege in parts of the US), enjoy high levels of trust, are highly valued, cultivate social capital and are locally situated (Aldrich, 2024). They are also networked and therefore well-positioned to contribute to systemic change and community-wide resilience to climate change and disasters as pointed out in entry points 2 and 3. For these reasons, IS/LIS scholars have fantastic opportunities to work alongside libraries and other GLAM institutions and organisations to advocate for climate justice in research, teaching and practice. We can take lessons from the BCLA who explicitly centre justice, equity and rights in their *Climate action statement*, as well as ideas from the OLA and BCLA Climate Action Committees that advocate for collective action and capacity building. We cannot undertake this work without educating current and future LIS professionals about climate justice, working alongside our students, GLAM and IS practitioners, institutions and associations, and alongside racialised, Indigenous, Black and marginalised communities who have been addressing climate mitigation and adaptation and climate justice for generations. The time is now.

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Beyond barriers and borders: Digital literacy support for English language learners via communities of practice

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Abstract

Introduction: English remains the dominant language on the Internet, exacerbating the digital divide for non-English-speaking populations. It is imperative that these barriers to using the Internet be lessened through adequate and appropriate digital literacy (DL) support.

Objective: This study identifies common types of DL learners among English language learners (ELLs), whose first language is Spanish, while also exploring the constraints and opportunities for DL development within this group.

Method: We use data obtained through semi-structured interviews with residents of Maryland (US) who identify as Spanish-speaking ELLs.

Findings: We find that this group is likely to be *forced* to acquire DL because of societal pressures, rather than pursuing it as a genuine desire to become digitally competent. In seeking help to navigate difficulties with digital transactions, they often rely on knowledgeable family members but also recognise the value of participating in formal and accessible DL education programmes. However, language barriers to obtaining learning resources, coupled with financial and time constraints and a lack of trusted support systems, pose challenges to their DL acquisition.

Conclusion: We conclude with suggestions for strategies grounded in the principles of communities of practice (CoPs) to deliver more tailored DL interventions for ELLs.

Introduction

The ever-changing landscape of technology and its growing importance in everyday life are widely recognised as integral to academic, economic and civic advancement in society. However, disparities in digital competence persist among low-income individuals, ageing individuals, individuals with disabilities, individuals with language barriers (e.g., limited English proficiency or literacy), racial/ethnic minorities, rural residents, veterans and others (Ryan, 2018), collectively referred to as *covered populations* in the US (US Congress, n.d.). These populations fall behind in both digital connectivity and digital literacy (hereafter DL). The Office of Statewide Broadband's (OSB, 2024) digital equity plan for the state of Maryland in the US, where this study was conducted, reports that covered populations, comprising 83% of the state's population (U.S. Census Bureau, 2021a), lag behind non-covered populations in computer (84% versus 96.3%) and Internet (78.8% versus 90%) access. The largest disparity is observed between low- and high-income households in the adoption of broadband (62.6% versus 86%) and devices (65.7% versus 92.0%). Furthermore, covered populations tend to underperform in online activities necessary for daily life, including telecommuting, social networking and e-government services because of deficits in DL.

The OSB's (2024) report documents the DL divide across various categories of covered populations, including ageing versus younger individuals, people with disabilities versus those without, low- versus high-income groups, rural versus metropolitan residents, veterans versus non-veterans and racial/ethnic minorities versus white populations in Maryland. We found a gap in their report that there was a lack of focus on DL discrepancies among English language learners (hereafter ELLs), which are defined as '*any individual that reports an English language proficiency less than* very well' (OSB, 2024, p. 89). Although ELLs are counted as a subset of covered populations by OSB (2024), no DL-related data are included in their report for this specific group; instead, the available data pertain only to the broader population with language barriers, including those with limited English proficiency or literacy. According to the U.S. Census Bureau (2021a), language barriers appear among 19.4% of the population in Maryland, higher than the low-income (14.4%) or disabled (11.6%) groups, which are identified as a crossover issue for racial/ethnic minorities comprising 50.2%. The OSB's (2024) survey reports that these individuals with language barriers lag behind others in key digital skills (e.g., online classes and job training, cybersecurity), with an average score of 10.9 out of 14, compared to 11.6 for the state's total population. Again, while the data do not specifically address ELLs, evidence that 21% of non-English-speaking households lack computers and 81% lack tablets, relying instead on smartphones (11.3% for ELLs compared to 4.3% for fluent speakers), implies the possibility of their limited capacity to leverage the Internet.

We focus on this underexplored second-level digital divide (i.e., skill disparities) affecting this specific population, with two objectives: understanding the unique constraints for DL development among ELLs, and identifying transformative strategies to support this group. Our investigation was made possible through community outreach facilitated by Marylanders Online, a statewide digital equity initiative in Maryland (see Method section below). As part of a larger interview study conducted to inform the community needs for this initiative (Harding et al., 2024), our study analyses a subset of data from interviewees whose first language is Spanish. Spanish is the most common non-English language in Maryland, with 519,045 households using it as their primary language and 244,554 households classified as the Limited English Proficient population as of 2022 (Migration Policy Institute, n.d.). Such a large portion suggests Spanish-speaking ELLs (hereafter Spanish ELLs) represent those who can articulate challenges of English-dominant digital practices.

Focusing on this group as the empirical sample, we explored: (1) Which category of DL learners best characterises Spanish ELLs? and (2) What prompts Spanish ELLs to pursue DL learning, and what barriers prevent their involvement? We addressed these questions through interviews and provide recommendation on strategies that can be used to tailor DL programmes for Spanish ELLs.

In the subsequent section, we provide an overview of the literature that guided our investigation, including research on information needs of immigrants. While we recognise that ELLs and immigrants represent distinct populations, we infer a significant overlap between the two groups, as immigrants come from diverse linguistic backgrounds. The US Census Bureau's (2023) data says that 55.7% of *foreign-born* populations speak a language other than English at home, with 46.3% speaking Spanish. In Maryland, 24.7% of the population are foreign-born and nearly 80% speak a language other than English (Migration Policy Institute, n.d.). Still, given that our empirical scope is limited to Spanish ELLs, the findings may not be fully generalisable to all groups facing language barriers. These limitations notwithstanding, the current study will have translational implications beyond the US context, as the DL gap is a globally prevalent phenomenon among ELLs. Although there are more than 7,000 spoken languages worldwide, English is still the predominant language on the Internet, with over half of its content in the English language (Internet Society Foundation, 2023). Our recommendation for tailored DL support that leverages unique community engagement will likely be applicable in different countries addressing DL with ELLs.

Understanding DL development of ELLs

Characterising ELLs as DL learners

Given how technologies have reshaped social practices and the concept of DL, individuals are expected to continue acquiring digital skills but are motivated to do so with varying levels of commitment. Our larger study on DL learners in Harding et al. (2024) resulted in a typology consisting of three learner categories: *Desire to learn*, *Ambivalent about learning* and *Forced to learn* (Harding et al., 2024; see Figure 1). Those in the Desire to learn category associate positive feelings with the shift towards the digital world and express an interest in developing their DL. Relatively, those categorised as Ambivalent about learning have weaker feelings about this digital transformation and do not actively seek help to keep up with it. They remain independent, although they are likely aware of the need to improve their DL. Lastly, those identified as Forced to learn express negative emotions about the digital world and show reluctance to develop their DL. They may not necessarily be digitally inexperienced but may resist learning about technologies.

ELLs with varying attitudes towards DL may fall into any of these categories. For example, ELLs seeking to empower themselves may exhibit a strong Desire to learn to access greater online and offline opportunities through technologies. This may be evident for those with unstable social status (e.g., immigrants or refugees), as technologies allow them to maintain sociocultural networks from their home countries (Bacigalupe and Càmara, 2012) and adapt to a new society (Gilhooly and Lee, 2014). This type of ELL may also seek greater DL to explore support systems (Alam and Imran, 2015), retrieve health information (Selsky et al., 2013) and advance professional interests (Khvorostianov et al., 2012). Additionally, personal interests can motivate ELLs, such as adolescents seeking DL to participate in online fan communities that span national borders (Black, 2009).

However, ELLs who are not much influenced by such collective or personal motivations are likely to resonate with the Ambivalent about learning type, showing neither strong enthusiasm nor resistance to DL practices. These ELLs may acknowledge the significance of the Internet as a vital tool for accessing resources and networking, and consider themselves self-sufficient in benefiting from it when needed (Bletscher, 2020). However, they may be '*negatively influenced*' by English-dominant systems (Acharya, 2016, p. 48), which undermine their linguistic confidence or are perceived as less effective in meeting their information or communication needs.

Finally, the Forced to learn type likely represent ELLs who view technologies as sources of stress or difficulty rather than tools for empowerment. In these cases, DL development may become an additional pressure, compounding the challenges they face in learning English. Research indicates that some immigrants consciously choose not to use technologies because of fear or resistance,

the digital divide and concerns over privacy (Guberek et al., 2018; Subramaniam et al., 2019). This type of ELL may be further demotivated by frustration as they navigate DL resources whose content does not cater to their language preferences (Acharya, 2016).

Considering these varying possibilities around ELLs' DL engagement, our first research question explores whether ELLs residing in the state of Maryland, US align with the typology of learners identified in our previous research, and which type is most prevalent within our specific focus (i.e., Spanish ELLs).

> **RQ1.** Which category of DL learners best characterises Spanish ELLs?

Identifying ELLs' needs and barriers to DL learning

Research on immigrants finds a range of information needs related to institutionalisation (integrating into the new country), acculturation (adopting the new norms and customs) and personal adjustment (coping with the challenges of relocation) (Wang et al., 2020). These processes require relevant DL to access information on daily essentials (e.g., education, housing, health) (Beretta et al., 2018), build networks and connect with the broader community (Gilhooly and Lee, 2014), navigate local citizen services (Safarov, 2023) and interact with formal institutions (Torralba, 2015).

Such information needs can be fulfilled through a variety of sources, including social networks providing '*warm support*' and '*funds of knowledge*' (e.g., family, friends, co-workers) (Hänninen et al., 2021; Subramaniam et al., 2019), public sector organisations (e.g., libraries, community centres, nonprofits), and the Internet (Wang et al., 2020). Nevertheless, immigrants tend to rely on informal support (especially from children) when encountering barriers to accessing mainstream services, language inefficiency, unfamiliarity with host country systems and psychological strains like mistrust and alienation (Aarnitaival, 2020; Caidi and Allard, 2005; Lloyd et al., 2013; Wong-Villacres et al., 2019; Yip et al., 2022). The inability to afford digital tools is another barrier, increasingly affecting ELLs' career development and participation in local social interactions (Alam and Imran, 2015).

Spanish-speaking immigrants in the US often face '*problems communicating orally*' when navigating English-dominant systems, leading them to frequently use English translation and learning apps on their mobile devices (Peile and Híjar, 2016). Those without DL related to using mobile devices are unable to benefit from language tools. Such challenges also arise in healthcare settings that lack non-English resources (Rodriguez et al., 2019). Latinos in the US often struggle with telehealth systems designed for English-proficient patients, which diminishes their medical care quality (Anaya et al., 2021). Similarly, non-English speakers in California (e.g., Spanish, Chinese, Vietnamese) show health disparities because of limited DL support in their preferred language (Rodriguez et al., 2021).

While the ubiquity of the digital world is undeniable in US society, we cannot assume that ELLs derive the same benefit from the Internet, even with equal access to it. This is particularly relevant for DL services if they lack linguistically appropriate resources for ELLs. Drawing on evidence from Spanish ELLs residing in the state of Maryland, US, our second research question investigates the needs for and barriers to DL learning for this specific group.

> **RQ2.** (a) What prompts Spanish ELLs to pursue DL learning, and (b) what barriers hinder their involvement in meeting their needs?

Exploring institutional DL interventions for ELLs

Because of the influx of immigrants to the US, tensions between the public education system and emerging multilingual learners have highlighted the need for DL practices that embrace ELLs (Yuan et al., 2019). In this context, locally based institutions play a key role in helping immigrants to meet

their DL needs through formal sources (Wang et al., 2020). Libraries serve multiple functions in promoting digital equity, providing language-appropriate assistance with digital tools and connecting patrons with other public services (Strover, 2019). Community centres serve similar roles in supporting ELLs, as evidenced in the Nebraska State Digital Equity Plan (Schafer et al., 2023). Nonprofits like Centro Hispano (n.d.) provide language and technology support, along with social services, to Spanish-speaking immigrant families.

However, such institutional support may not be as effective as intended when ELLs fail to engage because of psychological barriers (Wang et al., 2020). Research shows that immigrants often mistrust local citizens' and government services, which hinders them from obtaining needed support (Caidi and Allard, 2005; Lloyd, 2014). Linguistically or culturally inappropriate DL programmes may exacerbate these challenges, diminishing the sense of empowerment among ELLs, who may already feel alienated in social or civic settings (Shoham and Strauss, 2007). The Migration Policy Institute suggests that English for Speakers of Other Languages (ESOL) classes may be insufficient when viewed through the lens of immigrant integration (McHugh and Doxsee, 2018).

Research further points out the limitation in DL education focused solely on technologies. Simply increasing digital tools for instruction may not be effective for ELLs (Yuan et al., 2019), who need to learn DL as a way to engage in life-centred learning, rather than just completing digital tasks (Thomas, 2016). ELLs may need curricula that build communication literacy, beyond technological skills, as today's digital landscape demands (Reddy et al., 2023) to engage effectively with English-speaking systems (Kennan et al., 2011).

The literature suggests that DL support for ELLs requires holistic approaches to capacity-building which encompass social inclusion considerations, going beyond simply providing translation or skills instruction. Given these complexities faced by ELLs, we conclude our paper with a discussion on which approaches should be adopted to better serve this group.

Method

The data presented in this paper were collected as a part of our larger interview study (Harding et al., 2024) conducted from May to August 2023 in Maryland, through the state-funded Marylanders Online initiative. This initiative aims to promote digital inclusion by offering quality education that enhances DL across the state through tech support helplines, DL curriculum development and resource repositories for digital navigators and educators. To inform the DL curriculum, we conducted semi-structured interviews with Maryland residents regarding their daily device use, Internet activities and DL proficiency. Interviews were conducted at eight sites across six regions of the state, representing the target areas of covered populations. The sites were selected from trusted local institutions in each region (e.g., libraries, community centres), prioritising the comfort of interviewees to speak to us. Among a total of 160 interviewees, seventeen Spanish speakers were recruited via two sites: fourteen participants participated in a group interview, while three took part in one-to-one interviews. All interviewees self-identified as Maryland residents, were at least eleven years old and were comfortable participating in interviews in either English or Spanish with an interpreter. Interviewees were offered a $25 gift card for participation. This study received IRB approval from our home institution.

The duration of the interviews ranged from fifteen to forty-five minutes. Each interviewee consented to audio recording for transcription. If they declined, handwritten notes were taken. The transcripts were analysed using the collaborative qualitative coding software Dedoose. The codebook developed in the larger study (Harding et al., 2024), served as a starter codebook for analysing the transcripts of the Spanish interviews in this study. We used the existing coding scheme in a deductive manner to classify interviewees into three DL learner types (RQ1) and identify common motivators related to DL development (RQ2a). Additionally, we adopted an

inductive strategy to allow new codes to emerge regarding the unique challenges potentially faced by this specific population (RQ2b). We then derived practical insights that build upon the findings from RQ1b and RQ2b, resulting in recommendation on strategies that can be used to tailor DL programmes for Spanish ELLs.

We chose not to collect demographic factors from interviewees, beyond what was required for the consent forms (age), to avoid them feeling uncomfortable disclosing their personal information., although in many cases, interviewees volunteered additional information in response to questions. It is through these insights into their lives that we learned that many, if not all, of our interviewees identified as non-proficient in English and as foreign-born residents.

Findings

The interview data were analysed to address RQ1-2, focusing on the types and realities of DL learners whose first language is Spanish. Note that interview quotes from the one-to-one interviews are labelled with the interviewee ID (e.g., PG1-13 referring to the thirteenth participant interviewed at site 1 at a county, with initials PG). Quotes labelled as M2 are from the transcripts of the group interview. This group interview consisted of fourteen participants, and those corresponding to the quotes cannot be individually identified in the transcripts.

Which DL learner category best characterises Spanish ELLs? (RQ1)

According to the typology established in our larger study (Harding et al., 2024), our interviewees from the Spanish-speaking residents in Maryland were identified as more likely to fall into the third category of DL learners, Forced to learn. Most interviewees noted that they had not felt a pressing need to learn advanced DL in their daily lives before the Covid-19 pandemic, as '[*technology*] *is not bringing any benefits*' (PG1-18). This perspective aligns with OSB's (2024) findings that '*don't need or not interested*' in home Internet use was the key reason reported by the Maryland households that do not subscribe to broadband (63%). There was some consensus among our interviewees that they '*wouldn't have learned if it [the pandemic] hadn't happened*' (M2) but had to obtain DL because '*when the pandemic ended, almost everyone communicated only through Zoom*' (M2).

Some interviewees expressed mixed feelings about the increasing importance of DL, acknowledging that '*[we] have to evolve with technology … as time moves forward*' (M2). However, even among those who fall into the second category of learners (Ambivalent about learning), the prevailing sentiment was one of social pressure '*to modernise*' (M2) and the struggle '*not to stay behind*' (M2) rather than by innate aspiration or a sense of autonomy. This was exemplified by one interviewee who shared:

> *I didn't want to learn to handle the computer because I thought that I didn't need it. [Now] I changed my mind because I saw my colleagues [at work] who were with their smartphones and everything* (M2).

To sum up, the overall tendency of digital engagement among interviewees was driven more by a sense of compulsion to keep up with the shifts in the surrounding environment. This aligns with, according to Peters et al.'s (2018) typology, extrinsic (rewards and punishments '*I have to use it*') or introjected motivations (self-worth or self-perception: '*I should use it because I don't want to feel bad about myself*') rather than intrinsic (interest and enjoyment: '*I enjoy using it because it's fun*') or identified motivations (goals and values: '*I use it because I believe it's worthwhile*') that could foster genuine technology adoption.

What prompts Spanish ELLs to pursue DL learning? (RQ2a)

Although not particularly eager to become digitally competent, this Spanish-speaking group recognised the need to develop DL to adapt to emerging technologies required for work and education, for everyday life transactions such as accessing healthcare and government services,

and for a better lifestyle. They saw DL as necessary to navigate the challenges tied to their immigrant or status-related circumstances. Interviewees sought learning opportunities to better manage the difficulties they faced in operating their devices (e.g., computers, tablets, mobiles) and to connect online safely. Our older interviewees, who had received little education in computer skills during their schooling, expressed a heightened need to improve their basic abilities to operate devices and navigate the Internet. One stated, '*I have a very tough time using technology because there are things that I don't understand on the machine. It's just enough to go into YouTube, go to look at something on Facebook*' (M2). Another younger interviewee recounted their experience assisting elderly patrons, highlighting the issue behind their DL learning:

> *I have run into people that have just arrived* [immigrants] *… and it's hard for them to even open an email. They don't know anything about computers … They want to apply for a job, but the first step they need to create an account. They don't have any idea how to do any of that* (M2).

Even among those with a moderate level of DL, some interviewees noted that there is '*very much to learn*' (M2) to keep up with novel and ever-evolving technologies to execute everyday and professional tasks, such as accessing cloud apps and document software (e.g., Google Drive, Google Documents). In addition to personal necessity, parental responsibility motivated their pursuit of DL learning. Because of concern about online risks for children and needing to access school grades via learning management systems, one interviewee expressed a desire to further educate herself in order to effectively monitor '*what the kids are seeing and doing*' (PG1-13) on the Internet and to stay updated on her child's academic progress.

What barriers hinder Spanish ELLs from meeting DL learning needs? (RQ2b)

Notably, many interviewees noted that they often sought assistance with digital tasks from family members, primarily from their children. One adolescent interviewee said that they had responded to a request from their mother by '*typing a Gmail when she can't put the different letters*' (PG1-19). However, some parent interviewees expressed frustration and disappointment when their children responded, '*It is very easy*' (M2). One interviewee described:

> *I explained to my son my situation and the situation of many people. It's very easy for them because they were born with technology in hand, with a phone in hand, but I didn't use the phone when I was little and this is new to me* (M2).

Some '*desperate*' (M2) attempts to find immediate help prompted the need for self-directed tutorials as alternative solutions. Interviewees indicated a willingness to participate in DL training, such as '*formal classes with an instructor*,' either in-person or virtually. However, some noted that '[*we*] *don't know what type of services are available*' (PG1-18) at local libraries and schools. More importantly, our interviews revealed significant challenges that prevent access to available DL services. The most major barrier identified was language. Interviewees recalled their DL learning experience, noting that '*[trainers] said everything in English*' (M2) and '*[trainees] always ask for help to put it in Spanish*' (M2). One interviewee added, '*If one can understand a little bit of English, I think that it makes [DL learning] a little bit easier*' (M2), emphasising the need for more supportive translation services and video tutorials in Spanish. Those facing similar struggles shared:

> *I already have many years here [i.e., the library]. I am saddened by it, but I didn't have such an ease of learning. I couldn't understand very much because I would get on the computer to learn and then they [i.e., trainers] taught everything in English and I didn't understand them* (M2).

Beyond language barriers, interviewees highlighted a lack of services tailored to their life circumstances, particularly those related to their immigrant or working-class status. Even when some were aware of available resources, they noted the limited affordability of those services.

Interviewees stressed the need for free classes, pointing to a significant financial barrier, e.g., '*We don't have the money to pay for it*' (M2). In addition, interviewees reported struggling with the limited availability of free digital navigator services. This concern was evident in one interviewee's remark about the issues with kiosk machines in hospitals and government offices, stating, '*Sometimes there is no one at the desk to help you*' (M2).

Finally, time constraints because of family responsibilities and work obligations that make time and place-bound courses difficult to attend was another barrier preventing them from seeking DL learning opportunities. Some explained the reason for not seeking DL training as, '*There are places that give [classes] but there's not enough time for us*' (M2). One interviewee using a housing centre suggested the value of more flexible instruction services, stating, '*Some would come here at different times and to teach us directly*' (M2). They further emphasised that DL instructors should be more mindful of learners' life contexts that impact learning.

Discussion: From translation to transformation

In this section, we discuss which approaches should be adopted to better serve DL development among ELLs, including the use of the communities of practice (CoPs) framework (Wenger, 1998). Guided by its insights and our findings from RQ1 and RQ2, we explore which strategies can be employed to build CoPs for tailored, contextually appropriate DL programmes for Spanish ELLs, reflecting their cultural backgrounds and leveraging social learning processes in a way that empowers the community as a whole, beyond individual learners (Wenger-Trayner and Wenger-Trayner, 2014).

What strategies can be used for tailored DL programmes for Spanish ELLs?

Drawing on our findings, we now explore practical strategies for enhancing ELLs' DL development. Most Spanish ELLs in our study fell into the Forced to learn category. They reported acquiring digital skills out of societal necessity and family- or work-related requirements, rather than intrinsic motivation, despite linguistic, financial and time constraints. Language emerged as a critical obstacle for this population, consistent with the literature (Anaya et al., 2021; Peile and Híjar, 2016; Rodriguez et al., 2019, 2021), underscoring the need for tailored programmes distinct from those designed for other covered populations. However, we found that DL support for ELLs should go beyond translating materials to shift their mindset from *forced* to *willing* to learn. This calls for DL interventions that are paired with efforts to improve English proficiency, while also expanding support systems that foster learner agency. Such an approach shifts DL learning from a deficit lens of educators attempting to solve problems to an asset-based perspective that promotes transformative experiences by leveraging the individual and community strengths of ELLs.

One promising approach is to adopt the framework of CoPs, which offers insights for designing more engaged and contextually relevant DL programmes. CoPs posit that learning is a community-driven process rooted in a particular cultural and historical context, emphasising shared goals and collaborative problem-solving (Wenger, 1998). For ELLs, many of whom feel isolated from mainstream society, CoPs can foster supportive learning environments that enhance individual abilities through collective community growth. This approach, guided by the social theory of learning framework (Wenger-Trayner and Wenger-Trayner, 2014), involves three processes: helping ELLs to envision a future where DL empowers them (imagination), linking their learning to personal and community needs (alignment) and building competence through active participation (engagement). We propose strategies for nurturing these processes in DL interventions for ELLs. At its core, co-creating DL programmes with ELLs is essential (National Equity Project, n.d.), particularly in developing learning activities, defining language preferences and crafting culturally relevant curricula suited to their needs. This participatory approach fosters a sense of learning ownership and transforms DL programmes from a top-down directive into a collaborative effort.

From solitary to collaborative learning

To create transformative learning experiences for ELLs, we can adopt multiple means of representation (presenting information in various ways), engagement (diversifying learning activities) and expression (showcasing learning outcomes where appropriate) (Thomas, 2016). For example, collaborative DL working sessions can experiment with these approaches, emphasising social learning and collective goal setting, including group discussions on everyday DL applications and brainstorming sessions for problem-solving. Such opportunities enable DL initiatives to be co-designed with learner participation. To foster imagination and alignment (Wenger-Trayner and Wenger-Trayner, 2014), working session content can be centred on hands-on tasks that tackle real-life challenges common to ELLs. Examples include navigating and troubleshooting issues on public service systems (e.g., employment, healthcare, housing) together that lack language support or contain misleading information. Additionally, ELLs' family members, as their funds of knowledge, can be incorporated into joint learning activities. As evidenced in our interviews, parental work sessions can motivate ELLs who prioritise children's education, providing them with DL necessary for helping with homework and connecting with the school community. Good examples include Tech Goes Home (n.d.) in Massachusetts and the Latino Family Literacy Project (n.d.) in California, offering Hispanic ELL parents and their children family-based group work that emphasises family bonds and shared cultural values, with each of them focused on acquisition of DL and English language, respectively. DL educators and navigators can serve as facilitators in such programmes, rather than assuming the role of experts or teachers. This also allows active peer teaching and learning, similar to the success of high-end online learning platforms such as Stack Overflow for programmers helping other programmers and Scratch for a community of children learning programming languages.

From teacher-learner to trusted ally

Equally critical is determining who leads the programmes. The impacts of DL training for ELLs can be optimised through bilingual educators who can integrate scaffolding that develops both linguistic and digital proficiency simultaneously, while utilising community-relevant interventions. Libraries and housing centres with deep community ties are well-suited to hosting DL programmes, moving beyond the traditional teacher-learner dynamic. Based on their strong community outreach and partnerships with local advocates, these institutions can effectively design services tailored to ELLs' needs. To further enhance trust and rapport, increasing the representation of DL practitioners recruited from ELL communities can be an impactful approach. As part of our initiative, the Enoch Pratt Free Library's train-the-trainer programme exemplifies this effort (Sim et al., 2024). This programme trains digital navigators, tech educators and public service staff working in different settings (e.g., libraries, community centres, apartment complexes), leveraging the trusted relationship between trainers and learners. Our Marylanders Online initiative partners, such as Court Appointed Special Advocates (CASA) and the Gilchrist Immigrant Resource Center, also deliver community-focused DL programmes. One of our native Spanish-speaking educators from Venezuela teaches Google Digital Skills within a linguistically appropriate curriculum for Latino immigrants at CASA. The Digital Navigator Call Center that is part of the Marylanders Online initiative also offers tech assistance in Spanish and French to reduce the frustration of ELLs navigating English-based digital services.

From instructional to inclusive practices

Finally, CoP-based DL interventions should align with an identity-centred approach (Farnsworth et al., 2016), as learning is a social process situated within a particular historical and cultural context surrounding learners (Wenger, 1998). This should be more attuned for ELLs, who are often negotiating multiple identities in relation to their own communities and the host society they adapt to. Culturally relevant practices and social inclusion principles should be integrated into DL education for ELLs to ensure it is both accessible and practically applicable (Aarnitaival, 2010). For example, local religious hubs (such as Latino Catholic churches) and community learning centres

(such as Latino and English language exchange groups) can serve as culturally safe spaces to discuss the DL challenges within the context of Latino identity and culture. This allows the discovery of inclusive practices, similar to innovative STEM programmes that embrace the identities of underrepresented learners, such as Latinitas (n.d.), which offers tech education empowering young Latino girls through digital storytelling that reflects cultural values of this group, and Black Girls Code (n.d.), which develops coding skills for girls of colour to foster a diverse STEM workforce. Such settings can help cultivate more inclusive DL support systems, enabling ELLs to not only develop technical skills but also collectively nurture technology dispositions that match with their identity and culture.

Limitations

This study focused solely on Spanish-speaking participants from our larger study. As a result, the sample size was limited, and findings may not be generalisable to all ELL groups. However, given the large proportion of Spanish ELLs in Maryland, this group may still offer insights into language barriers in English-dominant digital environments. We believe that our recommendations above can also be adapted by other countries that have high populations of ELLs.

Next, the self-reported findings, without additional observational data on the actual DL experiences of interviewees, may have been influenced by social desirability biases (Fisher, 1993). Additionally, the researcher's lack of Spanish proficiency, relying on an interpreter, may have limited the ability to interpret nonverbal cues and ask follow-up questions during the interview.

Finally, most Spanish-speaking interviewees participated in a group interview setting, which may have hindered them from fully sharing their individual experiences. However, this format encouraged them to elaborate on their responses through interaction with one another, rather than feeling pressured to answer directly to the interviewers.

Conclusion

This work provided initial insights into the digital skills divide among ELLs. We highlighted the category that best characterises how Spanish ELLs approach DL acquisition, the motivations driving their learning and the barriers they face. Then, we shared the implications of our findings, which suggest a more communal approach (CoPs) that leverages allies and culturally responsive practices within ELL communities, moving away from a deficit lens towards an asset-based approach to DL development. We recommended the use of participatory approaches that epitomise co-creation of DL programmes and empowers ELLs to take ownership of their learning. Our initiative plans to expand on the approaches suggested in this paper by: (a) piloting collaborative learning through co-created sessions in healthcare (e.g., applying for state health insurance), benefits (e.g., requesting housing assistance) and education (e.g., engaging in learning management systems utilised by schools); (b) recruiting community allies by partnering with organisations serving Spanish speakers and mobilising local university students as digital navigators in ELL communities; and (c) embedding inclusive practices in our DL curricula that focus on identity and cultural challenges. While these are small steps, we hope to move forward with these interventions, refining strategies and assessing impact, with the goal of eventually expanding to other ELLs in the state.

Note: The data from OSB (2024) were sourced from the Current Population Survey Public Use Microdata and the American Community Survey Public Use Microdata (U.S. Census Bureau, 2021b, 2021c).

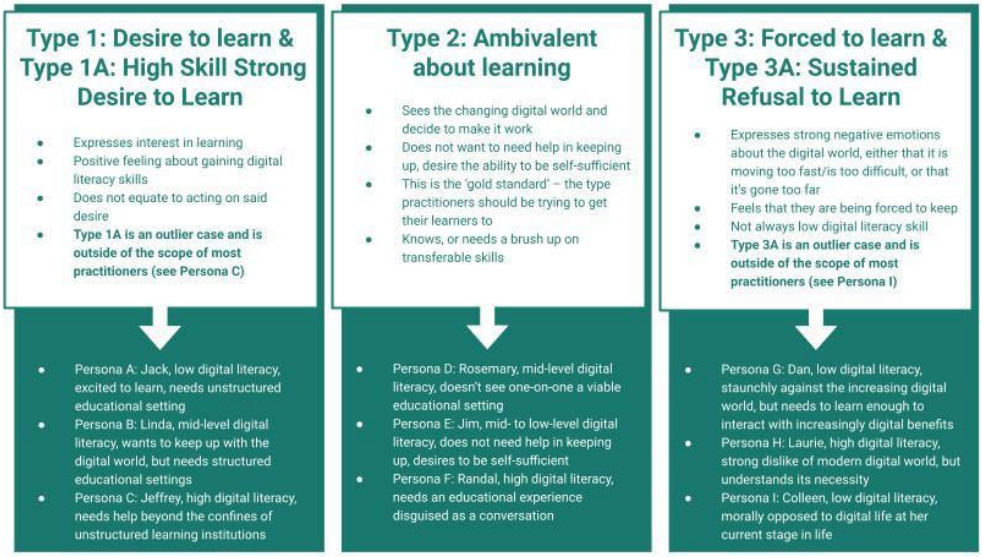

Figure 1. Typology of digital literacy learners (Harding et al., 2024)

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Being literate in data or practices: how paradata functions in the context of literacy

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Abstract

Introduction. Datafication of information practices underlines the importance of better understanding of data literacy and documentation. Framing data literacy as a sociocultural information practice, we draw from its conceptual affinities with the notion paradata to advance the understanding what it takes to be(come) literate, and how paradata functions in the context of literacy.

Method. Theoretical discussion draws from an interviews with (N=) 33 professionals working with archaeological data.

Analysis. Interview transcripts were analysed using a method based on the constant comparative method and close reading.

Results. Four facets of being literate with archaeological data were identified: information making literacy, syntactic literacy, information taking literacy and interpretative literacy. Becoming literate is influenced by the parallel (in)adequacy of individual facets. Literacies' social being-in-making makes becoming literate hard. Finally, paradata potentially 1) contributes developing and enacting individual literacies, 2) catalysing and impeding convergence of literacies, and 3) enacting the contexts of literacies.

Conclusion. Paradata, as a concept referring to practice-related meta-information, provides means to operationalise what can be known and communicated about practices as a contextual constituent of literacy. Paradata helps in becoming and staying literate. Finally, literacy can be a question of competent practice with paradata rather than mastering the data itself.

Introduction

The rapid surge of datawork as a dominant modality of producing knowledge, and data as its fundamental ingredient, underlines the importance of better practical and conceptual understanding of data literacy. Much of the existing literature on data literacy follows the conventional framing of literacies as abilities and competencies in relation to *information*, or in the case of data literacy, to comparable informational entities such as data and metadata (Fernández-Pascual et al., 2024; Tuominen et al., 2005). In parallel, however, the literature on data practices is underlining the processual, relational and practice-based nature of data entangled in a sociomaterial world (e.g., Faniel et al., 2019; Kim and Yoon, 2017), very similarly to how information science research has increasingly shifted from the objectivist and individually oriented approaches to information (e.g., Cox, 2013; Olsson and Lloyd, 2017; Savolainen, 2008), recognising the comparably entangled nature of information and information practices. Considering this, we argue that research into data literacy would greatly benefit from being grounded in a conceptual framework that moves beyond skills-centred concepts of literacy prevalent in the literature and practices of the information professions, and examines data literacy as a complex, highly-contextualised social practice.

This paper takes as its starting point Lloyd's definition of information literacy as a sociocultural information practice which emerges through shared understandings, social prescriptions, beliefs and understandings specific to a site/community (Lloyd, 2010). In contrast to skills and competences-based approaches to (information) literacy, it follows the tenets of the new literacy studies (Gee, 2000) in how it emphasises the multiplicity of literacies as embodied and material practices rather than as a generic ability. A central consequence of adopting an information practice-based approach to data literacy is the need to expand our understanding of both data and the associated method and data descriptions that its users and re-users will need to make sense of data made by other data authors.

This approach to literacy both contrasts and parallels with the conceptual focus of the notion of paradata, which refers to meta-information, data, or, in a broader sense, things that are potentially informative of practices (Huvila, 2022, 2025). The intersections and differences between information literacy-as-practice and paradata provide a useful starting point to enquire more closely into the so far relatively little studied nexus of *information in social practices* (Cox, 2013), paradata (or, meta-information) *on* practices and the practices themselves. By doing this, it is possible to elicit new understanding of practices, literacies, information, paradata and their linkages.

The aim of this paper is to advance conceptual understanding of the nexus of literacies and paradata. Drawing on an interview study with professionals working with archaeological data, and focusing on their views on the premises of data literacy, i.e. competent sociocultural data practice in archaeology, we inquire into (RQ1) what it takes to be(come) literate, and (RQ2) how paradata functions in the context of literacy.

Literature review

Literacies

In contrast to our practice-based approach, much of the earlier literature on data-related literacies adopts a skills- and competencies-based approach. Fernández-Pascual and colleagues (2024) argue that even if discipline-specific data literacy concepts have emerged, data literacy is often conceptualised as instrumental – either data analysis or lifecycle oriented – competence, and contrasted to subject expertise. In addition, Bowler and Shaw's (2024) recent review suggests that while interest in data literacy is growing, the majority of studies are conducted in relation to formal learning, digital (big) data and everyday life. The notion of data literacy has also been introduced in the conceptual vocabulary of archaeology, with a focus on highlighting the need for

archaeologists to understand data both conceptually and in practice in the context of archaeological practice (Kansa and Kansa, 2021; also e.g., Garstki, 2022).

We argue that such one-size-fits all approaches to data literacy have led to a problematic narrowing of the definitions of both data and literacy. Our ongoing research into the information practices of archaeologists, including data creation and re-use, which includes both interviews and ethnographic fieldwork, has demonstrated that data in archaeological contexts can take on many forms spanning many specialties and subdisciplines, and can often draw its authority from the personal, embodied knowledge and expertise of members of the excavation team. Because of this, we argue that if we want to truly understand the complexity of data creation and data literacy within such fields, then a broader, practice-based approach is needed. We also argue that in the context of such a socially-contextualised understanding of data, the concept of paradata becomes an invaluable conceptual tool.

Paradata

While a breadth of paradata definitions and use cases exist across information science (see e.g., Huvila et al., 2024b; Sköld et al., 2022) and for example archaeology (Reilly et al., 2021) and survey research (Sakshaug and Struminskaya, 2023), paradata commonly refers to the diverse means of acquiring, developing and sharing understanding of past computational and human doings (activities, operations, decisions, deliberations) and their settings (social organisation, material conditions, intellectual horizons) of a data product. From a practice-led perspective, paradata is generally understood as (meta) information, or data, about practices, or more specifically things and occurrences that can be appropriated as informative of them (Sköld et al., 2022). Earlier studies also show that paradata during the course of research work is identified and enacted drawing on diverse sources often including narrative descriptions of practices, formal metadata, visualisations, photographs, audio and video recordings (Sköld and Andersson, 2025).

Although it is established in the comparably large literature on paradata needs that the principal use of paradata is as cues to gain insights regarding past machine or user data interactions in order to gauge data trustworthiness and usefulness (Davet et al., 2022; Huvila, 2020; Yakel et al., 2024), there is little research delving into how paradata functions in relation to how abilities are learned and competencies are gained, and what it means to be a competent practitioner. What has been found, however, is that paradata and paradata usefulness are malleable and emerge in different ways across disciplines and settings of work. Börjesson et al. (2022) show that paradata can exist in the minutiae of data organisation and description in datasets, requiring a significant amount of understanding of how the data was created and managed in its original context of creation to be discernible. Paradata can emerge from collectively enacted data practices for both junior and senior learners, requiring presence in a particular time and space to become possible to operationalise (Huvila and Sköld, 2021). The literature also underlines that there are technical (understanding hardware settings; Gant and Reilly, 2018), epistemic (knowing the research method employed; Huvila, 2020; see also Baker and Yarmey, 2009), knowledge-organisational (being able to see how a dataset has been structured; Börjesson, Sköld, et al., 2022) thresholds that have to be surpassed before paradata can be identified and used. Sufficient domain and contextual knowledge here emerges as a key component in being able to discern what paradata is available and to gauge its applicability in supporting the task at hand.

Methods and material

The findings of this paper are based on semi-structured interviews (N=33; referred to as A-AG in the analysis) with data professionals in the field of archaeology (Börjesson and Sköld, 2021). The interviews were carried out between 2020 and 2021 and focused on what capacities are required to be literate in information practices (RQ1) and better understanding the impacts of paradata in this setting (RQ2). There was also a data biographical element in the interview approach (cf.

Thomer et al., 2018) that sought to operationalise the intersections of paradata and data literacies by interrogating the data interaction histories of data and datasets the participants had created, curated or otherwise used in recent times. Interviews lasted 60-120 minutes and were conducted in Swedish and English depending on participant preferences. Translations of quotes into English were done by the authors. Covid-19 restrictions necessitated that all interviews were conducted and recorded using videoconferencing applications. A professional transcription service was employed to transcribe the interviews in clean verbatim. The interview transcripts were analysed using a method inspired by the constant comparative method and close reading to iteratively identify themes and generate analytical narratives to describe them.

The interview participants worked in a wide range of data-centred roles and capacities in the archaeological domain, principally as researchers and data managers. Participant recruitment followed a purposive sampling strategy (Robinson, 2014) with the aim to as broadly as possible represent different archaeological subdisciplines, career stages and archaeological data work expertises. A limitation of this sampling strategy is that the findings encompass only the subsets of archaeological data work encompassed in the study. An advantage of the heterogeneous sample is that it reflects the diverse epistemologies and data practices present in archaeological datawork, and offers favourable conditions for the study of grasping the tangled array of interactions between literacies-in-practice and paradata in the field.

Analysis

In the analysis, following the two research questions of the study, we identified facets of being and becoming literate (RQ1) in working with archaeological data, and investigated the role of paradata in the process (RQ2).

Facets of being literate (RQ1)

The analysis points to four overlapping senses of being literate with archaeological data (Figure 1). The interviewees described the necessity of 1) being literate in the archaeological practice that underpins the generation of archaeological data (*information making literacy*), to have at least rudimentary 2) literacy in the practices of data(base) design and management (*syntactic literacy*), and being 3) literate with the practices pertaining to planned data use (*information taking literacy*). In addition, the interviewees underlined the need to be 4) literate with the information (here, archaeological data) itself in an ontological sense (*interpretative literacy*). It seems that the interviewees with data management related work duties were somewhat more inclined to discuss information making and syntactic literacies in comparison to those primarily working as researchers.

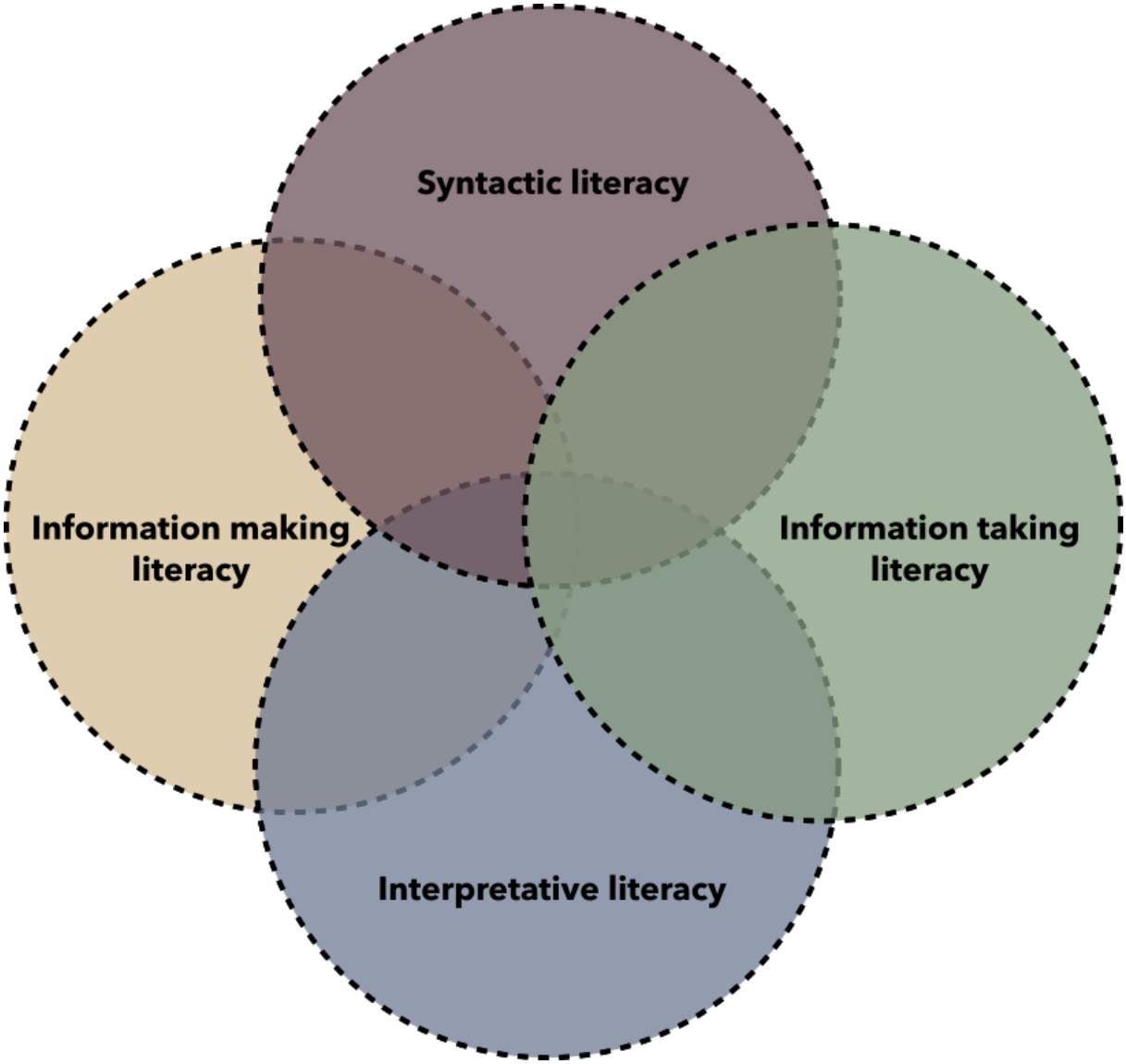

Figure 1. Four facets of being literate with archaeological data.

The analysis suggests further that the four senses of being literate form together a set of foundational facets of what constitutes *competent practice* with archaeological data. They all operate in parallel (e.g., A, C). For example, a field archaeologist who makes and documents observations during an excavation or survey needs to be proficient in both archaeological practices of information making but also at least to a certain extent in the syntactic practice of turning observations into a particular type of *data* (A, C, P). Similarly to being competent, it is equally crucial for literacy to understand what competences one is lacking (K) and how they differ from each other (G).

Information making literacy

A critical premise for working with archaeological data according to the interviewees is to understand archaeological practice and its relation to data being generated i.e. being literate with different means on archaeological practice of creating data in different countries, projects, contexts (C, I, AC). This broader competence, which we refer to as *information making literacy*, involves mastering the epistemics of how information making works within a particular field—

whether through observation, measurement or inference. It is about knowing '*the vocabulary, like the technical words of the discipline*' (A, also Z), and in archaeology, knowing research methodology (A), how archaeologists identify finds and features (R) and how they document (AC) and create plans and drawings (A). It encompasses an understanding of to what degree and in what terms a particular information generating practice is characterised by diversity and individualism or standardisation (Z).

Syntactic literacy

In parallel to understanding archaeology, the interviewees highlighted the need of at least rudimentary literacy in the technicalities of data management, database design and the data episteme i.e. understanding of how observations are transposed into *data* (G, I, K, M). In a broader sense, this competence we term *syntactic literacy* is about understanding the practices of how information is constructed and structured from its ingredients (e.g., observations, measurements, words, experiences, feelings and their combinations through *representational exchange*, see Huvila, 2024) to become information in a specific episteme.

Within the currently dominant episteme of digital data practice in archaeology, syntactic literacy encompasses a command of how to define and use formal vocabularies (Z) and computational ontologies (Z), create datasets (I) and understanding how databases and database systems work (G, R) and differ from spreadsheets (R). Archaeologists working with digital spatial data are also expected to be syntactically literate with geographical information systems and map-making (A, P).

Despite the dominance of digital data practices, the interviewees made comments on non-digital syntactic literacies of, for example, keeping a diary, filling out a form and drawing a map. Independent of the specific technologies used, an information maker needs to know how to '*systematise*' (I) and manage (O) it according to a particular episteme. While the use of spreadsheets was deemed substandard from the perspective of state-of-the-art digital syntactic literacy (R), it was also considered to be a baseline for what can be expected of an average archaeologist (AC). Interviewee (R) described the use of spreadsheets not as data-oriented but rather as a form of visual practice.

Information taking literacy

The interviewees also suggested a need to be literate in the practices of taking archaeological data into use in particular ways. A key aspect of what we call *information taking literacy* is an insight that particular types of information (e.g., research data, drawings, photographs or handwritten notes) are possible and relevant to take into use in specific practices in different ways. '*There's also kind of a skill to it*' as interviewee C noted that differs from the literacy of making information and data, for example, creating and using databases. Being a literate user and developer of archaeological databases is not the same (G). Interviewee I underlined further how the necessary type of mastery of archaeological practice depends on the type of data practice pursued. Part of it is also to understand the complexities of archaeological data and practices and their implications to using data (K).

Interpretative literacy

Finally, the interviewees underlined the importance of understanding and knowing archaeological data. *Interpretative literacy* is what we term as being literate in the content of information. It is the starting point of source criticism from the perspective of knowing the subject matter (I). With archaeological data, in contrast to understanding how a plan is drawn (cf. information making literacy), it is about understanding what the '*contents of the plan represent*' (A) and more generally, on what (cf. how in information making literacy) archaeologists focus when they are documenting and making observations (AC). Interviewee I described it in terms of a '*cultural historical competence*', referring to archaeology as a cultural historical discipline.

Becoming literate (RQ1)

Besides facets of what it takes to *be* literate, we also identified factors that underpin *becoming* literate with archaeological data (summarised in Figure 2).

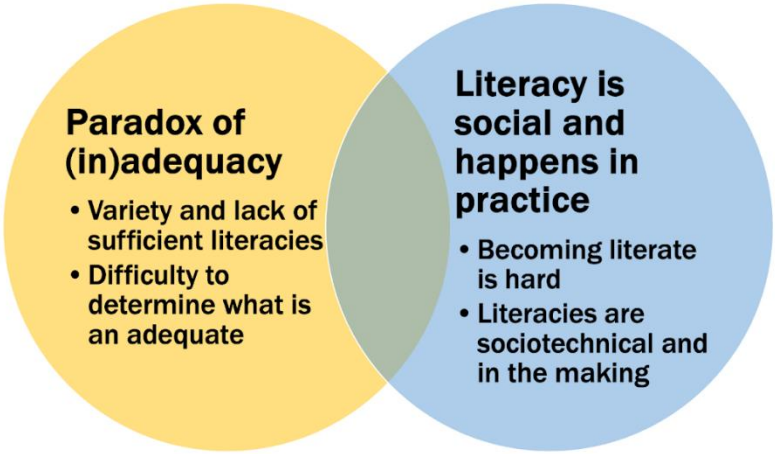

Figure 2. Factors that underpin becoming literate with archaeological data.

Paradox of (in)adequacy

The interplay and concurrency of the literacy facets means that a *competent enough* practice with archaeological data is a moving target. The adequacy of particular literacy depends on the available competences in others together with the aims of working with data.

First, several interviewees commented on the *variety and lack of sufficient literacies among archaeologists*, mostly pertaining to lack of syntactic competence of using digital tools and understanding how data and databases work as means for representing archaeological observations (A, C, G, I, K, R), but also in archaeological information making literacy of, for example, identifying specific types of artefacts (R). Both syntactic literacy (A, AC) and archaeological practice-related information making literacy (K) was also criticised for being unevenly distributed among archaeologists, sometimes leading to variance and inconsistencies in archaeological data (O). It is problematic '*[i]f [archaeologists] lack some of the skills*' (I) and if there is a gap, for example, '*between the technical expertise and the practical skills of the archaeologist and also the knowledge of the data itself, that gap is quite substantial*' (K).

Everyone was considered to need to learn basic data management skills (I, K, P). At the same time, it was considered that sophisticated digital skills were beyond what could be expected or needed (P). Working properly with data was considered to require a specialist (K, O) or a special organisational unit or similar that works on '*another level*' with the data (I) than an average archaeologist.

Second, a related problem to perceived lack and imbalance of competences was the *difficulty to determine what is an adequate level of specific literacies*. Partly, the degree of literacy is impossible to measure and communicate in detail (R). As interviewee P suggested, it may be possible to say that some are skilled and some are not, but who is competent and how differs considerably (P). In archaeology, sometimes students with a workable level of interpretative literacy and theoretical

competence in archaeological information making act as supervisors to local workers with decades of practical experience of archaeological information making (P). The type and time of education also affect competences and ways of seeing things (Y). People also have different subjective understandings of their level of competence, and it is difficult to say how sure they are about their verdicts (Z).

Literacy is social and happens in practice

The paradox of (in)adequacy in literacies is both a result of and mitigated by the fact that they are interlinked, depending on(O) and compensating for each other, are social and they are learnt and become (or happen) in practice.

First, *becoming literate is hard.* Developing literacies requires time and effort (V) some have and others lack (K, O, R). Training can be helpful and facilitate both information making and taking (R). The lack of formal training especially in data management can be problematic in how resulting insufficient competence makes working time-consuming and difficult, and leads to *data* that is not adequate in the dominant episteme of digital data or any other syntactic regime beyond the data-maker's own (C, V, AB, AC). This has consequences on the degree of information taking literacy required for '*tinkering*' and making sense of the data (C, AB). '*It's important to understand ... that [data is] not ... necessarily derived in quite the same way so you have to ... know, you have to understand that*' (C). It turns into a serious problem if data is formally correct but does not correspond with the observation (C, AC).

Variety and learning by doing are, however, also a hallmark of archaeological practice that needs to cope with an extreme variety of information sources and potentially relevant perspectives (C, I, V, AB, AD). Much of the variety can be explained by the fact that, while '*everyone's trying to do their best ... people learn from their lab or from a friend or from an advisor or whatever, and everyone does things in a different way*' (R), but also in that it is extremely difficult, if possible at all, to converge information making literacy and syntactic literacy in terms of common terminology and classifications (AD). From the perspective of a particular practice on archaeological information making, it can be useful to refuse to subscribe to syntactic literacy based on the digital episteme, and, for example, use a spreadsheet in a manner that is epistemically useful in that practice even if would make it impossible to directly extract the data to a database (R).

Second, *literacies are sociotechnical and in the making*. They are sourced from the sociotechnical sphere and intertwined in the social fabric of archaeological data practice. A common strategy to compensate for a lack of competence is to rely on social contact (C, O, AG). Sometimes a student in computer science can provide a necessary complement to the required syntactic literacy to solve a problem to a point that others can do it without exact knowledge of all technical details (K). Besides people, literacies can also be outsourced to technologies, for example, computer programs and structured data input forms (O). However, converging across the sociotechnical sphere requires trust (I, K) and shared understanding of each other's perspective: '*it is better to work with people that you know ... than having the perfect team with the perfect skills*' (AE).

Paradata and literacies (RQ2)

In the interview record, multiple points of convergence between literacies and paradata can be identified. As a whole, paradata emerges as the cues that help people to understand the practice related to archaeological information making and taking, tools and epistemes.

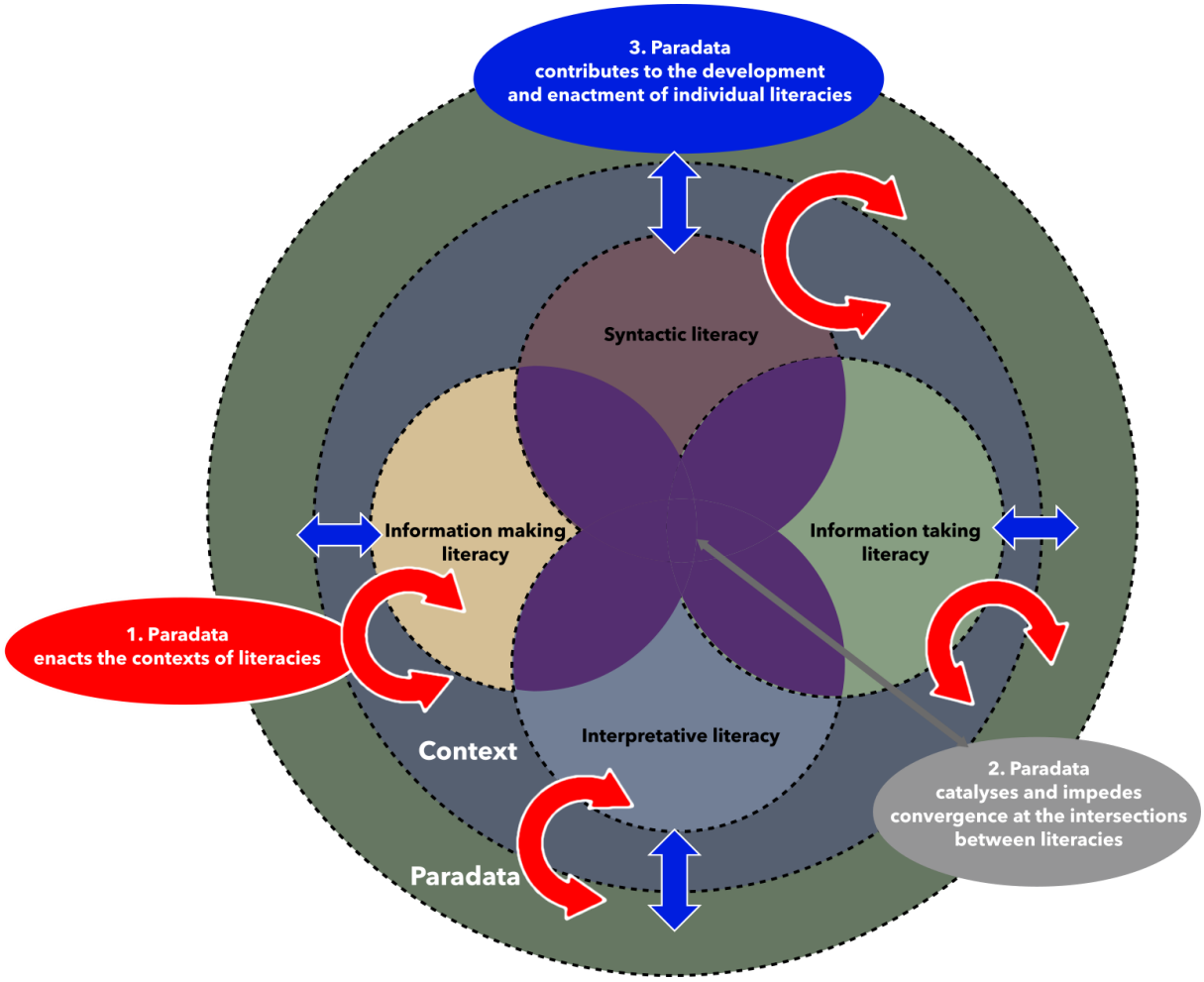

Figure 3. How paradata functions in the context of literacy.

First, paradata can *contribute to development and enactment of individual literacies* (red in Figure 3). It can contribute to knowing data (interpretative literacy) by helping to understand how it came into being (A, K), to information taking literacy through explaining the complexity (K), practices and criteria of its making (I, K) and validation (O), and pointing to how it might be used (M). Paradata could also contribute to syntactic literacy; for instance, by conveying how a database works (cf. A, G) and to information making literacy by shedding light on the evolution of the archaeological practice (cf. A, I), background, practices and language of individuals engaging in the making of archaeological data (A, C, I, R, Y, Z).

The observation above that individual literacies are simultaneously inadequate and compensate for each other, which means that a precise mapping of paradata types to literacies is not possible. There are, however, some observable patterns, summarised in Table 1.

Literacy	Paradata type	Examples in the interview record	Example formats
Information making literacy	Knowledge organisation and representation paradata (Börjesson, Sköld, et al., 2022); Knowledge making paradata (Börjesson, Huvila, et al., 2022).	Currently applicable methods (C, D, F, H, I); Information on standards (C, E, H, I) and formats (A, F) used.	Formal standards.
Information taking literacy	Knowledge making paradata (Börjesson, Huvila, et al., 2022); Methods paradata; Provenance paradata (Börjesson, Sköld, et al., 2022).	Nature and context of, and rationale underpinning data (C, G, H, I); epistemological culture (C).	Narratives of data creation practices.
Syntactic literacy	Knowledge organisation paradata (Börjesson, Huvila, et al., 2022); Knowledge organisation and representation paradata; Methods paradata (Börjesson, Sköld, et al., 2022).	Data codes and formats (A, D, H); Data structures and classifications (C, D, F); Instruments (F).	Templates; Training and apprenticeship; Workflows, Procedures; Instruction manuals.
Interpretative literacy	Knowledge making paradata (Börjesson, Huvila, et al., 2022); Scope paradata; Methods paradata; Provenance paradata (Börjesson, Sköld, et al., 2022).	Data coverage: spatial, temporal (B, C, E, G, I); Detail (G): Nature and context of, and rationale underpinning data (C, G, H, I).	Explanations of the rationales and purposes of data creation; Examples of data.

Table 1. Literacy facets, their associated paradata types and formats.

Second, *paradata can catalyse and impede convergence at the intersections between literacies* (grey in Figure 3). Paradata can convey crucial aspects of, for example, syntactic literacy to those creating archaeological data (K), and mitigate the difficulty of working with others lacking a particular literacy (I). There are, however, also situations when the work with paradata and the clarity of documentation are not prioritised or it is kept difficult to use on purpose:

> *I think a lot of the reluctance is tied to feelings about prestige and the need to secure a career for yourself by maintaining a dataset for your exclusive use. And then, if that becomes available to other people, you may lose some of the priority and the opportunities that you believe you're entitled to.* (AD)

Third, the *paradata enacts the contexts of literacies* (blue in Figure 3). Partly, while the interview record suggests that the same information can contribute to the enactment of multiple literacies, it also points to the fact that not all forms of paradata are compatible with all varieties of literacies. For example, interviewee AC commended how papers accompanied by Jupyter notebooks are good examples of how data and workflows can be brought and kept together but doubted at the same time whether they are technically too complicated for the average archaeologist at the moment, and pondered about ways how to achieve something similar that would be compatible with the practices of making and using archaeological data. Through being inscribed and embodied in diverse physical and conceptual forms, paradata enacts the contexts and contextualities of literacies, making them visible and practicable in context.

Discussion

What it takes to be literate

The findings underline the complexity and contextuality-in-practice of how becoming and being literate with archaeological data is enacted. Rather than comprising a single practice of becoming and being data literate, the findings suggest the presence of parallel literacies of 1) making information according to the conventions of archaeological practice (information making literacy), 2) taking such information into use (information taking literacy), 3) understanding the technical practices of how information is constructed and structured from its ingredients using a particular set of techniques and tools (syntactic literacy), and 4) interpreting and understanding the information and its meaning (interpretative literacy). They align with sociomaterial conceptualisations of engaging with literacies (e.g. Lloyd, 2010; Pourbaix, 2000) and classic descriptions of what constitutes a competent practice (e.g., Law and Lynch, 1988), however, providing a systematic enumeration of its key facets. The facets differentiate technical and subject-oriented trajectories of expertise typically separated in the literature (Fernández-Pascual et al., 2024), however nuancing the picture by distinguishing information making, interpretation and taking as distinct dimensions of the latter. Syntactic literacy comes closest to being a technical form of infrastructural literacy (not to mix it up with literacies of infrastructure, e.g. Gray et al., 2018) as the practice of mastering the underpinning technical and epistemic means of dealing with data in particular ways. However, similarly to other identified facets, it is not operating in isolation, being linked both to the epistemic underpinnings of specific data-technologies and how they are applied in context.

This means also that the different literacies as facets of being literate complement and compensate for each other but also contradict in their expectations and emphases on what kinds of data are central to upholding archaeological practice. This makes literacies a moving target, simultaneously adequate and inadequate. We suggest that previously observed diverging preferences of paradata and other forms of data documentation between data creators, managers and users can be explained in terms of their addressing of the different literacy facets. It appears that problems and solutions in data work are contextual to specific literacies, being based on assumptions and modes of operation that sometimes fail to generate or leverage data that is fully compatible with those of other literacies (e.g., Börjesson, Huvila, et al., 2022; Huvila et al., 2024a; Olsson et al., 2024). This was particularly obvious between the information making and syntactic literacies versus information taking and interpretative literacies. The first-mentioned emphasise formal and technical knowledge representation (and organisation) paradata, whereas the latter foreground descriptive and contextual types of scope and provenance paradata (Börjesson, Huvila, et al., 2022; Börjesson, Sköld, et al., 2022). Data makers' engagement with information making and syntactic literacies and data users on information taking and interpretative literacies further explain the differences in their respective wants and needs regarding structured versus narrative data documentation (Huvila et al., 2024a).

The findings on the complexity of literacies point further to the occasional productivity of *unliteracy* (Huvila, 2018; cf. Plaut, 2023) – of refusing to subscribe to a particular literacy practice but instead of relying on others, not knowing or documenting everything. From the perspective of a particular practice on archaeological information making, it can be useful to refuse to subscribe to syntactic literacy based on the digital episteme and, for example, use a spreadsheet in a manner which makes it impossible to directly extract the data to a database using it according to the premises of a visual rather than datafied syntactic literacy, simultaneously emphasising a different information taking and interpretative practice to structured information making (as, for example, for interviewee R).

How paradata functions in the context of literacy

In the interview record, getting and staying informed about a competent practice through engaging with paradata serves three major purposes. By informing about specific aspects of practices, it can help to develop and enact individual data-related literacies. Paradata is clearly not embodied competence made explicit but rather an ingredient of learning something akin to craftsman's abstractions (Høgseth, 2012) in how they encapsulate conceptualisations of the practice. Rather than functioning as a substitute, a broader understanding of a practice as a whole facilitated by paradata can compensate for a lack of mastery of some literacies and contribute to the convergence in the broader *landscape* (cf. Lloyd, 2010) of literacies. Further, through being informative about practices, paradata enacts contexts of – in our study archaeological – data practice resulting in better understandings of data and how and where it can work, i.e., aspects that have repeatedly been reported to be poorly documented and difficult to grasp in shared datasets (e.g., Faniel et al., 2019; Kim and Yoon, 2017).

However, rather than merely informing about processes or doings in a narrow technical sense, the findings demonstrate how paradata through informing on '*how things are done*' conveys understanding of not only practices but also their associated practice architectures (Kemmis, 2019; Olsson et al., 2024), and broader habitat that Stengers (2005) terms their ecology. From this perspective, we posit that many of the aspirations of what '*data literacy*' (cf. Kansa and Kansa, 2021) should achieve are less concerned about mastering data itself than paradata (see also Huvila et al., 2024). When data is recognised as a process rather than an immutable thing, the nucleus of data literacy is understanding historical, contemporary and future practices that influence(d) data, in effect mastering what we term paradata. The technical exercise of grasping data and its technical lifecycle is only part of being literate. Similarly to how understanding written work – a literary piece or an everyday text – requires competence in understanding it in its context situated in the process of its becoming beyond deciphering it as a sequence of words, being literate with data requires a similar grasp of it in its full, constantly evolving complexity.

A theoretical benefit of discussing paradata and literacies together is in how they both underline the importance of the contextuality of practices. While context has been debated in information studies for decades, resulting in a plethora of models, it still to a large extent lacks functional operationalisations (cf. Agarwal, 2017; Faniel et al., 2019). In contrast to vaguely suggesting that there is a need for contextual information, paradata offers a way of approaching context in a systematic manner through explicating mechanisms of how specific types of information-on-practice link to competent practice-in-context.

Interestingly enough, the importance of such competent practising of the contextuality of work through developing literacy through generation of what essentially is paradata has been discussed in the empirical context of this study – archaeology – from the 1990s onwards in the context of what is known as *reflexive archaeology* (Hodder, 1997; also, Berggren et al., 2015). The aim of the approach is to encourage archaeologists to reflect on their field practice in real time and write down reflections and interpretations of the practice – in practice, paradata – to avoid unreflective collecting of contextually detached *data*. Studies enquiring into reflexive archaeology suggest that producing reflexive paradata requires methods that are contextually relevant to a specific archaeological investigation (Sandoval, 2021), and good understanding of its context together with '*experience and skill*' (Sandoval, 2020). Hardly surprisingly, these measures map onto the identified literacy facets relevant to making and taking archaeological data and knowledge.

Conclusions

A key insight from this study is how paradata, as a concept referring to practice-related meta-information, provides means to operationalise what can be known and communicated about practices as a central contextual constituent of being and becoming literate. The findings nuance

earlier propositions of the potential importance of paradata in the context of data literacies. The present enquiry into archaeological data practice shows further how being literate is composed of multiple facets (literacies) that are in flux, distinct but overlapping, aligned and conflicting. A particularly blatant breach was identified between the literacies of making and understanding syntactic means of organising information and taking and understanding it in context. Becoming and being literate as a whole entail navigating them, not necessarily mastering, but learning enough of them all for staying afloat. Different types of information – or paradata – are helpful in this process, with specific types of information having affinities to enacting particular types of literacies, contexts and convergences in between. Finally, the exploration in archaeological data practice showed that being literate was more of a question of being literate in working with paradata about archaeological data practice than mastering the data itself, essentially pointing to the fact that data literacy, and literacies in general, could better be framed as literacies of paradata.

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Information literacy as part of an interdisciplinary approach to combat misinformation

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Abstract

Introduction. Misinformation is a complex challenge that cuts across all fields and thus requires an interdisciplinary solution. As professionals who support information access and evaluation across fields and have long-championed information literacy, librarians could be well-situated to facilitate collaborative responses. So far, however, library science has remained fairly siloed in its approach, similar to other fields.

Method. As a conceptual paper, this submission does not employ a detailed methodology but provides an overview of relevant literature.

Analysis. This paper provides a high-level overview of research and thinking related to misinformation and information literacy across a wide range of fields.

Results. The overview illustrates the complexity of the problem and the intersecting ideas and responses, with a focus on how these relate to librarianship and information literacy.

Conclusion(s). The paper concludes with a proposed framework for an interdisciplinary approach to studying misinformation with an aim to developing information literacy competencies.

Introduction

As attention to the challenges of misinformation spiked following the 2016 US presidential election and the Brexit vote, librarians were quick to claim a role for themselves as information experts with a long tradition of source evaluation and information literacy instruction. Public libraries, as trusted civic organisations, have been identified as natural outlets to support the development of information literacy skills to evaluate misinformation (Taylor and Jaeger, 2021). However, LIS has been fairly insular in its approaches. Both Sullivan (2019a) and Swanson (2023) note the lack of attention to neuroscience and psychology in LIS discussions of misinformation. While convened as cross-disciplinary discussion, participants of the *Know news* symposium noted a lack of representation from K-12 educators, psychologists, and neuroscientists as well as minimal representation from the tech sector (Saunders et al., 2018). Nevertheless, as a field that interacts with information across all other fields and disciplines, library and information science (LIS) could be well-positioned to facilitate an interdisciplinary response to misinformation.

Misinformation is an interdisciplinary problem in the sense that misinformation is created and shared within and across all fields, but also research to understand how people interact with, evaluate and share misinformation is conducted across many of the fields. In discussing research on fake news, Sample et al. (2020, p. 1) note, '*the design and consumption of data rely on a mixture of psychology, sociology, political science, economics, linguistics, marketing, and fine arts*,' while Pasquetto et al., (2024, final paragraph) call for '*in-depth, interdisciplinary efforts*' on the topic. Unfortunately, much of the work, both in conducting research and in developing responses, is happening in siloes. Broda and Strömbäck (2024, 141) discuss a '*lack of conceptual clarity*' and warn of '*fragmentation across disciplines*' (Broda and Strömbäck, 2024, 139) in the study of misinformation. They note that, with few exceptions (Bronda and Strömbäck point to Abu Arqoub et al. 2020; Ha et al., 2021; Madrid-Morales and Wasserman 2022), even reviews of the literature are often focused on a single field. This isolation, in which researchers and thinkers in various fields rely on the body of knowledge and collaborators within their own field with little or no attention to other fields, is likely to be less effective with such a complex topic than an interdisciplinary approach might be.

The rest of this paper offers a brief overview of how research and thinking on misinformation across a variety of fields could inform library instruction in information literacy. This overview is not meant to be comprehensive but to provide a starting point for an interdisciplinary discussion with the introduction of an information literacy dynamic. Across different disciplines, there has been a push to differentiate among different types of misinformation (see, e.g., Uscinksi et al., 2024; Wardle and Derakhshan 2017). While this paper acknowledges the importance of precise definitions, for the sake of concision the term misinformation will be used as the umbrella concept.

Information literacy instruction: context

Since the upsurge in attention to misinformation in 2016, librarians have developed hundreds of instruction sessions, guides and other materials aimed at teaching information literacy skills (Agosto, 2018; Jaeger and Taylor, 2021a; Lim, 2020; Russo et al., 2019). Even as they acknowledged information (or media or news) literacy as a potential intervention for misinformation, critics expressed concerns that these approaches were largely untested (Lazer et al, 2018; Sullivan, 2019a, 2019b). These concerns seem to have been well-founded. While pedagogical approaches framed around information, news and media literacy instruction can be effective in helping people to identify misinformation (Austin et al., 2015; Bateman and Jackson, 2024; Kahne and Bowyer, 2016; McGrew et al., 2019; Roozenbeek et al., 2023; Sádaba et al., 2023), these literacies are broad and complex areas and not all instructional approaches are equally effective. Many of the methods promoted, and sometimes developed by, librarians largely rely heavily on exhaustive checklists which are time-consuming to implement (Lim, 2020; Revez and Corujo, 2021; Russo et al., 2019), are '*not derived from empirical research about what experts do when evaluating online sources*'

(McGrew and Breakstone, 2023, p. 1) and '*treat evaluation as a straightforward process of checking for specific features and adding up these credibility cues*' (McGrew and Breakstone, 2023, p. 1). More effective are research-based approaches developed outside of LIS, like lateral reading and civic online reasoning (McGrew et al., 2019; McGrew and Breakstone, 2023; Wineburg and McGrew, 2017) or the SIFT Method (SIFT stands for Stop; Investigate the source; Find better coverage; and Trace the claim back to its source) (Caulfield, 2017) which draw on the fact-verification skills that journalists employ.

The rise of artificial intelligence or generative AI has added additional complexity to these issues by facilitating the creation of increasingly sophisticated misinformation, including deepfakes which can use digitally altered images and voices of celebrities, public figures and others to promote misinformation. In a 54-page guide to identifying AI-generated images, researchers from Northwestern (Kamali, et al., 2024) recommend scanning the images for a variety of *tells* including various anatomical anomalies such as missing or extra fingers, misaligned pupils and unlikely proportions of body parts; functional implausibilities, or '*relations between objects and people that do not conform to real-world mechanical principles*' (Kamali, et al., 2024, p. 31); and violations of physics, such as improper lighting and shadowing. Interestingly, these recommendations seem to mirror the sorts of close reading and checklists approaches of earlier iterations of information literacy instruction that have been shown to be less than effective, and as AI platforms become more sophisticated, some worry that looking for those cues will not be effective (Panditharatne and Hasan, 2024; Zhou at al., 2023). More recently, lateral reading has been recommended for verifying deepfakes or AI-generated misinformation (Nygren et al., 2021; Public Affairs Council, 2023; Settles, 2023).

Given that much of the attention to misinformation was prompted by the rise of concern around *fake news*, perhaps it is not surprising that the most effective techniques for verifying misinformation align with journalistic practices. However, addressing technology will take more than lateral reading, as the issues entail more than just fact-checking. With the publication of *Algorithms of oppression*, Noble (2018) helped surface issues of algorithmic bias and dispel the idea that search engines are neutral in how they process searches and rank results. Unsurprisingly, these biases impact information across platforms such as social media (see, e.g., Kim et al., 2020; Mozafari et al., 2020). Noble's research on how search engines perpetuate human biases in how they rank and present results added to the literature on algorithmic bias, including the ways in which personalisation of information can lead to filter bubbles and echo chambers, whereby people are increasingly directed towards information that aligns with (and thereby potentially magnifies) their existing worldviews (see e.g, Cinelli et al., 2011; Pariser, 2011). To that end, *Project Information Literacy* advocates a need for library instruction to go beyond skills to evaluate (mis)information and address '*how information works*' (Fister, 2021, 'Where do we go from here' section) in an age of algorithms. In other words, people need to learn more about the information infrastructure, including how algorithms impact their searches and, ultimately, their thinking about information, and how bias permeates those algorithms (Fister, 2021; Head et al., 2020).

Information literacy: larger contexts

While lateral reading and discussions of the information infrastructure provide important content for information literacy instruction, they are still fairly narrowly focused on sets of skills and mechanical knowledge. From a broader perspective, the fields outside of LIS can inform the content of information literacy programmes and the evaluation of misinformation but also provide important context for the topic in general. For instance, a number of writers contend that librarians have not been attending to brain science in their discussions – and, by extension, instruction – related to misinformation (Sturges and Gastinger, 2013; Sullivan, 2019a, 2019b; Swanson, 2023). While discussions of the role of cognitive biases and heuristics have become more commonplace in LIS, Sullivan (2019a, 2019b) observes that librarians are perhaps oversimplifying

or misconstruing some of these issues. His dissertation (2024) provides a master class overview of the relevant literature across areas like psychology, behavioural science, communications and other fields, parsing the nuances of different schools of thought on heuristics and their implications for how people make judgements and decisions. He notes that admonitions to evaluate '*every*' piece of information, often through overly extensive methods, and criticisms of '*satisficing*' that are common across library instruction programmes ignore the realities of heuristics and even some of the beneficial aspects they provide.

Needless to say, the literature in this area is vast and complex, encompassing the study of perhaps dozens of different types of cognitive biases. With regard to misinformation, one area that has received extensive attention is confirmation bias, or '*people's tendency to process information by looking for, or interpreting, information that is consistent with their existing beliefs*' (Casad and Luebering, 2024, para. 1), with the idea being that people are motivated to seek out and believe misinformation if it aligns with, or confirms, what they already believe to be true (Edmans, 2024; Heshmat, 2015; Peruzzi et al., 2018). As an additional challenge, a variety of research studies show that misinformation is often resistant to corrections (Vraga et al., 2019). Once people believe some piece of misinformation, they may persist in believing that faulty information even after receiving corrections, a phenomenon known as the continued influence effect (see, e.g. Ecker et al., 2011; Seifert, 2002). As such, even if belief(s) are initially changed, the incorrect information may eventually reassert itself over the new, corrected information (Grady et al., 2021). When people are exposed to the same inaccurate messages repeatedly, the likelihood of believing that misinformation increases, even if the reader has been warned the information is inaccurate (Pennycook et al., 2017). Importantly, most of the discussions about the role librarians could play in teaching people to evaluate information and avoid misinformation do not address librarians' own biases and, as a result, seem to imply that as *information experts*, librarians are perhaps immune to biased thinking. However, through a series of experiments and observations, Sullivan (2024) demonstrated that partisan ideologies can influence how librarians evaluate political information. In an interview, Dar (2021, p. 8) quotes librarian Nate Gass as saying '"We all carry bias with us, and neither journalists nor librarians are exempt from this"'.

Further, not only do those studying the topic need to keep abreast of an overwhelming amount of literature, but they also have to contend with contradictory findings and corrections. For instance, different studies have arrived at different conclusions as to the extent to which motivated reasoning, a type of confirmation bias in which people choose to believe information that aligns with their worldviews and reject other information, explains why people are likely to believe certain types of misinformation (see, e.g., Kahne and Bowyer, 2017; Pennycook and Rand, 2021, 2019; Rozenbeek et al., 2022; Savolainen, 2022). In another example, the backfire effect, or the idea that, when confronted with corrections that challenged a mistaken belief, some people would not only reject the correction but *double-down* or become even more entrenched in their original belief, was a popular explanation for why misinformation corrections do not always work. Although later research did not confirm the findings and Nyhan (2021), the researcher who originally identified the backfire effect, noted that it was being overapplied and was at best a moderate effect, the explanation is still invoked.

Beyond biases, some writers have noted a lack of attention to the role emotions play in how people interact with and evaluate information (Hewitt, 2023; Hicks and Lloyd, 2021; Swanson, 2023), instead treating evaluation as a wholly rational process. Lilla (2024, para. 8) notes that '*seeking and having knowledge is not just a cognitive pursuit; it is also an emotional experience*'. Along those lines, Young et al. (2020, p. 541) note that '*if educational approaches do not account for the interaction between personal beliefs (and emotion) and misinformation, then they will be far less effective at changing the behavior of students (or the general public)*' but they also note these as areas in which librarians often lacked confidence and perceived a need for more training and support. Caulfield's (2017) SIFT method, which is similar to lateral reading, does encourage people to recognise and

reflect on how emotion might play into their interactions with information. However, a better understanding of cognitive biases, heuristics and related topics would not only allow librarians to integrate those topics into library instruction with the intent of helping patrons to recognise how these impact their interactions with and evaluations of information so they can mitigate those effects, but might help them to consider their own responses to and interactions with (mis)information.

Even when discussing cognitive biases and emotions, however, much of the emphasis of information literacy and library instruction focuses on factual information and how to verify facts. Especially in an era of *alternative facts* and *post-truth* (see, e.g., McIntyre, 2021), discussions of information evaluation will need to extend beyond verification of facts, which may bring the field into areas of philosophy and epistemology. Indeed, Lim (2020) notes that the materials for evaluation of information created by librarians rarely, if ever, defined terms like *fact*, while Fister (2021) argues that library instruction must attend to *truth*. But, to Lim's (2020) point, there is little, if any, discussion of what is meant by either fact or truth within the context of information literacy and library instruction. Are these terms synonymous and interchangeable? If not, how does one verify each kind of information? Unfortunately, this lack of distinction may muddy attempts to discuss evaluation of information, since people can arrive at different conclusions based on the same facts, and what people believe to be true may have little to do with the facts involved (see, e.g., Blackburn, n.d.; Collins, 2024; Nyhan, 2014). Indeed, truth claims are often based in fact, but offer speculation asserted as though it is part of, or follows inevitably from, that fact. As such, truth claims pose a different challenge for evaluation than facts, and more time in library instruction must be devoted to how to parse such claims, which will entail attention to more *philosophical* approaches to evaluation (Saunders and Budd, 2020). Further, the conflation of fact and truth might obscure the reality that facts can change over time, especially in the area of science as new data is gathered (see, e.g., Arbesman, 2013). As such, understanding the nature of fact and the evolution of understanding is a critical part of scientific literacy.

Personal *truths* or beliefs are often highly connected to individuals' values and identity, which might make it harder for them to accept facts that contradict those truths (Lilla, 2024). But another reason might be a simple reluctance to admit that one was wrong in one's beliefs to begin with. Intellectual humility is another more contextual area informing instruction related to misinformation that is receiving some attention, coming broadly from fields of epistemology and philosophy. Research across the social sciences has shown that misinformation is often resistant to correction (see e.g., Ecker and Antonio, 2021; Ecker et al., 2011). While some of that resistance may be part of how our brains are hard-wired to deal with memories, some of it could potentially be attitudinal. Intellectual humility essentially provides space for a person to admit their own fallibility, which might open them up to potential corrections in their ideas or beliefs. Gorichanaz (2021; 2023) discusses intellectual humility as a virtues-approach framing for information literacy. Some research suggests that intellectual humility could be correlated with media literacy, with people with higher levels of intellectual humility not only demonstrating better ability to evaluate information but also being more likely to spend more time reviewing sources and somewhat less likely to find sources that confirm their own biases (Gorichanaz, 2023; Koetke et al., 2023; Leary et al, 2017; Lin et al., 2022; Prike et al., 2024). This openness seems like it could be a counter to librarians' concerns that typically the patrons who self-select into programming on misinformation are those who already have some knowledge, while those who might benefit most will avoid the sessions because they do not want to admit that they have fallen for *fake news* (Young et al., 2020).

While promising, one challenge to this approach is to figure out how to teach for intellectual humility (Gorichanaz, 2021). One potential avenue would be to frame evaluation on a continuum of relative trustworthiness, or as a probabilistic judgement, rather than a binary of true and false. This '*tentative or provisional judgement*' may signal that there is room for argument or new evidence (Sinatra and Lombardi, 2020, p. 124), and some research suggests that people are more accurate in

their evaluations when rating trustworthiness on a scale rather than a binary (Guilbeault et al., 2021). Indeed, some fact-checking outlets like Politifact (https://www.politifact.com/) model this approach by scoring stories on a '*truth-o-meter*' with ratings such as mostly true, half true and '*pants on fire*'.

The importance of pedagogical knowledge

The question of how one teaches intellectual humility raises the point that the entire discussion of information literacy and library instruction needs to be framed within larger discussions of pedagogy. Young et al. (2020, p. 543) uncovered '*complex issues that limit their [librarians'] ability to confidently design and implement effective programming*' and assert that these librarians need a better understanding of the '*most effective formats for misinformation programming*' as well as '*tools and training that can make librarians feel more confident in addressing misinformation as it emerges within their communities*'. Part of the challenge, the authors note, is not only the dynamic and fast-changing environment of misinformation, but the fact that the topic intersects with so many areas, which '*forces the librarians to juggle a lot of different domains*' (Young et al., 2020, p. 545). In discussing some of the technological topics related to misinformation such as online safety, privacy and scams, Young et al. (2020, p. 545) note that many of the librarians they worked with '*ended up conflating many of these different phenomena, which can also lead to a muddled understanding and response to them*'. Similarly, Jaeger and Taylor (2021b) express surprise at the lack of information literacy among professional librarians and call on LIS degree programmes to integrate information literacy more fully into their curricula.

Indeed, a number of studies suggest that librarians feel un- or underprepared for their instructional roles, raising questions of how well degree programmes are preparing emerging librarians (see, e.g., Bryan, 2016; Hostetler, 2021; Julien and Genius, 2011; Saunders, 2015). To be effective instructors, librarians will need at least some grounding in pedagogy and instructional design. While instructional design knowledge is important for planning programming that is engaging, accessible and aligned with specific learning outcomes, an understanding of pedagogy and basic learning theory could help library instructors to understand and tap into learners' motivations and support whole-person learning, including some of the affective aspects of learning.

The social context

At an even broader level, the challenges of misinformation and, by extension, instruction related to misinformation evaluation, need to be put into the larger social and political context. Chatman (1996, 1999) uncovered the ways in which individuals in *small worlds* shared (or, in some cases avoided sharing) information and how *insider* and *outsider* status could impact the extent to which information sources were trusted. In an effort to conform to the expectations and norms of their small world communities, members may avoid or discount information and viewpoints that come from outside sources. More recently, writing and research on misinformation has considered identity and, often, political identity, as one factor in how people evaluate information (See, e.g., Jenke, 2024; Pennycook and Rand, 2021, 2019). However, even when it considers sociopolitical context, or group interactions such as on social media, much of this literature still seems to focus on how individuals evaluate information on their own. Yet, some research suggests that people reach better judgements about information as a group when they interact with peers, rather than as individuals (Guilbeault et al., 2021). Importantly, those effects were demonstrated under experimental conditions with groups formed only for the study. Other research suggests that, when individuals self-select into like-minded groups, '*formation of online groups affects information consumption patterns, often leading to more polarization and radicalization*' (Efstratiou and De Cristofaro, 2022, p. 1).

Building on Chatman's theories, Burnett and colleagues (2008) advocate for more exploration of what they describe as social access to information, or the ways in which communities develop normative behaviours around information which impact what they are willing to access and accept as accurate or true. Burnett and Williams (2023) offer a helpful overview of how this approach can be used to explore the promotion of conspiracy theories within like-minded groups, including how technological and algorithmic issues such as filter bubbles and echo chambers might exacerbate the situation. Likewise, in studying social norms online, Castioni et al. (2022) found that a large volume of misinformation is created by a small minority of users on Twitter (now X) and then retweeted by a much large group of what they call '*consumers*'. They suggest that the consumers mistakenly believe that misinformation to be a majority voice because of its volume and exposure and then feel *pressured* to share the misinformation in order to conform to the norms of their group. From a more positive perspective, some research has suggested that promoting social norms around information sharing can be effective at reducing the spread of misinformation on social media. Rozenbeek et al. (2023, 195) describe social norm nudges as messages which '*draw attention to partisan or societal norms around news-sharing behavior in order to improve the quality of people's news-sharing decisions*'. These nudges can take the form of brief messages framing responsible behavior. In a review of the research, they describe several types of social norm nudges. Descriptive norms explain what people generally do in certain situations. These messages warn people that they might encounter misinformation online and remind them that responsible people would not share such inaccurate information. Injunctive norms, on the other hand, will explain what kinds of behaviour other people will approve or disapprove of. Such nudges can be either general or targeted towards specific beliefs, such as anti-vaccine information. Overall, both descriptive and injunctive nudging can be somewhat effective in reducing the sharing of misinformation and encouraging people to report misinformation when they encounter it, and using both kinds has the greatest effect (Prike et al., 2024; Rozenbeek et al., 2023). In their edited volume on information literacy theory, Hicks and colleagues (2023) present several discussions on social aspects of information literacy and information behaviours. Nevertheless, research on social norms and social access to information seems light compared to other areas of study on misinformation.

A better understanding of the social context might be especially important as libraries continue to emphasise their role as community centres and even community builders, and as they promote more programming related to civic – and civil – discourse (Kranich, 2010; Wyatt, 2023). Indeed, at a time of increasing polarisation and partisanship, the role libraries can play in bringing communities together could be critical (Budd, 2022; Edwards et al., 2013; Kranich, 2020; Scott, 2011). Such work might happen both actively and passively, as librarians provide programming and collections that help patrons access many ideas and perspectives. However, it is unclear how well, if at all, librarians have been prepared to navigate these kinds of discussions, especially in a highly politicised environment. Young et al. (2020, p. 543) observe that librarians understand the complexities of the situation including how the political nature of misinformation made programming '*complicated and kind of tricky*,' and they emphasise the need to frame interventions in ways that are '*respectful and effective*'. Indeed, some librarians in their study expressed concern that because the topic of misinformation has itself become politicised, related programming could '*cultivate an us-versus-them mentality that could easily lead the public to viewing librarians as an enemy*,' and potentially '*bring patrons to the library with feelings of pre-emptive rage, which would undermine their programming for everyone*' (Young et al., 2020, p. 546). These concerns suggest that librarians may need not only a better understanding of the social context but training in how to facilitate discourse in a highly politicised environment. As noted above, evaluating facts might be different from evaluating truths or truth claims and, given the emotional aspect of engaging with what one believes to be true, such interactions might also entail a different form of communication (McIntyre, 2021).

Politics and policy

As a final note, several writers (see, e.g., Grizzle et al., 2013; Jaeger and Taylor, 2019; Taylor and Jaeger, 2021; Young at al., 2020) discuss the importance of the broader political environment and information policy on information literacy. For example, Young et al. (2020) note that some librarians were concerned about running misinformation programming for fear of alienating patrons as well as larger municipalities and funding bodies. The authors suggest that librarians may need to partner with other organisations to share risk but acknowledges that this approach '*requires a lot of political work by libraries, to ensure that they are building strong partnerships that will help them weather any political fallout*' (Young et al, 2020, p. 546). Taylor and Jaeger (2021) devote an entire book chapter to issues of politics and policy related to literacy and information literacy specifically, while elsewhere they discuss information policy more broadly (Jaeger and Taylor, 2019). UNESCO (Grizzel et al., 2013) provides a policy brief related to media and information literacy (MIL), framing media and information literacy as critical competencies and advocating the need for policies that will help ensure equity and access.

While these issues extend beyond the content and even framing of library instruction, at a time of ever-increasing polarisation when impacts on education and libraries are moving beyond pressure campaigns to the regulatory environment (EveryLibrary, 2023; Meehan and Friedman, 2023), and government funding to research misinformation is being politicised and called into question (Newton and Schiffer, 2024), it does seem that librarians, perhaps especially in public and school libraries, will need to monitor the situation and be ready to advocate for information literacy. While clearly important, issues of policy, politics and advocacy add yet another set of disciplines and perspectives with which librarians would need to be familiar.

A framework for further discussion

None of this is to say that librarians cannot address misinformation, or even that they do not already address it, at least to some extent. But, to fully engage these issues will clearly take an interdisciplinary approach. However, it is not realistic or necessary to expect librarians to become experts across the disciplines. Rather, there is a need to develop interdisciplinary teams to engage in the research and develop and test the approaches that will encompass these various interdisciplinary perspectives. Burnett and colleagues' (2008) discussion of normative information behaviours might provide a useful starting point. In that paper, the authors describe three realms of information access: physical, intellectual and social. Physical access is the ability to locate and obtain existing information, while intellectual access entails the ability to understand and evaluate the information and social access, as described earlier, addresses the ways in which community and culture can influence a person's interactions with information.

Each of these realms aligns to some extent with various disciplinary approaches to studying information and, by extension, misinformation. For instance, physical access would necessarily include the technologies people rely on to access information, including search engines and social media platforms, and the sometimes invisible infrastructure that supports them (Haider and Sundin, 2019, 2022). Intellectual access would likely include psychological and neuroscience understandings of how the brain processes information, including heuristics, confirmation bias, and so on, but might also include areas such as intellectual humility and consciousness. Social access could include various sociological perspectives including group decision making as well as social norms. Importantly, however, all of these realms intersect. For example, research on social norm nudges touch on social access, but might also include attention to intellectual access issues such as confirmation bias. And all of this might be studied in an online environment, which then entails the physical access of technology. Issues of algorithmic bias might be viewed as a technology concern, but it clearly overlaps with and grows out of human biases within the realm of psychology and intellectual access. As such, one could conceive of these three realms as a Venn diagram, as in Figure 1, where the overlaps describe potential areas of interdisciplinary research.

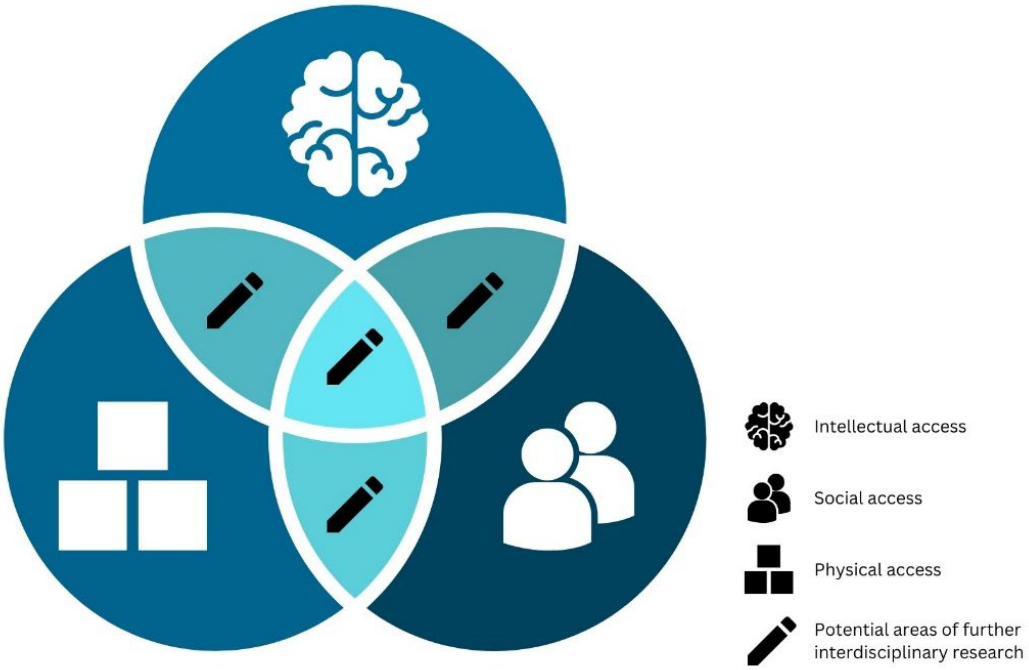

Figure 1. Realms of access.

Graphic created by Katherine Carlson.

However, as noted above, the issues and challenges of misinformation exist in a larger framing of politics, policy and even pedagogy. Thus, the Venn diagram could be placed within a larger circle representing that environment. And, finally, one might describe the absolute centre of the Venn diagram, where the three areas of access completely intersect within that larger environment, as a place of information literacy, as illustrated in Figure 2:

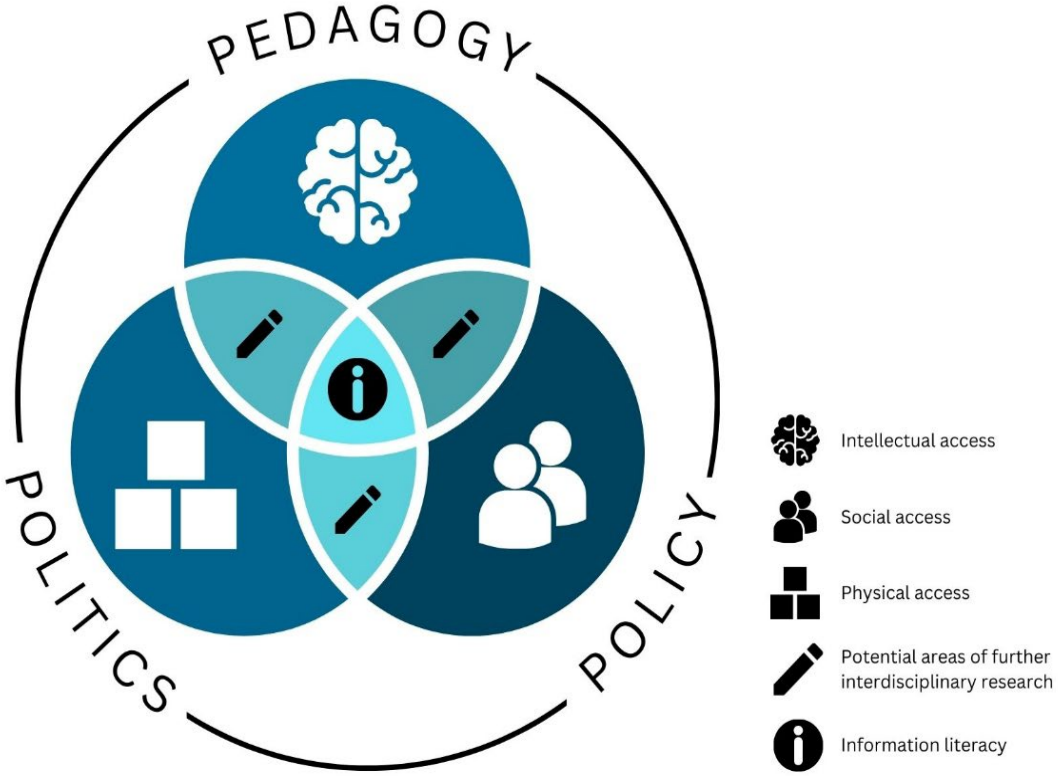

Figure 2. Realms of access in a political environment.

Graphic created by Katherine Carlson.

Conclusion

As noted from the start, this paper barely scratches the surface of the challenges of misinformation. It would be impossible to provide a comprehensive overview, not only given the vastness of the literature, but because the author is herself limited by her disciplinary knowledge. The purpose of the paper is to demonstrate (some of) the complexities of the topic and hopefully to start a larger conversation. Given that misinformation has been repeatedly identified as a global threat (Howell, 2013; World Economic Forum, 2019), that the threats to people's wellbeing from misinformation is such that the UN Secretary General stated that '*misinformation kills*' (United Nations, 2020), and that the poor outcomes associated with misinformation disproportionately impact people from historically marginalised communities (Arun, 2019; Nerbovig, 2020), engaging in research to better understand how people engage with misinformation, what strategies are most effective in identifying and avoiding it, and how best to teach those strategies and advocate for policies to support them, is imperative. All of this also has implications for LIS education. As noted above, there has already been discussion in the literature as to the extent to which emerging librarians are being prepared to take on instructional roles, and even how well information literacy is being taught in LIS degree programmes. The complexities of misinformation suggest even more areas to address, from psychology and neuroscience to philosophy to politics and policy. Of course,

library programmes could not hope to address all of these areas, and no librarian could become an expert in all, or even just a few, of these disciplines, which is why an interdisciplinary approach, bringing together experts from across the fields, is necessary.

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Two decades of critical information literacy: a review and analysis of the literature

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Abstract

Introduction. Critical information literacy (CIL) has been explored, refined, debated and critiqued since its first appearances in the literature twenty years ago. CIL uses teaching and learning settings in libraries to understand and act upon oppression in information systems. What does the literature tell us about the direction of CIL and critical librarianship more broadly, and what is absent from the existing scholarship?

Method. This research explores CIL's recent past through a literature review and analysis of 97 publications from 2016-2024. The review is international in scope.

Results. The literature review finds common thematic concerns in the areas of Conceptualising and theorising, Responding to contemporary politics and technologies, and Critiquing critical information literacy. Additionally, several issues and failings of CIL were identified, including a lack of attention to race and labour and the overrepresentation of perspectives based in higher education and western-centric knowledge systems.

Conclusions. The author suggests that to move towards its liberatory aims, the burgeoning field of CIL should continue drawing upon other relevant movements and contemporary theories, establish localised analyses of power and be considered as a dynamic and context-dependent concept rooted in sociopolitical realities.

Introduction

Critical information literacy (CIL) seeks to understand and act upon how libraries and other information systems both contribute to and can oppose systemic oppressions such as racism, sexism, colonialism and ableism. CIL has taken on new roles and an increased sense of urgency in response to global concerns such as disinformation and authoritarian leaders, and continues to generate ideas that encourage library workers to seek to democratise knowledge and access to information. This paper seeks to answer the questions: 1) What themes are present in the current CIL literature? and; 2) Based on the current CIL literature, what areas and perspectives are lacking or underrepresented? Moreover, this paper will also consider the functions of the absences and erasures in the literature and what potential next steps for CIL could include.

Drabinski and Tewell define critical information literacy as, '*a theory and practice that considers the sociopolitical dimensions of information and production of knowledge, and critiques the ways in which systems of power shape the creation, distribution, and reception of information*' (2019, p. 1). Twenty years after CIL's initial appearances in the literature it has been the subject of many works theorising, applying and critiquing it. Interest in CIL continues to expand and flourish, and it has contributed to challenging entrenched ideas in libraries and information literacy. The literature has seen a considerable increase in researchers applying CIL to specific settings and specialities, providing useful nuance and insight. Despite its advances, CIL has remained limited in consequential ways. CIL's inattention to race and white supremacy is one major issue, along with other concerns voiced in the literature such as a lack of recognising labour and working conditions as a fundamental aspect of teaching in libraries, a western-centric representation and interest in CIL, and a focus on and within higher education that limits CIL's broader potential. First, a brief look at CIL's foundational years will provide useful context.

Critical information literacy: foundations, early 2000s-2015

Critical information literacy has accumulated a considerable presence in the library and information science literature and at conferences, especially in North America. As such, the literature and particularly early works in CIL are North America-centric. Foundations of the critical information literacy literature include articles by Kapitzke (2003), Swanson (2004), Elmborg (2006), and Jacobs (2008), all of whom argue for the importance of an information literacy theory and practice which accounts for political and ethical issues. Kapitzke applies poststructuralism to critique the concept of information literacy, while Swanson, Elmborg and Jacobs draw upon critical literacy theory and composition studies to consider the roles of teaching librarians. Critical theory as well as composition studies continue to be used to analyse information literacy and the educational work of libraries, but as early as the cornerstone volume *Critical library instruction: theories and methods* edited by Accardi and colleagues (2010), inspiration for reimagining information literacy has taken many forms that included queer, feminist and critical race pedagogies. Extending the conversation on information literacy's political possibilities, Higgins and Gregory's edited volume *Information literacy and social justice: radical professional praxis* (2013) took further inspiration from Paulo Freire and the field of critical pedagogy.

A major step in practical applications of critical information literacy came with the publication of Pagowsky and McElroy's two-volume *Critical library pedagogy handbook* (2016), which contains a collection of essays, workbook activities and lesson plans that are readily applied to teaching. Notably in respect to the mainstreaming of CIL and its more widespread visibility in North American librarianship, these volumes were published by the American Library Association. Also contributing to theoretical and practical advancements at this time was the edited volume *Critical literacy for information professionals* (McNicol, 2016). Simultaneously, research that sought to identify and concretise critical information literacy themes and practices was conducted by Downey in *Critical information literacy: foundations, inspirations, and ideas* (2016) as well as articles by Tewell (2016, 2018). Shortly afterwards, considerable work was expanding CIL's theoretical

inspirations, from Greek theories of time to critical geography to media studies (Drabinski, 2017; Nicholson, 2018; Tewell, 2017). Now twenty years after CIL's initial appearances in the literature, it has been the subject of many additional works theorising, translating it into classroom practice and providing long overdue critique.

Critical information literacy literature: 2016-present

Method

To locate publications on critical information literacy published since an earlier review conducted by Tewell (2015), the author conducted searches of three databases: *Library and information science abstracts* (LISA), *Library & information science source* (LISS) and *Google scholar*. Search terms included: '*critical information literacy*', '*critical pedagogy and libraries*', '*critical literacy and libraries*' and '*critical library instruction*'. Additionally, the author used controlled vocabularies in LISA and LISS as well as the '*Cited by*' and '*Related articles*' functions in Google scholar to identify relevant publications. After searches no longer generated new publications, the list of publications was reviewed to remove items that did not address critical approaches to information literacy or critical information literacy specifically (e.g., articles that focused on critical thinking).

Regarding geographical scope, publications in languages other than English were included to the extent that they appeared in the searches conducted. Other authors have researched and written on critical information literacy and related concepts in other global contexts, which contribute important perspectives beyond this paper's primarily English-language focus. Cherian et al. (2022) surveyed academic librarians working in the state of Kerala, India on their attitudes towards critical information literacy and critical librarianship, while Santos (2024) reflects on critical information literacy's evolution and application in the Philippines. Further, Manhique et al. (2023) survey Portuguese- and English-language literature on critical information literacy literature up to 2021, and Crilly (2024) reviews case studies of critically informed actions in academic libraries that encompasses antiracism and decolonisation with an emphasis on the United Kingdom.

Publication trends

To provide insight into when and where publications were completed, both the year of publication and number of CIL publications by country were calculated. Year of publication was identified using citation information, while publications by country was based on an author's country of residence using their affiliation noted in the publication. In cases of multiple authors, if all authors of a publication resided in the same country, only one tally was made, whereas if authors were based in different countries, each country was counted once. Countries represented include, in order of the most frequently represented in the literature: United States, United Kingdom, Brazil, Canada, Croatia, Sweden, China, Spain, Nigeria, South Africa, Finland, India, Mozambique, Philippines and Serbia.

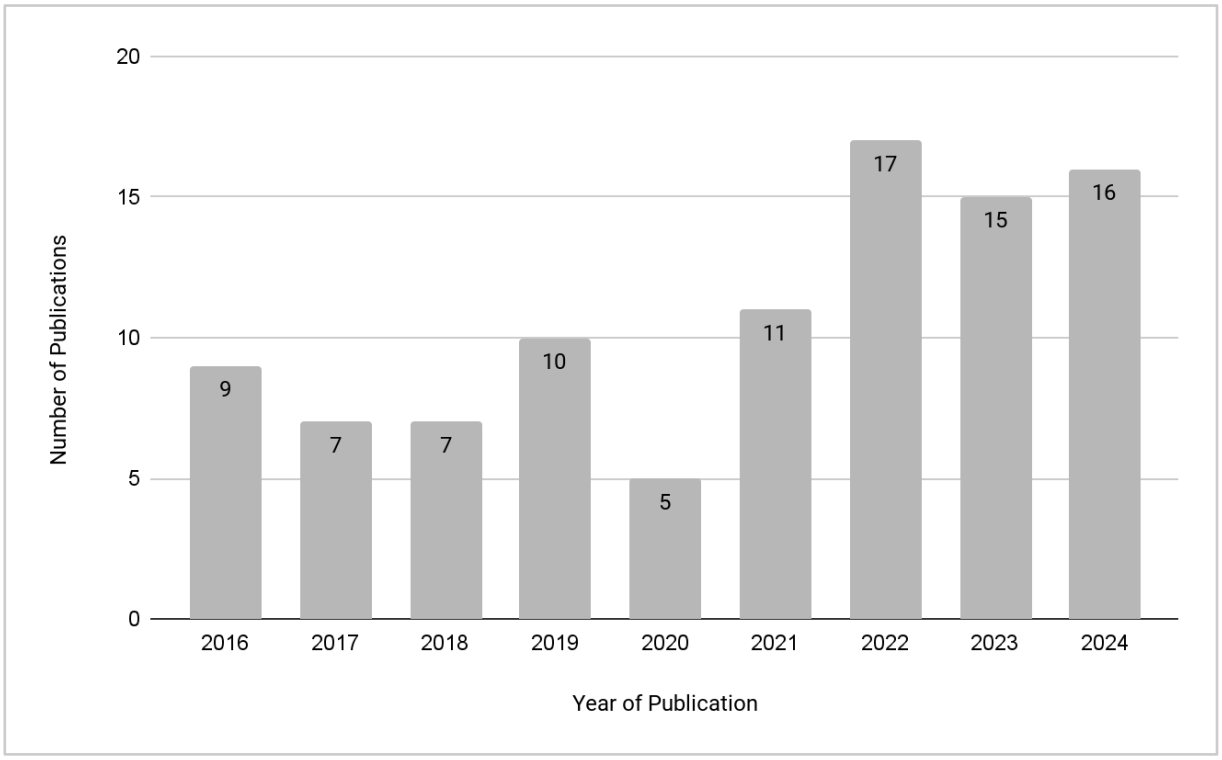

Figure 1. CIL publications by year, 2016-2024.

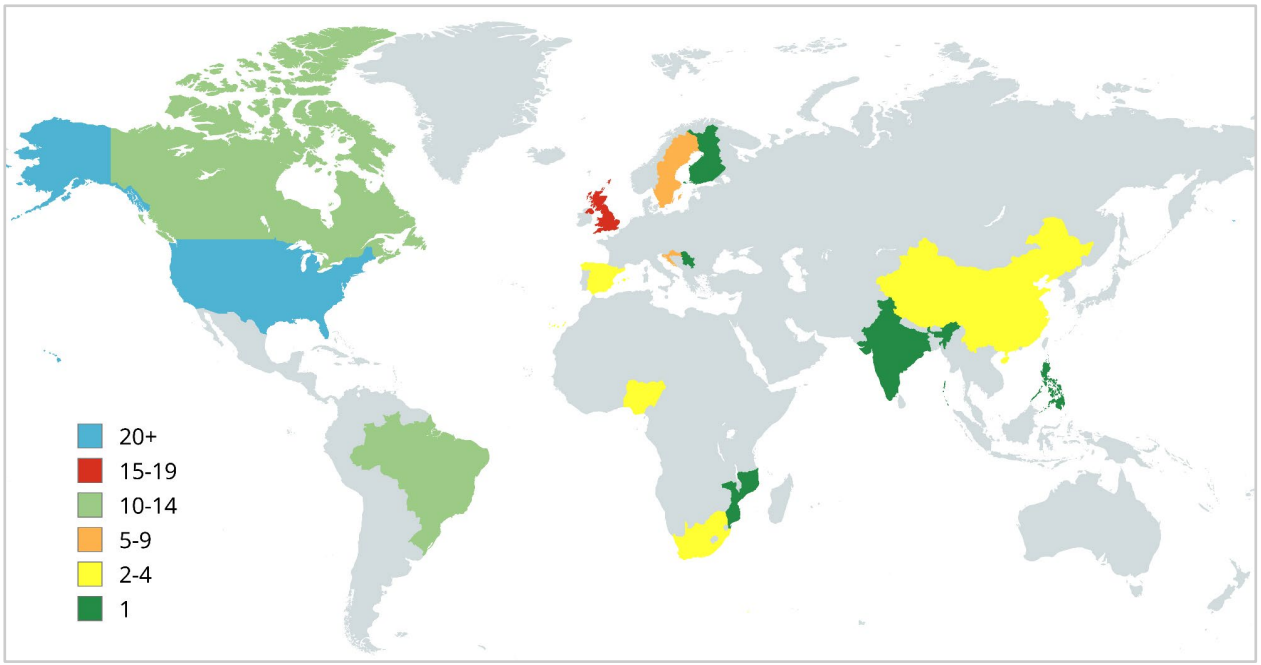

Figure 2. CIL publications by country, 2016-2024.

Themes

Thematic areas were developed by reviewing individual articles and discerning their primary topics and focuses. This review resulted in six thematic areas, which were then grouped under three larger thematic categories that encompassed the subthemes. Themes include: 1) Conceptualising

and theorising; 2) Responding to contemporary politics and technologies; and 3) Critiquing critical information literacy. Each theme is explored in more detail below.

Conceptualising and theorising

Questions of what constitutes the bounds of critical information literacy and associated information practices have been increasingly present in the literature, along with CIL's application to different learning contexts and the adoption of models outside of library and information science that have potential to inform LIS research and practice. These works contribute to CIL's knowledge base by identifying connections across fields and identifying opportunities for further dialogue. A number of researchers have recently studied how information literacy is presented through discourse analysis and related approaches (Bezerra and Beloni, 2019; Johansson and Limberg, 2017; Multas and Hirvonen, 2019; Seale, 2016; Walton and Cleland, 2017), challenges to its adoption and recognition in present-day information environments (Haider and Sundin, 2022a; Hicks, 2024; Oliphant, 2021; Šobota, 2024; Šobota, 2023), and examined its theoretical foundations and contributions (Bezerra, 2021; Flierl and Maybee, 2020; Špiranec, 2018; Webber and Johnston, 2017). Notably, tensions between the *empowerment* that academic information literacy outwardly promises contrasted with the deficit-oriented approach it often adopts internally have been made clear by Hicks and Lloyd (2021), while cline and López-McKnight (2024) offer a useful decolonial reading of information literacy as a project and product of empire.

Studies which apply models or ways of thinking outside of library science to information literacy represent a second component of the Conceptualising and theorising theme. These represent a wide range of theories, adopted for their conceptual as well as practical implications. Such works draw upon literacies in other fields (Chiewphasa and Sisk, 2022; Doyle, 2019; Johansson, 2023; Kuglitsch, 2018; Pavelić and Špiranec, 2021), rhetoric and composition studies (Baer, 2016; Zanin-Yost and Freie, 2020), concepts originating in Greece and Germany (Drabinski, 2017; Elmborg, 2022), Indigenous identity and ways of knowing (Littletree et al., 2023), human geography (Nicholson, 2018), user experience (Hicks et al., 2022), political theory (Cope, 2017), media studies (Tewell, 2017), anti-apartheid activism (Schneider and Bastos, 2021) and critical theories including anti-colonialism, black feminism, feminism and Marxism (Tanus and Gomes, 2024; Moreno, 2023; Doyle and Brisola, 2022; Schneider and Bezerra, 2023).

Research investigating different populations' information practices as they relate to critical information literacy are also present in the recent literature. Such works study job categories or workers more broadly, such as social workers (Sharun, 2023) or how workers use information in protection of their rights (Šobota and Špiranec, 2022), while others examine how individuals apply critical information literacy to their use of mainstream and social media to combat violence against women (Mudhai et al., 2016), how adolescents critically assess sources and bring infrastructural awareness to digital information environments (Haider and Sundin, 2022b) and the personal dynamics between information literacy and citizenship (Cloudesley, 2021).

Situating critical information literacy in relation to various scholarly disciplines has been a major development in the literature. In an examination of how information literacy has influenced and is adopted by selected fields and disciplines, Hicks et al. found through small-scale qualitative mapping that, '*information literacy has been most visibly leveraged into professional fields and disciplines, including in areas where librarians are more commonly working (e.g. higher education and nursing)*' (2023, p. 561). Critical information literacy praxis specific to business (Stonebraker et al., 2017), criminology (Stockdale et al., 2022), music history and music (Conor, 2019; Wells et al., 2022) and STEM (del Junco, 2024; Storksdieck, 2016) have been explored. Undertaking a study that interviewed academic researchers concerning possibilities for critical information literacy in decolonising the university, Marsh found that CIL holds potential to '*facilitate positionality, practice relationality and consider transitionality*,' including, '*scaffolding a decolonising approach to learners' navigation of information and processes of knowing*' (2022, p. 4). Notably, the

aforementioned works all represent higher education contexts. Only two publications concerning teaching practices in other settings were located, which are on the topics of encouraging public library workers to adopt CIL pedagogy in their work with people who are incarcerated (Hancock, 2021) and critical public librarianship, especially as it relates to library collections (Garrett, 2020).

Responding to contemporary politics and technologies

CIL offers a means to respond to political changes and technological developments, and to not only raise such issues for discussion but to critically question and challenge them. A considerable number of researchers have considered CIL in relation to its potential for responding to societal challenges such as combating disinformation, contending with *post-truth* ideologies and supporting democratic ideals, as well as those which are more technological in nature. While critical information literacy itself is far too marginal to make a dent in larger forces shaping society, the aspirational goals of CIL are present in many works within this theme.

Concerning the subtheme of Disinformation, post-truth and democracy, CIL has been proposed as an effective means of teaching how to evaluate online sources, especially the proliferation of *fake news* and mis- and disinformation (Brisola and Doyle, 2019; Cooke, 2018; O'Hara, 2024; Rajić, 2022; Wendt et al., 2024). Other authors call upon library and information science workers to take up '*information activism*' to respond to hate speech and disinformation (Cuevas-Cerveró et al. 2023; Martínez-Ávila and Cuevas-Cerveró, 2022); to adopt '*revolutionary information literacy*' as a way to contend with capitalist systems that promote disinformation (LaDue, 2024); suggest reading clubs that use a CIL foundation to counter the post-truth era (Zubac, 2023); and propose CIL as a teaching strategy uniquely suited to education in a post-pandemic era, both for university students and for lessening the digital divide (Liao and Tian, 2022; Figueiredo and Borges, 2021). CIL's role in supporting civic engagement and democracy more broadly has been explored by researchers from theoretical and civic engagement standpoints (Bonnet et al., 2019; Lawal, 2019; Polizzi, 2020). Most notably, Esmail (2023) surveys the struggle for control over the contemporary information environment, including attacks on libraries that include book bans, censorship challenges and targeted harassment campaigns and how critical information literacy can be used to spur collective action; while Bezerra and Schneider's (2022) edited volume *Critical information literacy: theory, consciousness and praxis* collects leading work on critical information literacy research and practice in Brazil.

The second subtheme is Emerging technology, which authors view from a variety of perspectives. Researchers have applied CIL concepts to new technologies and ways of finding and creating information, including algorithmic culture and increased reliance on algorithms, especially as related to awareness and agency (Haider and Sundin, 2021; Lloyd, 2019); data visualisation and time-based bias and politics (Johansson and Steglund, 2021); the massive growth in data and data infrastructure (Špiranec, 2019); participatory web environments (Špiranec, 2016); creating a training programme for European librarians to address emerging digital challenges (García-Quismondo, 2024); and, most recently, generative artificial intelligence applications (Wang et al., 2024). In the future one can expect a great deal more work on generative AI, given the serious ethical and environmental concerns its usage poses.

Critiquing critical information literacy

Critique of CIL itself represents a fourth thematic area. It is no coincidence that larger systems of domination are present within and reified by critical information literacy, since CIL research has remained a largely white and North American endeavour. As such, it is perhaps not surprising that while racism and cultural imperialism should be major concerns of CIL, they remain underdiscussed and largely unattended to. This preserves the existing power relations that in principle CIL seeks to disrupt, and some authors have taken to interrogating CIL's contradictions and shortcomings across various lines.

CIL has always recognised the importance of critique as applied to libraries and information systems, but it took over fifteen years for considerable critique of CIL itself to emerge. Leung and López-McKnight (2020) have remarked upon CIL's inattention to racialised oppression and white supremacy, which have been strikingly underexplored in its theory and practice. Other critiques oriented towards critical librarianship and CIL were published in the same special journal issue reflecting on the volume *Critical library instruction: theories and methods* (2010), including Feretti's (2020) consideration of critical library work's failings when extended past the classroom into the workplace and one's relationships with colleagues, and Seale's (2020) identification of the institutionalisation of critical librarianship and the management of critique that comes with widespread acceptance, leading to depoliticisation. Relatedly, Tanus (2022) explores the '*social institutionalisation*' of progressive and critical librarianship based upon the existing literature.

A special issue on critical information literacy in the *Journal of Information Literacy* includes a reflection from the editors which acknowledges a lack of focus on race as well as an authorship predominantly representing North America and the UK, which are substantial issues present in CIL at large (Smith and Hicks, 2023). Other critiques of CIL include a lack of engagement with racism and critical race theory (Haigh, 2024; Pashia, 2021); underrepresentation of working-class knowledge and information experiences (Flynn et al., 2023); that social justice-oriented teaching can become hypocritical when content and teaching methods are not aligned and lacks critical self-reflection (Vong, 2024); and that pushback from academic faculty, other librarians or administration and students posed threats to implementing CIL in classroom practice (Williams and Kamper, 2023). Further examinations of labour, power and critical library pedagogy have been undertaken by Mirza et al. (2023), who identify CIL discourses of agency and empowerment to be inadvertently emphasising individualism instead of collective action, and argue that the recognition of library labour is a key component of any meaningful pedagogy.

Critical information literacy issues and failings

This review of the literature reveals several prominent interests in CIL research, but what and who is underrepresented or absent from the literature altogether is just as important to consider. CIL currently lacks attention to essential topics, including race and labour. CIL's lack of focus on race and white supremacy is particularly troubling given library and information science's history and demographics, while inadequate recognition of labour and working conditions as a fundamental aspect of information literacy is another failing. Additionally, the CIL literature consists of a primarily North America-centric representation and thereby is largely informed by western ways of knowing and engaging with information, as well as a focus on and within higher education settings that greatly limits the possibilities for CIL theory and practice. These concerns have been voiced in the literature and are explored below.

Race

Racism and white supremacy animate the foundations and ongoing practices of libraries and dominant information systems across the Global North, which makes the absence of attention to race in the CIL literature troubling. This failing is especially concerning in a field that in North America is predominantly white and must reckon with its past and present complicity in upholding systems of racialised oppression (Espinal et al., 2018). As Ferretti observes:

> *libraries, like academia, are historically white serving, have been complicit in the white racial project of the United States during the 19th century, and perpetuate the racial inequity in the field today through mechanisms such as unpaid labor* (2020, p. 142).

The lack of presence of race in CIL discussions is highly problematic because it signifies such issues are not a primary concern and reinforces the underlying ideologies of white supremacy. Another question is what impact would be made if CIL researchers did in fact centre and confront racism as demanding urgency and action. While this would represent a necessary corrective in the

literature, without action it still lacks meaningful material changes. Leung and López-McKnight question such greater narratives of progress, noting that, '*progress in the profession is generally defined by a liberal marker of attainment that has no real, concrete impact in the lives of those most marginalized*' (2020, p. 14). Writing about critical librarianship in particular, the authors find that in ignoring white supremacy, critical librarianship '*mirror[s] the false promises of diversity and inclusion initiatives and advance the reification of White Supremacy*' (p. 16). To begin to engage with systems of oppression in information platforms and practices, CIL must meaningfully address white supremacy and legacies of racism in libraries and information literacy.

Labour

The CIL literature also largely fails to meaningfully discuss labour and the material conditions that shape one's engagement with information literacy, whether as a teacher, learner or both. Ferretti has pointed to this issue and in particular how critical pedagogy has led to changes in information literacy instruction, but has not made a dent in library workplaces, including how colleagues continue to uphold existing power relations (2020). In their exploration of labour and critical library instruction, Mirza et al. argue that critical library instruction's '*overemphasis on the agency and ability of an abstract charismatic teacher works instead to reinscribe neoliberal logics and white savior narratives in libraries, working against solidarity and collaboration*' (2023, p. 116). Assuming that library instructors already have agency within a classroom or other spheres greatly simplifies existing power relations, recklessly positions educators as '*already empowered*' and learners as requiring empowerment, and leads directly to the potential for white saviour assumptions and narratives (Mirza et al., 2023). cline and López-McKnight also identify this thread of individualism and question the end result of critical information literacy and information literacy more broadly, asking whether they are:

> *acculturating us to the oppressive, extractive, capitalist/colonial systems in which they are enmeshed – even if they are attentive to these structures or have an analysis of power – rather than dismantling them or fundamentally changing the world and how it is configured* (2024, p. 10).

An inattention to labour in the literature also represents a missed opportunity in making meaningful connections with learners as well as other workers. In identifying how to address the challenges that capitalism poses to CIL practice, Espinel and Tewell suggest that academic library workers focus on the information economy and scholarly communication systems in their teaching, but also '*identify shared issues within their workplaces to organize around and build coalitions outside libraries to transform what is possible for academic labor and student learning alike*' (2023, p. 573). These criticisms of CIL's shortcomings in changing the workplace, its centring of individualist and overly simplistic narratives of change, and lack of considering opportunities for building shared power among workers are significant and should be addressed moving forward.

Western-centric

The existing CIL literature is highly influenced by and often produced using viewpoints that prioritise western and Eurocentric perspectives. Lloyd draws attention to this issue by observing:

> *IL as it is currently presented is an anglicised concept which centralises power and the construction of authority within a western system, which by virtue accommodates a primarily western-informed view of what constitutes information and knowledge and methodologies which are authorised for teaching and learning* (2024, p. 25).

Lloyd offers that acknowledging and coming to terms with this western-dominant influence is, '*the first step to recognizing the bias in our entrenched approaches to IL*' (p. 25). Because such worldviews shape the past and present of information literacy research and theory, it is all the more important that additional perspectives, including recognising the fact that learners always bring with them

their own information literacy knowledge and practices, are actively involved in CIL theory and practice. Though the existing literature is steeped in western-centric views and mostly originates from the Global North, an increasing number of researchers from outside of North America are making substantive contributions to CIL conversations, especially those based in Brazil. Despite CIL presently lacking a robust knowledge base outside of western systems, it is an area that appears to be changing for the better.

As CIL grows increasingly examined and applied internationally it is important to remain attentive to the potentially imperialistic nature of *exporting* information literacy with lack of regard for context, as considered by Pilerot and Lindberg in their analysis of international policy documents concerning information literacy (2011). The reproduction and dissemination of western cultural imperialism would clearly be at odds with critical information literacy's intended aims, but such a risk is pronounced and requires reflection by CIL researchers internationally. A universal version of CIL does not and should not exist because it is a situated practice deeply dependent on time, place and the sociopolitical dynamics that shape who we are and the decisions we make.

Higher education focus

An overwhelming number of CIL researchers and practitioners are based in higher education. CIL has a more academic orientation than some other subfields of information literacy, which are in general more likely to consider information practices outside of academe and as they occur in informal learning settings. As a result, CIL currently lacks a more expansive view on information literacy's use and potential. In the review conducted, only two publications concerning teaching practices are not focused on higher education settings (Hancock, 2021; Garrett, 2020).

Writing about critical librarianship, Beilin argues that the association of critical library thought with academia '*carries certain risks, especially the danger that it will exclude many if not all librarians and LIS scholars outside academia who consider themselves 'critical' or committed to social justice*' (2018, p. 196). CIL would undoubtedly benefit from considering where and how it can be applied outside of academic settings, with particular attention towards its aims of social justice. In the same way that critical information literacy's western-centric perspectives are detrimental and limiting, a focus on and within higher education ignores the many ways that CIL can and does occur in informal learning, civic engagement, the workplace, digital information platforms and many other places and purposes.

Conclusion

Critical information literacy seeks to understand oppression as it occurs within and is perpetuated by libraries and information systems, and ultimately for library workers and learners to intervene in these systems to change them. This review and analysis of the literature indicates that the theory and practice of CIL continues to flourish and expand. CIL has sought to intervene in the dominant information literacy discourse, which is often inattentive to the sociopolitical dimensions of information's production and use. CIL practice often occurs through small-scale work efforts, making it difficult to discern what material impact, if any, CIL has had on teaching and learning in libraries. While CIL is often defined in opposition to mainstream information literacy concepts and practices, it has become integrated into this more dominant discourse in considerable ways (Seale, 2020). As the world faces developments such as the international rise of right-wing populism and technologies such as generative AI that pose ethical and environmental concerns, CIL itself cannot solve any widespread problems but it holds potential to meaningfully address them in teaching and learning settings, especially when a critical lens is applied to present-day information tools and environments (Pho and Tranfield, 2024; Zvyagintseva and Blechinger, 2023).

What are the next steps for critical information literacy? In addition to coming to terms with the issues and failings described above, drawing upon other relevant movements and contemporary theories would represent an important step. To actively work towards causes such as antiracism

and anti-sexism, those who research and practise CIL can learn from activist and social justice movements. While is a significant first step to surface CIL-related issues through scholarship and teaching, these efforts often lack the ability to move learning, workplaces and the field forward in larger ways (Leung, 2022). In this respect, learning the strategies of activists and what it takes to build movements can only benefit library and information workers. To effectively challenge that which is exploitative and unjust, it is essential to organise collectively and build shared power. As Beilin writes:

> *organizing and resisting the corporatizing and austerity measures of university administrations is a very concrete way to put theory into practice. The struggles for fair contracts and against lockouts and other actions against workers can mobilize critical librarianship into direct action for justice and democracy* (2018, pp. 205-206).

Finally, it is worthwhile to recognise that CIL should be considered as not static and unchanging, but instead, '*a dynamic concept that evolves by accounting for sociopolitical realities*' (Šobota, 2024, p. 38). After all, cline and López-McKnight ask, what is the use of critical information literacy, or any literacies, if they do not support and facilitate:

> *the development of critical consciousness, the formation and maintenance of collectivism and solidarity, and the larger abolitionist project of dismantling oppressive systems and institutions that regulate information, and creating new forms of information that are liberatory and communal*? (2024, p. 10).

Critical information literacy is necessarily an ongoing work in progress, and in its current formations too often reinforces the very systems of racism and eurocentrism it must seek to interrupt. Looking forward, by drawing upon the research done to explore CIL and expand our understandings of information – including whether it is even possible to move information literacy towards a more liberatory future – the best chance for meaningful CIL theory and practice is to take up this work together.

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Information practice and information behaviour: on the need for conceptual and theoretical clarity

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Abstract

Introduction. Literature on people's dealings with information sometimes suggests that the concepts of information behaviour and information practice are interchangeable. These concepts are often used without theoretical underpinning. This contribution presents an in-depth examination of the concept of information practice in relation to theoretical contributions within the information behaviour literature.

Method. This conceptual paper critically examines the theoretical foundations of two central concepts by exploring existing information research and literature on social science theory. It aims to unpack the intellectual roots from which these concepts have emerged.

Analysis. Based on an established distinction between theories of action and theories of practice, a fine-grained comparison of theoretical differences between information behaviour and information practice research is presented.

Results. Contributions based on the concept of information behaviour are anthropocentric in nature, psychologically oriented, and portray dealings with information as planned behaviour grounded in individual choice. The information practice literature leans towards a posthumanist perspective through its focus on materiality and distributed agency.

Conclusion. Theories and concepts are ambiguous phenomena that can be imbued with different meanings by different authors. This does not necessarily pose a problem if authors strive to clearly explain their theoretical premises and what they mean by the central concepts they use.

Introduction

In the subfield of information studies that focuses on people's interaction with information, there has long been a discussion about which key concept is best suited for conducting and presenting such studies. The debate primarily concerns the established concept of *information behaviour* and the less widespread but increasingly adopted concept of *information practices*. There have also been other conceptual initiatives, such as the proposal to introduce *information experience* as a key concept (e.g. Bruce, 2014). In this contribution we focus on the concept of information practices, but discuss it alongside information behaviour.

More than 15 years have passed since Savolainen (2007) published his influential article on information behaviour and information practices as umbrella concepts within information seeking studies. About the same amount of time has passed since the then well-known debate between Tom Wilson and Reijo Savolainen, where they, along with a few other debaters, examined and discussed the two concepts (The behaviour/practice debate, 2009). Recently, an extensive review of information behaviour research (Huvila and Gorichanaz, 2024) covering the period between 2016 and 2022 was published. The review conveys to readers that, while some authors prefer to employ the concept of information practice, such contributions can nonetheless be incorporated into the literature on information behaviour, effectively treating them as a natural subcategory within the broader framework established by the concept of information behaviour. This is a standpoint akin to the one taken in Wilson's (2013) edited volume on theory in information behaviour research. In that work, practice theory, along with several other theories, is positioned as one among many under the broader category of theory in information behaviour research. However, Given et al. (2023), in their review of the literature, state that works drawing on practice theories '*account for the strongest recent growth in citation among information behavior investigators*' (p. 134).

In the discussion this contribution engages with, there is no shortage of literature that seems to dismiss the concept of information practice in a seemingly disparaging way. Often, this dismissal involves presenting the concept as merely a semantic preference rather than a theoretically considered choice. It has for example been claimed that the practice proponents aim to '*re-christen*' (Gorichanaz, 2018, n.p.) the field of information behaviour to information practice, as if it were simply a matter of a name change. Another example is the tendency to regard practice theories and other emerging theoretical orientations as '*the latest fashion in theoretical frameworks*' (Julien and Williamson, 2011, n.p.), as though serious theoretical contributions to the literature were merely a matter of launching a new trend.

At the same time, we believe we see in the literature an expansion of precisely this phenomenon – that is, authors substituting behaviour with practice as if the terms were interchangeable. We also see contributions where both terms appear together in a way that raises questions about the theoretical foundations of these two key concepts, for example when it is claimed that '*information practices […] [are] explore[d] […] through the lens of information behavior*' (Narayan et al., 2024, n.p.). This is a trend that makes Rouse's (2006) early reflections on the spread of the concept of practice within the social sciences at large seem justified: '*[p]erhaps the ubiquity of practice talk merely reflects current intellectual fashion with no substantial conceptual significance, or worse, an underlying theoretical confusion assimilating incompatible conceptions of social life under a superficially common term*' (Rouse 2006, p. 500). In a somewhat similar vein to Rouse's suspicion, Savolainen (2007, p. 109f) poses the rhetorical question whether '*researchers [have] reflected on the content and meaningful scope of the above concepts, or are they used in an unreflective manner?*'

We acknowledge that the scepticism expressed in the quoted texts may hold some relevance for the research we address in this paper. However, it is not our task to assess whether this is indeed the case. We are also not attempting to present the concept of information practice as a corrective to other theoretical frameworks (cf. Tuominen et al., 2002; Bates, 2002). Nor do we propose that practice should replace behaviour. Instead, in analogy with the literature in the field of conceptual

change – which argues that researchers '*must build new ideas in the context of old ones*' (diSessa, 2014, p. 88) – we seek to illuminate the concept of information practice and its theoretical underpinnings in relation to information behaviour.

In the years since Wilson and Savolainen initiated this debate, a few insightful contributions have been published that commendably unpack various information practice approaches (e.g. Huizing and Cavanagh, 2011; Cox, 2012; Pilerot et al., 2017). Nevertheless, we still lack an updated discussion on information practices and its theoretical foundation in relation to information behaviour. It is this white spot on the map that this contribution aims to illuminate.

The structure of the contribution is as follows: the next section addresses a selection of previous reviews, focusing on theory in the literature on information behaviour. To facilitate reasoning about the use of concepts, a brief discussion follows on how concepts can be applied at different levels. This is followed by a section that outlines various perspectives on what constitutes social science theory. Then, a relatively extensive section examines a set of practice-theoretical ideas for the study of interaction with information. In the concluding discussion, a comparative analysis is presented, highlighting overarching characteristics of the two approaches based on information practice and information behaviour.

On theory and theorising in the field of information behaviour

Even though the focus in this paper is on the sort of theorising that supports studies on information practice, we maintain this focus by recurringly relating it to the kind of theorising put forth by those who propose information behaviour as a key concept. There are numerous references to '*information behaviour theories*' and/or '*information science theories*' (VanScoy et al., 2022, n.p.) in the area of information behaviour.

Over the years, several reviews of the literature on information behaviour have been published, with one of the aims being to examine the use of theory within the research field (e.g. Vakkari, 2008; Julien et al., 2011; VanScoy et al., 2022). Although it is unclear in some of these contributions what is meant by *theory*, they collectively provide some interesting insights. Vakkari (2008, n.p.) has analysed and compared ISIC contributions from the 1996 and 2008 conferences and observes, among other things, that a '*current theoretical silence*' characterises the contributions to the 2008 conference. He is furthermore highlighting a trend towards descriptive studies focusing on what he refers to as an individual level, '*which leaves the social context of the information behaviour untouched*'. Among the very few theoretical approaches explicitly mentioned in Vakkari's (2008) paper are '*social constructivism and phenomenology, grounded theory, naturalistic paradigm and discourse analysis*'. One of his conclusions is that '*there is a declining trend of theoretical*' approaches. He also finds that '*central concepts used were often insufficiently defined*'.

Julien and her co-authors (2011, p. 20) have a broader scope in their review, both regarding the material analysed (749 articles published between 1999 and 2008) and the variables included in the analysis, of which '*theoretical frameworks used*' is one of eight. Nevertheless, they conclude that their results are consistent with Vakkari's (2008), '*which identified decreasing use of theory over time*' (Julien et al., 2011, p. 21).

The recent review by Huvila and Gorichanaz (2024), covering more than 1200 articles, concludes that '*the vast majority of the work published in information behavior is atheoretical*' (p. 14). It is therefore somewhat surprising to see the claim made by VanScoy and her co-authors (2022, n.p.), that most of the ISIC conference papers between 1996 and 2020 that they reviewed in search for theory usage (in total 243) '*include theory and more than half of them use theory substantially*'. The differing conclusions in these reviews are likely due to the authors' varying interpretations of what constitutes *theory*.

However, by consulting one of the field's more influential publications one can gain an indication as to why theory appears to be a relatively prominent issue and why certain authors may claim that there is an abundance of information behaviour theories while others do not. In the volume *Theories of information behavior* (Fisher et al., 2005), the table of contents has a main heading reading '*The theories*', after which a long list of *theories* follows. However, what we see here is a clear illustration of our suspicion that it seems widespread in information behaviour research to confuse models with theories. Among the *theories* listed in *Theories of information behavior* we find, for example, '*Berrypicking*', which Bates (1989, p. 407), the originator of the concept, describes as '*a new model of searching*'. Moreover, we find – according to the headings in the book's table of contents – '*Ellis's Model of Information-Seeking Behavior*' as well as '*Krikelas's Model of Information Seeking*', and many more models presented as theories. And this is not a one-off. Papers continue to be published where models are confused with theories (e.g. Million et al., 2023). Another striking example of how models are confused with theories is offered by the previously mentioned paper by VanScoy and co-authors (2022). In their review of theory usage in empirical research in ISIC conference papers, between 1996 and 2020, models are consistently described as theories. However, '*a model is not the same as a theory [even if it] can be employed as a form to represent a theory. A model simply represents an object or process so as to highlight its key components and their connections*' (Shoemaker et al., p. 13).

Although, as we will explore below, the literature on information behaviour has evolved through various phases, it seems that a lingering dominant trait persists – particularly regarding the numerous models focusing on individuals' information seeking. This trait appears to stem from the so-called cognitive or user-centred turn in the field. This is largely characterised by psychological approaches focusing on cognitive states, mental models and where information needs are viewed as internal phenomena. That this is the case is evident from, among other things, the fact that contributions by authors such as Belkin (e.g., 1980), Dervin (e.g., 1999), and Kuhlthau (e.g., 1991) continue to steadily generate citations within the field.

A different reading of the information behaviour literature, with regards to the treatment of theory than those presented above, is offered in another recently published literature review (Nicolini et al., 2023). Here, the authors note that '*[t]he arc of development in the literature on information behavior*' (p. 196) can be said to encompass four developmental phases. The first of these is labelled in the review as '*Information seeking: a systems-oriented view*'. According to the authors' analysis, the focus here is on information sources and systems and their use. However, this approach came to be criticised within the field, with the argument that it was perceived to ignore cognitive aspects and users' attributes.

In the next phase described by Nicolini and co-authors (2023), labelled with the term '*Information behavior*', a strong focus is placed on users' cognitive states and individual characteristics. At the core of this approach are individual needs and motivations, personal knowledge structures and actions. Prominent during this phase is also a sensemaking view, with attention directed towards how users make sense of and turn information into meaning. The criticism put forth of this phase is, in short, that needs and motivations cannot be observed and that the link between a certain need and how someone acts based on it remains unclear. Additionally, the perspective does not fully illuminate unintentional information behaviour and often results in simplified descriptions of complex phenomena.

In a third phase, named '*Social perspective on information behavior*', the emphasis is on how information should be viewed as constructed and reconstructed in social contexts rather than as some kind of objective, independent entity. Here, the focus is on how social relationships affect and shape people's ways of interacting with information in various networks and small worlds. The criticism of this perspective highlights that information behaviour still appears as a separate activity, and information takes the form of some quasi-substance that moves among people, while

the material aspects of information are overlooked due to an overly strong focus on the discursive dimension of the study object.

According to Nicolini and co-authors (2023), the fourth phase, finally, described under the title '*Information practices and information work*', can be traced to practice-theory-oriented researchers in the field who emphasise that information practices must necessarily be seen as embedded in broader work or life practices. The focus here is thus no longer on needs and preferences but on socially and materially sustained (information) practices and their people.

Conceptual use on three levels

On an analytical level, concepts can be viewed as useful on at least three different levels (cf. Pilerot, 2016). Both information behaviour and information practices function as a kind of label used to name a particular area of interest and the activities occurring within that area. This is how we refer to the field within information studies that focuses on people's interaction with information as the research field of information behaviour (or information practices); as expressed by Fisher and Julien (2009, p. 317) in an earlier review: it is '*a broad field that in its widest interpretation includes just about any paper that deals with information and people*'. Using the concept as a label, we are referring to the research conducted in that field, the conferences organised, the literature produced and, in general, the ideas and discussions that relate to the area.

When the concept is used empirically, however, the focus is more specifically on the activities being studied – that is, how people in different contexts seek and use information; in short, what is done, and what is said in relation to people's interaction with information and where and through which means these interactions take place.

On a third level, concepts are used to analyse or theorise about a particular occurrence or phenomenon. The use of concepts at this third level must necessarily be grounded in a more or less elaborate set of starting points and assumptions about what is being studied. In other words: we argue that if we claim to use a concept theoretically, we must also show how it is grounded in the theory we are working from.

To this discussion of concepts and the suggestion that concepts can be understood and used on three different levels, it must, of course, be added that we are making an analytical argument. In practice, the three levels are intimately connected and overlap. Emphasising the theoretical function of a concept presupposes having a clear understanding of the concept when used for empirical purposes, since the empirical object is the subject of analysis and theorisation.

On theory

Fully explaining what theory entails is obviously not possible within the scope of this contribution, even if we limit ourselves to social science theory, as we do here. A commonly accepted view is to categorise theories into three groups based on their scale and the scope of their contributions.

Grand theories, such as functionalism (e.g. Parsons, 1991) and structuralism, are broad, overarching frameworks that aim to explain large-scale social phenomena or human behaviour as a whole, whereas micro theories such as symbolic interactionism (e.g. Mead, 1972) or ethnomethodology (e.g. Garfinkel, 1984), broadly speaking, focus on interpersonal relationships and group dynamics. Middle-range theories, finally, fall between these two approaches. In the words of Merton (1949, p. 48), they '*deal with delimited aspects of social phenomena, as is indicated by their labels*'. In Wilson's (2013) volume on theories for information behaviour research, the included theories are referred to as middle-range theories.

To shed light on practice theory's stance toward what is studied, this type of categorisation of theoretical perspectives can also be applied to their respective approaches to dualisms, such as structure and agency, individual and collective, or part and whole. Using Layder's (2006)

framework, we can identify the following three positions: 1) *a view-from-on-high*, which roughly corresponds to the previously mentioned macro perspective and regards overarching structures and systems as the primary unit of analysis; 2) *a where-the-action-is* perspective, which, similar to a micro perspective, focuses on activities and interactions; and 3) *a breaking-free-and-burning-bridges* perspective, characterised by an ambition to simply avoid dualisms of this kind altogether. The latter camp includes authors such as Foucault, Giddens, Bourdieu and Schatzki. This stance is also emphasised by most practice theorists, regardless of their specific orientation (e.g., Shove et al., 2012; Feldman and Orlikowski, 2011; Schatzki, 2012). As Schatzki (2012, p. 2) puts it, practice approaches '*counter the subject-object split that defined much philosophical thought in the modern era*'. Instead, they aim to '*steer a path between individualism and societism*' (Schatzki, 2005, p. 469).

According to a classical understanding of theory, which has its origin in philosophy, social theory can be regarded as a system '*with unambiguous definitions, premises, and [where] conceptual conclusions has been established*'; that is, a system that '*claims to have the widest possible scope of applicability [and which] forms a unified whole and is self-contained*' (Reckwitz and Rosa, 2023, p. 23). Practice theory, however, which repeatedly is presented by its proponents not as a unified theory but rather a family of theories (e.g. Nicolini, 2012) should not be seen as such a system. Instead, practice theories can, in Reckwitz' (Reckwitz and Rosa, 2023, p. 25) words, be understood as a tool that forms a '*conceptual network*', which '*can evolve in multiple and unpredictable ways*'. As he concludes: '*One can embrace certain aspects of the old while turning away from others. In this way, theory thus takes on the form of a bricolage of concepts to be tinkered with*' (Reckwitz and Rosa, 2023, p. 25). This is a stance towards theory that in many ways resembles the ideas put forth in a now classic and highly cited contribution to the literature on social theory. In his paper, DiMaggio (1995) presents several aspects of what constitute '*good theory*'. It can, for example, be seen as a '*surprise machine*' – a device helping the theorist to see the unexpected – which he describes as '*a set of categories and domain assumptions aimed at clearing away conventional notions to make room for artful and exiting insights*' (p. 391). In line with the previously mentioned network model, it is also stressed that there must be room for theoretical hybrids developed intuitively in interaction with the empirical data. Even though some sort of focus in theorising is reasonable to strive for, theory must also be open to a certain aspect of '*multidimensionality*'; namely '*the extent to which theory includes reference to agency, culture, structure, and several other abstract categories in its rhetoric*' (DiMaggio, 1995, p. 393). Finally, regarding DiMaggio's reasoning on social theory, we should also be open to the idea that theory is '*created by its readers as well as its writers – it is then recreated by the authors who employ it*' (p. 394).

Practice theory for the study of people's interaction with information

Against this background, where social theory is depicted as a conceptual network, a bricolage of concepts to be tinkered with, which admittedly renders it a rather fluid character, one could perhaps question whether there is any unifying core at all in practice theories. However, even though suggestions regarding what constitutes a practice vary, it stands clear that they expose common denominators. Among the most prominent theorists are Reckwitz (2002) and Schatzki (2002). Reckwitz (2002, p. 250) posits that a practice is a '*routinized way in which bodies are moved, objects are handled, subjects are treated, things are described and the world is understood*'. For his part, Schatzki (2002, p. 87) proposes it to be '*a temporally evolving, open-ended set of doings and sayings linked by practical understandings, rules, teleo-affective structure and general understandings*'. In the information studies literature, it has been claimed that a practice can be understood as '*a set of interrelated, routinized actions (including linguistic statements); more or less established and shared ways of understanding the world; more or less pronounced rules ('one must…'), norms ('one should…') and conventions ('one usually…'); as well as the material objects people interact with, including the places they are located in*' (Pilerot and Lindberg, 2017, p. 256). At their core, all these suggestions about what constitutes a practice highlight, albeit with different degrees of emphasis, routinised activities, shared understandings and material objects.

In the following paragraphs, we are taking our departure in a claim made in previous research (Pilerot et al., 2017) that there is a set of prominent tenets that hold together the family of practice theories. Apart from avoiding dualisms and viewing the notion of practice as an ontological and epistemological base unit, practice theorists, to start with, tend to conceive of practices as *sets of activities* that are *socially recognised and named*, comprising both *individual and collective agency*, and that *embrace bodies and materiality*. It is moreover highlighted that practices are *oriented towards ends*, situated in *time and space*, and that they comprise *inconsistencies and tensions*.

To unpack the specific notion of *information* practice, and to illustrate the claim about prominent tenets made in previous research, we are referring to yet another suggestion for how to conceptualise a practice.

Any odd set of activities cannot be regarded as a practice before it has been established as such. In line with Shove and co-authors (2012), one can employ an understanding of the concept of practice as including three key elements. These interconnected elements, which together constitute a practice, include *material* components (such as physical objects like various tools for information interaction and their attributes, the spaces where information is sought and utilised, and the body itself); *competence* (encompassing forms of understanding and practical knowledge related to information and its associated activities); and *meaning* (the socially constructed, collectively agreed-upon, and symbolically significant aspects attributed to the enactment of information practices and related activities).

By conceptualising dealings with information as a practice in this way, not only the information technologies (in their widest sense) and the body, but also places and infrastructures, constitute examples of the material element. This is linked to the two other elements: the competence in knowing how to engage (or not) with information, like assessing credibility, and the meaning in the form of the significance attributed to information and its related activities (and technologies), for example related to claims about the importance of information literacy. According to such a view, information practices are performed not only by individuals but are also sociomaterially and societally positioned. When elements, over time, become linked in new or different ways, and when these new constellations eventually get recognised and named, practices evolve or change. A perhaps banal but illustrative example of how an information practice evolves is the recognition in the early 1990s of a new mode of information search and seeking that became named *surfing the Internet* (For the origin of this phrase, see https://en.wikipedia.org/wiki/Jean_Armour_Polly). This is an example of how an established practice of information seeking, albeit previously named differently and enacted through a different constellation of material objects, took shape through changes in technologies and infrastructure. In the light of algorithm-driven and AI-assisted information search, the expression surfing the Internet appears distinctly outdated. However, this example highlights how materiality (in concert with other agents, such as people) contributes to shape and transform, or give rise to new, information practices.

Even though it perhaps already has been made clear, it should be highlighted that activities (as a cornerstone of the constitution of practices) also include discursive activity, which is evident from a recurrent phrase in the practice idiom, namely '*doings and sayings*' (Schatzki, 2002, p. 87). Coining a phrase such as surfing the Internet is not necessarily a prominent feature of an information practice, but it is clearly part of the practice of surfing the Internet.

Returning to a few more of the previously mentioned prominent tenets in the practice theory literature identified by Pilerot and co-authors (2017), it should be highlighted that as practices emerge and evolve, and if they seem meaningful to others than those that already practice, they become picked up by other practitioners who, in Shove and Pantzar's words (2007, p. 164) become '*carriers of practice*'. In this sense, we can say that practices are *(re)productive of the sociomaterial* – of ways of interaction with people and material objects – and, even though they gradually change,

contribute to sustain trajectories between past and future. An information practice, like seeking for information, that once was enacted using, for example, a card catalogue in a library has in this way, through changes in material, competence and meaning, transformed into a practice that some refer to as surfing the Internet. And it is not only a matter of a transformed practice, but there is also certain expectations and assumptions connected to practices, which implies that practices are *generative of rules and norms*, such as ideas about the right (or wrong) ways of interacting with information.

To once again bring the reasoning about information practice into relation with information behaviour, there is a useful distinction for discussing the overarching difference between the two orientations. Gherardi (2009) draws on Cohen's (1996) suggestion that one can distinguish between *theories of action* and *theories of practice*. In line with the gist of information behaviour theorising, as it emerges from our overview, the former emphasise the intentionality of actors and stress the importance of scrutinising subjects and their meaning making, whereas the latter concentrate on how practice is enacted or performed. Cohen (1996, p. 74) posits that regardless of theoretical orientation, '*[t]he theoretical trick is to locate the source of the patterns we want to find*'. It is here, we argue, that the fundamental difference between information behaviour theorising and information practice theorising lies. Gherardi (2009, p. 115) summarises this line of reasoning like this:

> *[T]heories of practice assume an ecological model in which agency is distributed between humans and non-humans and in which the relationality between the social world and materiality can be subjected to inquiry. While theories of action start from individuals and from their intentionality in pursuing courses of action, theories of practice view actions as 'taking place' or 'happening', as being performed through a network of connections-in-action, as life-world and dwelling.*

Already from the above quotation it can be discerned that the two theoretical orientations take on different perspectives. In Cohen's (1996, p. 74) words, their respective attempts '*to locate the source of the patterns*' they are looking for clearly take different forms. In the concluding discussion we delve deeper into what characterises the respective orientations.

Concluding discussion: characterising theories of information practice and theories of information behaviour

Already in the behaviour/practice debate (2009, n.p.), Savolainen emphasised the importance of clarifying '*the meaning of key concepts*'. He urged us to '*continue the analysis of conceptual issues by scrutinizing how information behaviour and information practice are related […]*'. We agree with this, but must conclude, building on the above reasoning around concepts and theories, that the concept of information behaviour, even though widespread and deeply established in information studies, mainly is used not as a theoretical concept but as a label denoting a research field. Working with concepts that can potentially be used on different levels, without clear signals to the reader, has the consequence that the concept in question is left too open. It thus becomes polysemic and generates distracting interpretive possibilities. If an author fails to clarify the meanings of the concepts they use, their presentation is often perceived as atheoretical.

Notwithstanding this confusion, there are of course explicit theoretical groundings in several of the approaches associated with the kind of research that presents itself as information behaviour research. We have already touched upon a few pertinent examples through our references to what must still be considered key works in the information behaviour literature (by e.g. Belkin, Dervin and Kuhlthau). It has been pointed out before (Cox, 2012, p. 184) that '*the field [of information behaviour] is not very sociological*', which was already highlighted by Savolainen in the aforementioned debate. There he asserts that '*[b]ehaviour draws more strongly on the tradition of*

psychology (or social psychology) while the conceptualizations of practice draw more on sociology (Bourdieu, Giddens) and social philosophy (Schutz, Schatzki, Wittgenstein)' (The behaviour/practice debate, 2009, n.p.). Since this observation, much has happened. Not least, the practice-theoretical approach has evolved toward a broader adoption of posthumanist ideas (e.g. Cozza and Gherardi, 2023), which, among other things, emphasise the futility of separating the material from the social and, as a result, agency distributed across humans and material objects. If one attempts, schematically on an overview level and based on theoretical starting points, to describe the main differences as reflected by the two key concepts between how the two orientations approach their study objects, this effort may result in the arrangement presented in Table 1.

Information behaviour	Information practice
Anthropocentric	Posthumanist
Individuals	Individuals, groups, material objects – in concert
Psychological	Sociomaterial
Cognition	Materiality and bodies
Thinking, doing	Actions, habits, routines
External conditions in change	Internal dynamics in change
Planned behaviour, rationality, individual choice	Spontaneity, social, coincidence, shared
Deterministic	Generative, reproductive
Structure, discrete events	Motion, flow, flux

Table 1. Comparison of theoretical differences between Information behaviour and Information practice research.

The presentation in Table 1 is the result of an overarching analysis aimed at illustrating the most prominent distinctions between the two orientations as pedagogically as possible. We do not argue that the distinct differences we wish to highlight are always as discernible as they appear in a schematic representation of this kind. However, it is not unreasonable to observe, in a comparison, that the information behaviour camp adopts what could be described as an anthropocentric position, with its strong analytical focus on human thinking and actions. On the same grounds, it seems reasonable to describe the information practice camp, with its emphasis on distributed agency and its focus on materiality – often inseparable from the social – as posthumanist in orientation (though this cannot be said of all practice-theoretical approaches). Rather than focusing on individuals' thinking, experiences and actions, this orientation uses practices as its unit of analysis.

As noted in our review of previous overviews of theory usage in the information behaviour literature, the field is characterised by its extensive use of psychologically oriented approaches. In contrast, the information practices literature increasingly emphasises the necessity of focusing attention on sociomaterial configurations – thus, individuals, groups and material objects acting in concert. In this vein, we also observe a distinction between the emphasis on cognition in the information behaviour camp and the tendency of information practice proponents to engage more with matters concerning materiality and embodiment. Another trait in the information practice theorising is its accentuation of habits and routines portrayed as doings in motion and flux. That differs from the information behaviour proponents' focus on modelling individuals' actions as discrete events according to a certain structure, which not least is reflected in their propensity to produce models. These models give an impression of planned information behaviour grounded in rationality and individual choice, whereas the information practices literature seeks to avoid modelling and instead try to capture through thick descriptions the coincidences and spontaneity of practices as something that happens in a shared and social space among carriers of practice.

This latter point also relates to the differences regarding views on how change comes into place, where the information behaviour camp seems to place more importance on external factors, and the information practices proponents view change as emanating from within practices. Rather than to some sort of causality, practice theorising locates change, as we have seen in the example based on Shove and her co-authors (2012), in the reproductive and generative character of practice.

The present study suggests that the key concepts within the field generally referred to as information behaviour are, to a significant extent, used '*in an unreflective manner*', to borrow Savolainen's (2007, p. 110) words. The practice-theoretical turn within information studies has occurred relatively recently – around 2007 (Pilerot et al., 2017). Those aiming to introduce a new concept along with its supporting theoretical underpinnings probably experience a greater obligation to articulate their theoretical foundations compared to those who have been part of the field longer and can rely on a kind of implicit consensus about what the central concepts mean. Theories, models and concepts are inevitably ambiguous phenomena that can thus be understood and imbued with different meanings by different authors. However, this does not necessarily pose a problem as long as we strive to clearly explain our theoretical premises and what we mean by the central concepts we use.

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The implied information 'actor' – revisiting models of information behaviour through a Meta-Ethnographic approach

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Abstract

Introduction. Information use and non-use have often been treated as two unequal concepts favoring information discovery, though information may not always be 'good' and wanted. Through a new methodological approach, this paper investigates explicit and implicit notions of the human information actor in five models of information behaviour (IB).

Methods. The meta-ethnographic methodology by Noblit and Hare was employed in a new way to strengthen the systematic and inductive analysis of 'meanings' inherent in the five IB-models.

Analysis. Each model was systematically examined according to the seven meta-ethnographic phases and in an ongoing 'dialogue' between the model, prior writings about the model and a conceptual framework of information engagement, including information avoidance exemplifying non-use of information.

Findings. The implied actor emerging from the models (still) appeared to be driven by a need to discover, seek, find and use information to solve a problematic situation, hence, positioned as an active or passive information seeker. The outcome and the methodological potentials, barriers and limitations are discussed guiding further research.

Conclusion. The study suggests a new analytical approach to IB research fostering deeper insight into tacit and underlying notions of information behaviour affecting how we understand, study and support humans' engagement with information.

Introduction

Already in 2011, Ronald E. Day proclaimed the death of the 'user' in Library and Information Science (LIS) and the need for a new understanding of the human actors engaging with information. Since the 'user turn' in LIS promoting information access, the need *for* information has changed (Julien et al., 2018). To many, non-seeking or non-use of information, here in terms of information avoidance (IA), has become a common strategy to cope with daily life (Hicks et al., 2025). That said, information use and non-use have often been treated as two unequal concepts of information behaviour (IB) favoring information discovery despite information may not always be 'good' and wanted. This imbalance in IB research was already demonstrated by Houston (2011, p. 364) finding that less than 1% of the preceding 60 years of information science publications addressed information non-use. The same observation was made by Julien et al. (2018) in their review of user constructions identified in proceedings from the Information Seeking in Context Conference (ISIC) between 1996 and 2016. With few exceptions, the information behavior literature only contains little discussion of the non-users. Even in prior visions of future IB-research the focus is (still) expected to be on how people search *for* and *use* information (Wilson, 2008, p. 463). This vision has recently been confirmed in a review of trends in IB research between 2016-2022 (Huvila & Gorichanaz, 2025). According to the authors, '*…today's information behaviour literature still has features that harken back to the field's historical roots, such as a plurality of articles that focus on information seeking…*' (2025, p. 227). The dominant focus on information seeking and use of information is also reflected in views of the human information 'actor'. Besides being an information seeker, the information user has often been taken for granted in IB research, e.g., implying an individual without a social context (Byström, 1999), or by sparse participant descriptions (Julien et al., 2018). In his critical analysis of the 'information user', Olsson (2016) identified a tacit system-oriented focus in many IB models deriving from a narrow conceptualization of information seeking behavior. He then called for a more holistic approach to understanding the complex relationship between people, information and context. The way IB scholars describe, conceptualize and construct their participants and human information actors, e.g. in models of information behaviour, has important implications for how we design information studies and perceive and understand peoples' information related behavior in research and practice (Julien et al., 2018). An example of the latter is found in Miksa (2009, p. 345) which discussed the effects of the vague conceptualization of the 'mysterious' information user among information professionals.

As this short introduction highlights, conceptualizations of information actors in IB research are often difficult to discern, yet impactful for research and practice. There is a need for a broader view of human information engagement involving also behaviour of non-use and disengagement. For example, what implicit/explicit notions of the human information actor can be identified in existing models of information behaviour when looking through an information avoidance lens. This research question has guided the theoretical analysis presented in this paper. Five general IB models were analyzed based on the meta-ethnographic methodology (Noblit & Hare, 1988) originally aimed at theory development. By using this methodology in a new way for analyzing IB models, the aim was to examine notions of the human information actor while ensuring a systematic, transparent and consistent approach to 'look' (also) for information avoidance in conceptual models of IB. The analysis was further guided by two research questions:

RQ1. How is the human information actor conceptualized in models of information behaviour?

RQ2. How can a Meta-Ethnographic methodology approach contribute insights into notions of the human information actor in IB models, if at all?

In this way, the aim of the study was to contribute insights, reflections and suggestions for further research mitigating the imbalance in IB research favoring information discovery.

The paper is structured in six parts starting with a theoretical background introducing the key concepts informing the analysis. The methodology of the meta-ethnography approach is presented including how it has been adapted to the analysis of the five selected IB models. The 'meanings' elicited from the analysis are presented and discussed, followed by a section on the limitations of the study and suggestions for further research. The conclusion presents the outcome and reflections of the study and the potential of the Meta-Ethnographic approach for future studies.

Background

This section presents the theoretical background framing the analysis of the IB-models.

The implied actor

As already indicated, the term *user* represents a limited view of human information engagement. People not only *use* information, systems, libraries etc. but may also need to disengage from information at particular moments in time and space. Users are also more than traditional and/or invented categories (Dervin, 1989). According to Day (2011) the user or the preferable 'subject' does not exist per se. Rather, the human subject is constructed and *only* exists in his/her/their relation to some objects, co- determined by social, cultural and physical affordances. Other researchers have suggested using broader and more powerful terms like *actors* (Day, 2011; Dervin, 1989; Tabak, 2014), *doers* (Byström, 1999) and *agents* (Day, 2011), all stressing individuals' agency. A similar variation in terminology and viewpoints is reflected in the naming of participants and their accompanying role in studies as users, participants, subjects or partners (Julien et al., 2018; Nesset et al., 2024). In this paper we use the human information actor and introduce the concept of the 'implied information actor'. It is a theoretical construct inspired by Lars Ulriksen's (2009) idea of the 'implied student' that tacitly exists in study structures and practices, forming the student's academic identity. His thinking originates from Wolfgang Iser's (1974) idea of the 'implied reader' being inherent in the text just waiting for an agent (reader) to do something with the text before meaning can emerge. Likewise, we argue that an *implied information actor* is inherent in the structures and design of IB-models just waiting for a reader (e.g., a researcher, teacher, student) to interact with the model to emerge. As such, the models do not determine a specific information behaviour; rather they provide a set of frames for what is possible and a legitimate and comprehensible way of engaging with information. The idea of the 'implied information actor' adds to recent employment of Ulriksen's theoretical construct (Hyldegård & Jensen, 2023; Nicolaisen & Achiam, 2020).

Models of information behaviour

Many models exist in information science offering an overview and a framework for thinking about information behaviour. They differ in type, purpose and complexity, but all 'mirror' the author's conceptualization expressing either '*…actual or theoretical relationships, or ideal processes of interaction with information.*' (Wilson, 2017, p. 2087). Despite their heuristic advantages, they may also oversimplify processes, leading people to over generalize without realizing the limitations of their tacit assumptions (Johnson, 2009, p. 595). Three types of models seem to dominate in information behaviour research: 1) purely descriptive models 2) process-oriented and flowchart-inspired models with arrows/feedback, and 3) explaining models, including theory and intervening variables (Wilson, 2017). With a broad perspective on information behaviour (IB) including any dynamics between use and non-use of information, the focus in this paper will be on the process-oriented and explaining type of models. Inspired by Greifeneder and Schlebbe's (2022) general and newcomer-oriented IB-model, we distinguish between information discovery (use) and information avoidance (non-use) when exploring the selected models of IB. The *use* of information refers here to 1) the information discovery process regarding both the active intentional and the accidental discovery of information (Wilson, 2022) and to 2) the specific use of the information discovered. The *non-use* of information refers here to the activities and processes related to

actively or passively avoiding and disengaging with information. The *implied information actor* is the one emerging from the analysis of *meanings* and views represented in the IB-models.

Information Avoidance

Already in 2001, Pettigrew et al. (2001, p. 68) pointed to the '*...rich insights [to] be obtained regarding such novel concepts as...the non-use of information or information blunting*'. That said, the interest in non-engaging information behaviour has only been sparse in the information science literature, and only rarely discussed (Case et al., 2005, p. 356). In a recent critical review of information avoidance in LIS literature (Hicks et al., 2025) three recurring characteristics were identified: 1) information is narrowly defined, 2) information avoidance is absent from models in LIS in contrast to other disciplines and 3) avoidance of information is depicted as 'failure' or even pathologic. Turning to other disciplines like communication, Donohew and Tipton (1973, p. 265) defined that '*...avoidance is something other than the failure to seek*'. In the field of psychology, Sweeny et al. (2010, p. 340) talked about information avoidance '*...as any behavior designed to prevent or delay the acquisition of available but potentially unwanted information*'. From a sociological perspective, Chatman (1996) asserted that people will avoid seeking information if it is not socially acceptable, or preventing one from becoming burdensome, indebted, or responsible for reciprocating any help that might be provided. Information avoidance (hereafter IA) is a rich and complex concept. IA can be hedonically or strategically driven (Golman et al., 2017), motivated by personal, physical, social, situational, emotional, cognitive and temporal factors (e.g., information overload, cognitive dissonance, uncertainty, groupthink, mis-/dis-information, privacy, and critical life transitions and crisis) (Case et al., 2005; Choo, 2017; Golman et al., 2017; Klaus, 2021; Lakshminarayanan et al., 2011; Sweeny et al. 2010; Hicks et al., 2025). Further, it can be manifested in many forms, both passively and actively (e.g., by ignoring, rejecting and delaying information or by self-guarding and selective exposure). It can also be practiced by different actors like individuals, groups and proxies (Houston, 2011; Lakshminarayanan et al., 2011; Sweeny et al, 2010). Most recently, Haider and Rödl (2023) have raised our critical awareness to IA when compelled by powerful technological and political structures and agents. To qualify and strengthen the IA lens during the conceptual analysis of the IB models, a framework of IA terms and concepts was established and employed as part of the meta-ethnographic methodology presented below.

Methodology

The qualitative analysis of IB models was guided by the meta-ethnographic methodology (France et al., 2019; Noblit & Hare, 1988; 1999). A meta-ethnography (hereafter M-E) is a methodology for deriving understanding from multiple qualitative studies based on interpretation rather than aggregation. Ethnographic refers to an underlying interest in finding an explanation for social and cultural events based upon the perspectives and experiences of the people being studied (Noblit & Hare, 1999, p. 95). One of M-E's key strengths is theory development from primary studies, and it has been widely used across social science, education, social care and nursing (France et al., 2019). Recently, it has also been used in information science to develop an information behaviour theory of transitions from an information perspective (Ruthven, 2021). In this study, we employ the approach in a new way to strengthen the systematic and inductive analysis of *meanings* in IB models, hence, for contributing implied notions and views of the human information 'actor'. As Ruthven (2021, p. 591) has suggested, the M-E approach may also be useful for other areas of information science to progress the many models we have in information science toward theory.

The M-E methodology was developed in 1988 by Noblit and Hare and consists of seven iterative and overlapping phases (1-3 preparation; 4-6 analysis and 7 presentation):

1. The focus and intellectual interest informed by qualitative research
2. What to study and synthesize

3. Reading studies (here each model and associated research), and repeat the reading of the study accounts
4. Determine how the studies (here models) are related by listing, comparing and grouping terms/concepts
5. Translating studies (here the models) into one another (meaning translation) by reciprocal translation (looking for major themes), and by refutational translation (looking for contradictions and exceptions)
6. Synthesize translations to develop new interpretations
7. Express the synthesis (reporting)

A key consideration in M-E is which studies, here models, to include (step 2). The selected IB models were five general *process-oriented* and *explaining* information behavior models (Wilson, 2017):
Wilson (1996) in Wilson (1999), *Wilson* (2022), *Savolainen* (1995), *Johnson et al.* (1995) and *Krikelas* (1983). The models were selected for their historical and current dominance in the field, e.g. demonstrated by their continuing employment and appearance in reviews, articles and encyclopedias of information science (Case & Given, 2016; Case et al., 2023; Kundu, 2017; Rather & Ganaie, 2018; Wilson, 2017). Modifications of dominating models were included as well.

To support and guide the 'reading' of the five process-oriented and explaining IB models through an information avoidance lens (step 3), terms and concepts deriving from an initial conceptual analysis of the information avoidance literature (see Hicks et al. (2025) for more information on procedure) were categorized into Sweeny et al.'s (2010) five Ws of IA (what, why, who, when and where). A sixth category (how) was added (Table 1). The same categories and aspects were employed when looking for concepts and terms related to information discovery (use).

What (Attributes)	**Why** (Motivations)	**Who** (Actors)	**When** (Time)	**Where** (Context)	**How** (By which means)
Active/passive Conscious/ unconscious Information-related Person-related Person-information related Positive/ negative Situated Temporal	Cognitive dissonance/ resonance Confirmation Coping Costs/satis-ficing Distraction Disruption Ease of use/feasibility Ignorance Information overload Least conflict (fit) Least effort Risk manage-ment Self-efficacy Self-protection Uncertainty reduction	Gatekeepers for self/others Human/digital Individual/ group Personal/social Proxy Roles (labels) of non-users	Deferring Delaying Information holidays Liminal Recent Slow/fast	Domain specific Incidential Setting Situation	Blunting By proxy Compelling Concealing Delaying Delegation Filtering Forgetting Ignoring Rejection Resignation Satisficing Selective exposure Self-regulation

Table 1. Terms and concepts associated with information avoidance (not exhaustive) categorized alphabetically according to 6 key aspects.

After the initial preparation (step 1-2), each model was read and examined in an ongoing 'dialogue' between Table 1, the model, the author's presentation of the model in original and later work, related writings, and reviews of the model by other researchers (step 3) (Case et al., 2005; Case & Given, 2016; Case et al., 2023; Fisher et al., 2005; Kundu, 2017; Rather & Ganaie, 2018; Wilson, 1999; 2017; 2022). When preparing for both the individual and the reciprocal analysis between models, identified terms and concepts of *use* and *non-use* behaviour were recorded and grouped separately during reading in a working-table for each model; and notes were added. During the next phase of comparing models (step 4) in a continuously 'dialogue' between working-tables, text and models, four new groupings of concepts and elements occurred iterating the reciprocal analysis of models: 1) *theories* informing models, 2) *role of information*, 3) *type of need* and 4) *type of context*. Then meaning was elicited by translating the conceptual meanings of the models into one another (not literal) (step 5). Since no step-by-step guide for this part of the process was provided by Noblit and Hare (France et al., 2019, p. 8), step 5 was done by reciprocally translating the concepts and elements for one model into the others, back and forth. Working between groupings of concepts (e.g. use and non-use), text and models as abstractions of the text served to clarify what the models were representing in terms of information behaviour. This stepwise and reciprocal conceptual translation further guided the synthesizing of *meanings* across the models (step 6). The outcome of the analysis (step 7) leading to explicit and implicit notions of the human information actor is presented in the next section.

Findings of 'meaning'

First, some general characteristics of the models are presented followed by the *meaning* elicited from each model.

Like many other models in LIS, the five general IB models were not derived from a meta-theoretical analysis but reflected the authors' theoretical conceptualization of actual or ideal processes of interaction with information in specific contexts (Wilson, 2017). None of the examined models explicitly mentioned or addressed 'information avoidance', but all authors acknowledged to various extent instances of *not* wanting to seek, receive or use information. By discussing mechanisms whereby people may avoid information, authors' different points of views of information non-use also appeared. In some cases, avoidance and non-use of information was considered a potential and accepted part of human information behaviour (e.g. Krikelas, 1983; Savolainen, 2005), while in other cases information avoidance such as ignoring was seen as a likely, but 'wrong' behaviour (Johnson, 2009). Table 1 and the six aspects served looking for IA terms and concepts explicitly in the models, but also implicitly during background reading and analysis. Likewise, the six aspects all served to identify and record terms and concepts related to information discovery in a systematic way.

Wilson's 1996-model (figure 1) (Wilson, 1999; 2005; 2017; 2022) recognizes that avoidance behaviour can be invoked immediately after a need arises. He stresses the importance of looking at the person in context (not specified), that is, the underlying situation and the *basic* needs of any information behaviour, including the physical, affective and cognitive factors influencing information seeking. The 1996-model introduces initial activating motivators and theories for seeking information (or not) such as stress/coping, risk/reward and self-efficacy. Though not depicted in the model, Wilson (2022, p. 32) explains that a person may decide at this point not to seek information, to avoid information, to postpone or to delegate it. These motivators for seeking (or not) are influenced by intervening variables expanded from five in 1996 to eight in 2022 (psychological, demographic, role-related/interpersonal, environmental, source characteristics (potential future actions) *and* socio-economic (external to person) values and beliefs). Each variable can be enlarged to identify or point out related factors. Likewise, experiences of risks or low self-efficacy to execute and produce a desired outcome can invoke a passive and limited information seeking behaviour (Wilson, 1999). In his recent expanded 2022-model (figure 2) *Wilson* (2022, p. 44) replaces

information seeking with the broader label *information discovery* to cover both the active purposive *and* the passive non-intentional information activities. That said, the model still reflects information behaviour as primarily an intentional activity towards information *discovery* for the common good. This interest is further demonstrated by a call for research into why people *do not* move on to search for information '*...when the need for information is evident to them*' (Wilson, 2022, p. 41-42).

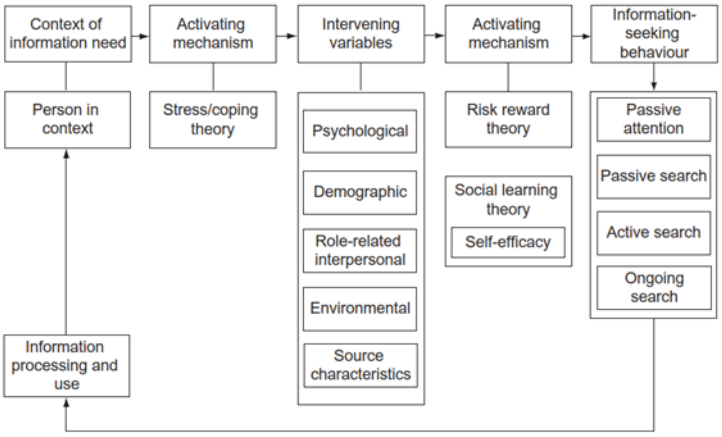

Figure 1. Wilson's 1996-model of information behaviour (adapted from Wilson, 1999, p 257).

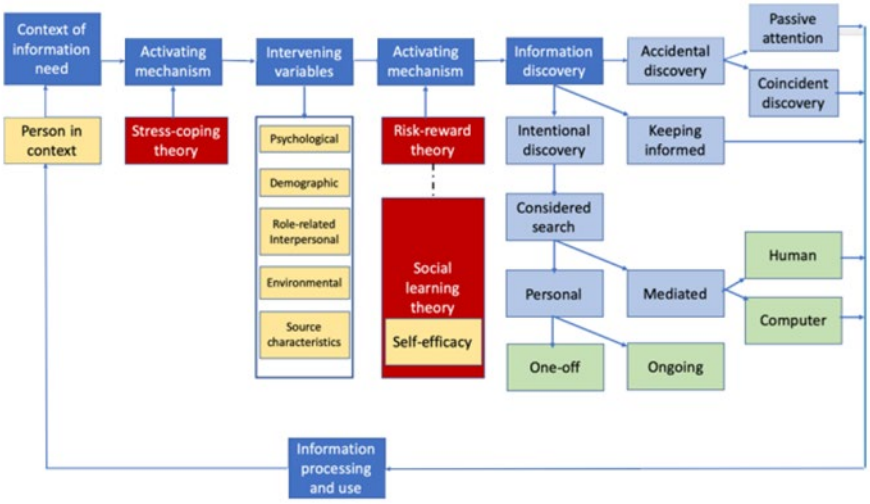

Figure 2. Wilson's expanded 2022-model of general information behaviour (Wilson, 2022, p. 44).

Savolainen's 1995-model of everyday-life information seeking (ELIS) (figure 3) draws on Bourdieu's (1984) idea of habitus and the cultural and social factors influencing people's way of preferring and using information sources. Information seeking is rooted in people's way of life and integrated with their mastery of life, e.g., the way they solve a problematic situation, make sense of and keep order of things. Savolainen's 1995-model introduces four information strategies to master life-situations involving also the right *not* to seek. Many cognitive and/or affective factors may interfere with people's need for (seeking) information, meaning that an increase in the importance of a problem does not automatically imply that a person will be more motivated to seek information. There *are* times when a problem may just be seen as an 'unwanted guest.' (Savolainen, 1995, p. 281) Information avoidance can here be the preferred strategy (consciously/unconsciously) to master one's life. Except for the first type involving systematic information seeking and use of specific

sources and channels, information avoidance is introduced as a legitimate coping strategy given type and need of mastery.

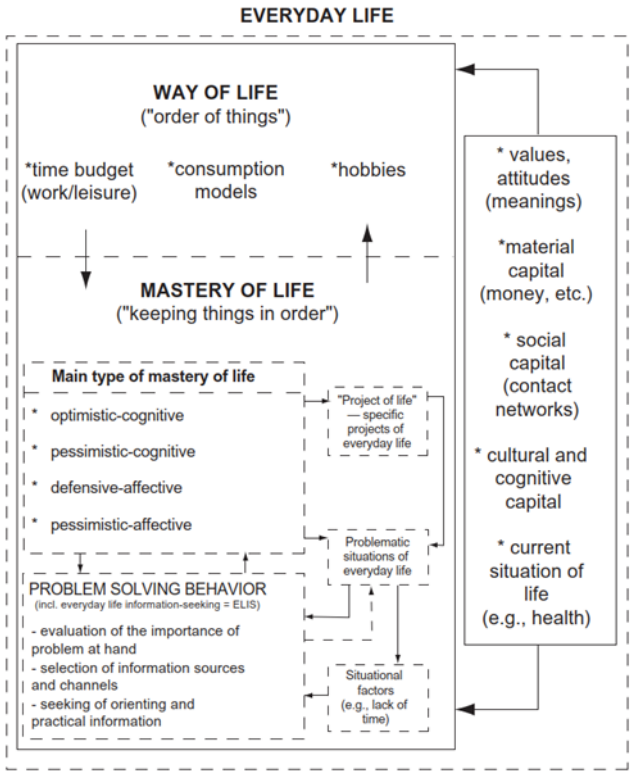

Figure 3. Savolainen's 1995-model of everyday-life information seeking (ELIS) (Savolainen, 1995, p. 268).

The underlying premise of *Johnson*'s (1995) comprehensive model of information seeking (CMIS) (figure 4) is that information is important and has crucial impact on decision making and problem solving, e.g., in settings like organizations, communication and health that primarily has informed his model. He draws on theories from Uses and gratification, the Health Believe Model (HBM) and a Model of Exposure and Appraisal (MEA). Information avoidance, on the other hand, is associated with ignorance and considered a failure implying numerous negative consequences, e.g., workers' feelings of stress and burnout. Later, still echoing the accepted view of IA as negative, Johnson (2009) notes that ignorance is viewed as something that needs to be overcome. He unpacks ignorance into 6 different concepts: 1) known unknowns, 2) unknown unknowns, 3) error, 4) false truths, 5) denial and 6) taboo.

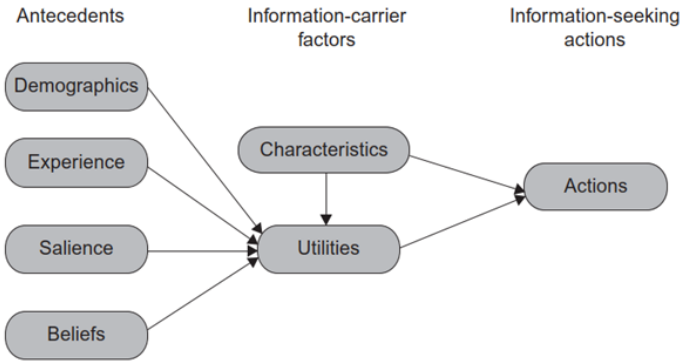

Figure 4. Johnson's (1995) comprehensive model of information seeking (CMIS) (Johnson, 1995, p. 276)

Krikelas's (1983) model of information gathering, seeking and giving (figure 5) differentiates between different types of needs and information all with the aim of satisfying a perceived need and reduce uncertainty. The model seeks to unify concepts examined in user studies without specifying a context. He focuses on information *use*, but acknowledges that some needs can be immediate, others deferred or delayed when gathering information for potential later use (means of IA). In contrast to many models, Krikelas (1983) includes both personal/internal and external knowledge and experiences, hereby challenging a perspective of information beyond literature – but also the dominant view of information use to imply the seeking of external sources.

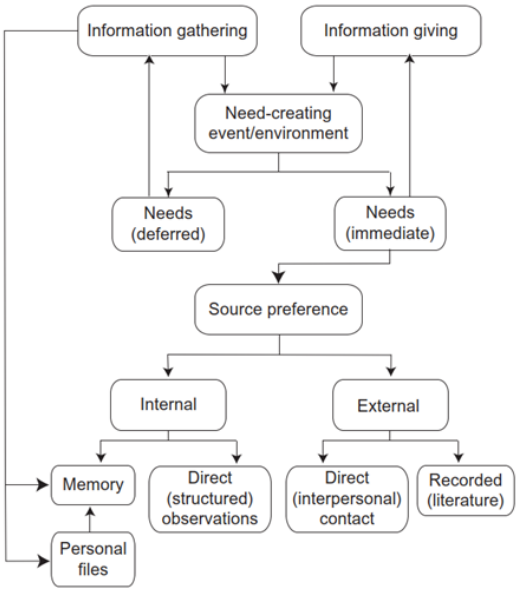

Figure 5. Krikelas's (1983) model of information gathering, seeking and giving (Krikelas, 1983, p. 17).

Though instances of information avoidance to varying degrees are acknowledged by the five IB models and authors, the dominating view in these models favors human information behaviour as an *intentional* activity towards information discovery in response to a need *for* information. This imbalance was explicitly and implicitly reflected by the models' actions in support of information discovery, while behaviour of information avoidance (or non-use) was either absent, explained or mis-conceptualized as 'failure'. When synthesizing the *meanings* of the human information actor inherent in the models, the implied information actor that emerged from the analysis reflected an individual who may occasionally avoid information to escape negative feelings and cope with life, but *ideally* one who behave like an information *seeker*. As the analysis indicates, the structured, yet dynamic, M-E-approach supported the 'unlocking' of new perspectives of the IB-models and the 'reader's' meaning-making, which will be discussed further in the next section.

Discussion

This paper has examined inherent perspectives and views of use (discover) and non-use (information avoidance) in five general IB-models to identify notions of the human information actor (RQ1). To strengthen the analysis and 'meaning making' of the models including notions of the human information actor, a meta-ethnographic methodology approach was employed (RQ2).

As the outcome of the analysis has indicated, the implied information actor emerging from the analysis reflected a reductionistic view of human information engagement, preserving the human actor in an archaic position as *user* and information *seeker* of information, and information as 'good' and wanted. One may argue that most of the examined models were rooted in another time (e.g. guided by a 'library logic' aimed at professional users and developed before the Internet); but

nonetheless these models are still referred to as some of the general and mainstream models of IB in information science and still inspiring new attempts of modeling and unifying information seeking behaviour (Agarwal, 2022). This way, there is a risk of stereotyping the human actor engaging with information.

Only recently, LIS researchers have started to propose alternatives to intentional information use and seeking (Greifeneder & Schlebbe, 2022), as information behaviour is a much more complex and dynamic process between use and non-use of information (Ruthven, 2024). At times '*…it seems that we strive to know both more and less at the same time*' (Case & Given, 2016, p. 118). This dilemma may sometimes harm discovering meaningful information (Matsubayashi, 2023) but may as well lead to new information. Just as you may incidentally discover information while searching for something else (Wilson, 2022, p. 42), you may also incidentally discover relevant information while *avoiding* something else. Discovering and avoiding information involves many of the same behaviour approaches (e.g., passive/active, conscious/unconscious) and actions (e.g., evaluating and sense-making) and they are influenced by the same factors (e.g. individual and situational). Though *differently* motivated, Link et al. (2023) found that information seeking and avoiding are two distinct, not causally, but co-related behaviours regulated by norms of information seeking *and* avoidance behaviour. As Manheim (2014) emphasizes, exploring information non-seeking more holistically may lead to cases of beneficial uses and deeper understanding of non-seeking in general. Today, the human information actor not only needs to be good at seeking, finding and using information, but he/she should also know when and how to critically avoid or ignore information to cope meaningfully with different life situations (Kozyreva et al., 2022).

Regarding the second research question, the M-E-approach was chosen for its strength of producing a new interpretation of data, for instance, a new conceptual understanding and 'storyline', or overarching explanation of a phenomenon (France et al., 2019, p. 11). Disregarding the limitations mentioned below, the proposed analytical approach contributed new insights - and may serve as a steppingstone towards deeper insight into tacit and underlying notions of information behavior impacting how we understand and study human information actors. For example, future research design of IB might address how to collect qualitative and quantitative data on non-use behaviour and information avoidance. This may imply decisions on what to observe and how, what questions to ask in interviews and how to elicit behaviour of information non-use and IA from different data probes (diaries, questionnaires, interviews, visual material). Further, one may ask what a 'critical incident' of information non-use and IA looks like; how can information non-use and IA be explored over time (longitudinal study) and how is IA perceived, experienced or practiced in specific settings and among specific groups of people. Moreover, a new conceptualization of the human information actor is needed in models and frameworks reflecting the dynamic between use and non-use behaviour, which also calls for more research into the strategies, skills and mindset driving or supporting non-use of information compared to information discovery. From a design perspective, a nuanced understanding of the information actor's interactions with information could lead to better IT solutions and suggestions for non-information literacy.

Limitation

Some methodological limitations of this study should be mentioned, also serving future research. The meta-ethnographic methodology was originally developed with the aim of theory building by offering a detailed and systematic approach to synthesize meaning across rich text material. In this study the M-E approach was used in a new way to guide the analysis of IB models, ensure a systematic, transparent and consistent approach, hence, also to establish a distance between researcher and text minimizing the risk of an 'impressionistic' analysis. However, since the analysis was not 'tested' or validated by other researchers, the analysis may reflect a one-sided lens of IB driven by an interest in legitimizing *non-use* of information in favor of a new IB-logic. Further,

Noblit and Hare (1988; 1999) recommended being exhaustive when selecting material, but it is likely that comparing and synthesizing *meaning* within and across only five different models may be too few to really demonstrate the value of M-E for examining IB-models. More models also imply more groupings of material, e.g. using a chronological and/or contextual grouping of IB-models to elicit conceptual trends or changes of IB during time, which could lay the ground for theory development as suggested by Frances et al. (2019) and Ruthven (2022). The order in which the models have been compared and translated into one another may also have impacted the overall interpretation (France et al., 2019, p. 15).

That said, the purpose of the M-E-analysis was not to formulate or suggest an 'ideal' information behavior model or to develop a theory from existing IB-models and frameworks. Rather, the aim was to highlight notions of information behaviour in existing IB-models from a holistic perspective, where non-use like information avoidance and use like information discovery co-exist as common instances of human behaviour to 'master life' (Savolainen, 1995). Likewise, using the theoretical construct of the 'implied actor' inspired by Ulriksen (1999) was not to suggest an 'ideal' information actor, but to make the hidden and implied notions of the human actor visible to the reader for further reflection.

Conclusion

This paper has presented a conceptual analysis of the implicit/explicit notions of the human information actor present in five general information behavior models. Though instances of information avoidance at different acceptance levels were acknowledged, *the implied information actor* emerging from the analysis (still) appeared to be an information *seeker*. This imbalance was explicitly and implicitly reflected by the models' actions in support of information discovery, while behaviour of information avoidance (or non-use) was either absent, explained or mis-conceptualized as 'failure'. Drawing from this, the models reflected a reductionistic view of human information interaction preserving the actor in a limited role ignoring the *varying* needs for information engagement. To strengthen the conceptual analysis and foster deeper insights into underlying notions of information behavior and practices in frameworks and models, a new methodological approach was proposed. Despite the limitations, the meta-ethnographic methodology approach contributed a richer perspective and understanding of the implied information actor. Further research is needed for validation, but it seems that the proposed M-E-approach emphasizing procedural transparency holds potential for generating insights that may affect how we understand, study and support humans' engagement with information.

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Exploring pilgrims' information behaviour and spiritual skills development

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Abstract

Introduction. An understanding of pilgrim information behaviour in relation to spiritual skills development is barely represented in information science. This research explores the dynamics and interrelations between Hajj pilgrims' information practices, information needs and spiritual skills development.

Method. The initial phase of research investigates pilgrims' information behaviour through an online semi-structured survey in Arabic and English. This overview of the demographics, information behaviour, learning processes and spiritual skills development before, during and after the Hajj provides an initial understanding of pilgrims' information practices.

Analysis. Completed survey responses from 126 participants were analysed using reflexive thematic analysis.

Results. The Hajj constitutes a transformative experience in which information behaviours, learning strategies and spiritual practices intersect. Findings highlight the pivotal roles of trust, accessibility and community in supporting and influencing pilgrims' experiences; the blending of traditional and digital resources; and the importance of a communal environment for learning and fostering spiritual development.

Conclusion. This study contributes to understanding how Hajj pilgrims obtain and use information during this sacred journey, and their underlying information needs, preferred media and formats and learning strategies to cultivate and nurture spirituality.

Introduction

Pilgrimages are '*one of the oldest and most basic forms of population mobility known to human society*' (Collins-Kreiner, 2010, p. 440). They are rooted in a shared human quest for meaning, transformative experiences and a profound connection with personal or collective spirituality (Devereux and Carnegie, 2006).

It has been argued that pilgrimages may also be journeys of transformative learning, personal growth, understanding and meaningful change, thus encouraging self-reflection and perspective shifts for long-term personal growth (Carr-Chellman and Kroth, 2020). Spirituality inspires good deeds, rejection of materialism, and simplicity (Delgado, 2005). Spiritual information, in an analogue or digital form, may facilitate access to and engagement with spiritual knowledge and transformative learning by shaping spiritual beliefs and approaches to religious teachings, practices and communities (Kari, 2007). A deeper understanding and intentional practice of spiritual skills and competencies help people understand and practise life's purpose (Nangia and Ruthven, 2023).

While various disciplines consider pilgrimages as transformative experiences, understanding religious performances and the processes associated with acquiring and developing spirituality require further investigation (Tisdell, 2017). In information science there is interest in pilgrimage and information practices in relation to social media use (Caidi, 2019; Caidi et al., 2018; Caidi and Innocenti, 2018) and how pilgrims document, share and curate before, during and after their journeys (Innocenti, 2023).

As one of the pillars of Islam, Hajj is a sacred pilgrimage to the holy city of Makkah in Saudi Arabia (Niu, 2023), and is the biggest annual gathering in the world (Alnabulsi et al., 2020). Performing the Hajj is mandatory for all adult Muslims who are physically and financially capable of undertaking the journey at least once in their lifetime (Gatrad and Sheikh, 2005). This pilgrimage typically takes four to six days and constitutes a deeply personal and spiritual journey in which participants wear identical clothing and perform prescribed rituals, fulfilling an obligatory religious duty and seeking spiritual enlightenment (Alnabulsi et al., 2020; Gatrad and Sheikh, 2005). As a transformative pilgrimage, Hajj provides a unique opportunity for skills development through personal reflection and community interaction (Caidi, 2023).

This research explores the dynamics and interrelations between pilgrim information behaviours and spiritual skills development during the Hajj. The aims are to improve understanding of how Hajj pilgrims seek and use information, and how such practices contribute to developing spiritual skills and addressing diverse learning needs. Two research questions inform the work:

1. How does pilgrims' information seeking and learning intersect with their spiritual journey before, during and after the Hajj?
2. How do pilgrims develop their spiritual skills before, during and after the Hajj?

Method

In the first phase of the research, an online semi-structured survey was carried out in 2024. The survey furnished an overview of the demographics of the Hajj pilgrims' community and an initial understanding of their information behaviour, learning processes and spiritual skills development before, during and after the Hajj.

Participants had either recently completed the Hajj or were planning to embark on one. The survey was published with Qualtrics in both Arabic and English. A total of 181 surveys were received,126 of which were complete. Arabic responses were translated into English, and data were checked in Excel before conducting reflexive thematic analysis (Braun and Clarke, 2006, 2019; Byrne, 2022).

Findings

The survey data reveals how diverse cultural, educational, and experiential backgrounds shape Hajj practices, and how family and regional accessibility affect participation. Overall, 75 men and 51 women completed the survey: this a higher percentage of men than in the Saudi Hajj data for 2024 and previous years (Ministry of Economy and Planning, 2024). Most respondents (95) were 35-64 years old; many (108) were living in Saudi Arabia, and a smaller group in the UK (16). External visitors normally make up the majority of Hajj pilgrims, and such a demographic group can help to shed light on local pilgrimage experiences (Ministry of Economy and Planning, 2024).

The Hajj had been performed by 109 of the 126 of the participants. Of these, 43 had done this pilgrimage once, whereas others had completed it multiple times: 23 people did the Hajj twice; 18 participants completed it four to five times; 15 did it six to eight times; one pilgrim nine to ten times; nine respondents did not specify the exact number of times they performed this pilgrimage, stating '*many times*'. This distribution shows a range of pilgrims' experiences, from beginners to experts suggesting both new and repeated spiritual involvement.

Our survey suggests how Hajj pilgrims develop their spirituality through information seeking, using and sharing, while undergoing a spiritual transformation after intensive information processing to learn and acquire knowledge. Situational experiences, personal actions and reflections during the pilgrimage shaped pilgrims' initial understandings. Through rituals, prayers and collective practices, participants reported a greater sense of oneness, connection with a higher being and spiritual awareness. Findings point to a development of the pilgrim's spiritual competencies, preparing them for life changes.

Information-seeking practices and spiritual learning before during, and after the Hajj constitute the three main themes identified through reflexive thematic analysis of the survey responses. These are discussed below.

Information-seeking and spiritual learning before the Hajj

This theme encompasses pilgrim's information-seeking practices while preparing for the Hajj, types of trustworthy and reliable sources of information, and how pilgrims learn.

Survey participants emphasised the importance of consulting scholars or well-established religious organisations to guarantee the accuracy of received information and mitigate risks that may compromise their Hajj. One survey respondent stated that '*it's better to ask someone who understands religion, such as a female preacher to Islam or a mufti*'. Another similarly noted that '*There is a lot of information and sometimes I don't feel like I can trust it*'.

Data suggest that pilgrims prepare for the Hajj in different ways, value using authoritative and trusted sources (provided by the Saudi Hajj Ministry or Al-Azhar Mosque), consult scholars or well-established religious organisations, learn in groups and check sources to get accurate ritual information. Some respondents relied on Google (19), the Saudi Hajj website (18), online Hajj free books (17), and scholars (16). Consulting prior Hajj pilgrims for information was another choice (10), followed by asking family members (9), imams (7) and friends (4). Searching on YouTube (9) and social media groups (4) were other options.

Friends were the most frequently cited source of information (44) when seeking how to perform rituals. Formal sources like mosque imams (who lead pilgrimages organised by licensed tour agencies) and Hajj tour guides were the second most common source for 41 participants. Pilgrims also sought reliable ritual information by learning in groups and searching on their own. This verifying approach is consistent with prior research on the dissemination of Hajj information

practices within communities (Caidi, 2020; Caidi, 2023). It also fits with earlier research that shows how pilgrims share information (Hyldegård, 2006; Innocenti, 2023).

Information-seeking and spiritual learning during the Hajj

Addressing aspects of information seeking and learning during the pilgrimage, this theme encompasses media and human source reliability, privacy concerns, verification of information trustworthiness and credibility, and individual versus group-based learning approaches.

During the Hajj, pilgrims' survey responses indicate a mixed use and integration of in-person and online resources for trust, accuracy and validation, from digital platforms to personal relationships, religious authorities and other authoritative sources (Figure 1). This suggests a preference for a blend of interpersonal, visual and textual learning resources, as online platforms may lack ritualistic, communal and tangible aspects of traditional spiritual practices. The Hajj is also often a communal journey undertaken with one's family; family members were reported as a readily available resource for Hajj information by 16 participants.

Respondents noted a preference to consult in person or online with religious leaders, scholars, fatwa issuers, mosque imams, university professors, and relatives and friends who have performed the Hajj. Several participants indicated following a strategy akin to triangulation – using several sources to cross-check and verify material. Some used a layered approach, first consulting recognised religious authorities then confirming this information using online tools and personal networks. A participant explained that '*I searched for information about various rituals and religious practices by using official religious websites, YouTube videos, books on Hajj, and from friends and family who performed Hajj in recent years*'. Another retrieved information '*from our Imam Sheik, as being the group leader and from my other member groups who have the knowledge and more experiences*,' while one indicated '*joining […] several Hajj preparations groups on social media platforms like Facebook and WhatsApp. These groups are filled with experienced Hajjis who share tips and answer questions.*'

During the Hajj, Saudi government-recommended texts were given priority over Google searches. Several participants indicated that reading reputable Islamic books and first-hand accounts was useful, with one stating: '*Reading books on Islamic teachings, the Quran, and the Hadith can deepen your understanding. Authors like Yusuf Islam (Cat Stevens) have written about their conversion experiences.*' Another pilgrim, who had become a tour guide with a Hajj travel agency, noted, '*I found information everywhere I could possibly find it—books, lectures, induction programs, scholarly opinions, videos—everywhere I could access information*'. A few pilgrims also blogged.

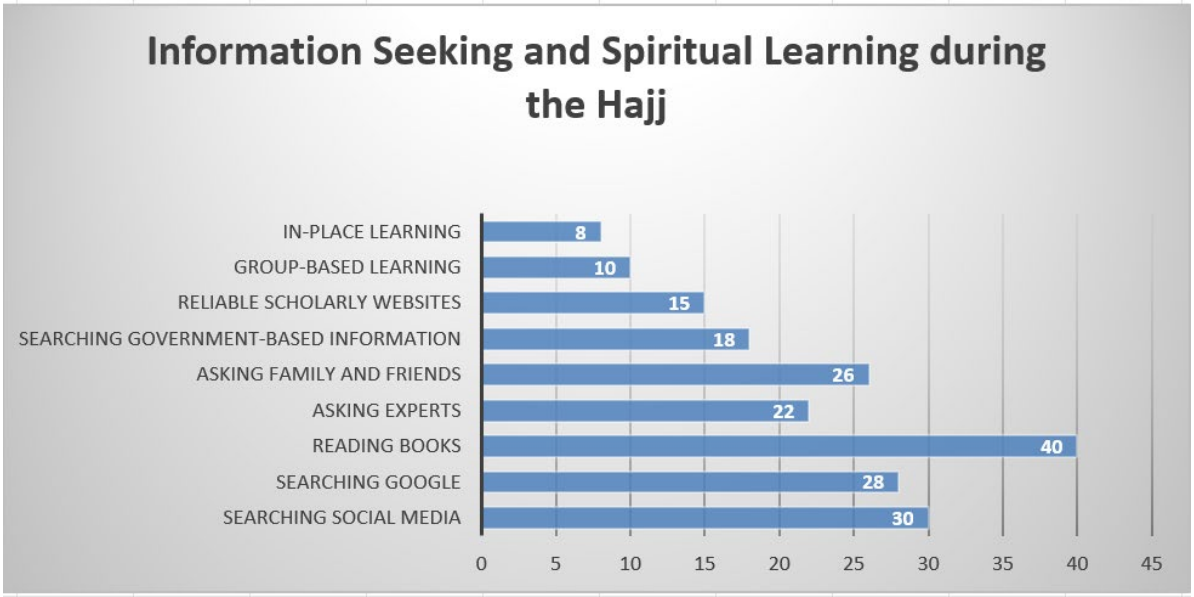

Figure 1: Information-seeking and spiritual learning during the Hajj (The authors)

The survey insights echo previous studies suggesting that people engaging in religious or spiritual practices value reliable, authoritative sources for those practices ((Nangia and Ruthven, 2023; Robinson, 2021; Caidi, 2019, 2020). The findings point to a multi-tiered validation and confirmation strategy that includes authoritative and easily accessible sources (Yap et al., 2016). Trusted digital and social media resources may also provide pilgrims with diverse insights and advice during the pilgrimage (Innocenti, 2023; Caidi, 2019; Caidi et al., 2018; Qurashi, 2018; Hill-Smith, 2011). Travellers can share advice and form communities with pilgrims, which improves readiness and confidence (Hussain and Wang, 2024). Some Hajj pilgrims in this survey also mentioned '*informing*' themselves and acquiring information leading to knowledge creation, thus adding an interesting dimension to the nature of information seeking, which is traditionally approached as a form of human activity that is directed to informational objects (information sources) existing outside the information seeker (Savolainen, 1995).

Information-seeking and spiritual learning after the Hajj

Following the pilgrimage, many participants share informal knowledge online and offline. This may take place in person via succinct interactions with family, friends and others. As one participant noted, *'by sharing my experiences with my closest family and friends, I am able to engage in meaningful and honest conversations. It facilitates more profound connections and offers a personalised touch*'. Sharing can also happen through more elaborated textual and multimedia exchanges via social media, particularly WhatsApp and Telegram groups. These groups act as support networks offering advice, sharing and group discussions to support spiritual learning.; accuracy of information was again highlighted as important here.

Not only do some Hajj pilgrims share text, photos and videos, they also establish groups on one or more social media platforms. Spiritual insights may be a driver compelling pilgrims to become writers and share their Hajj experiences so that others may learn, find useful information on rituals and socialise with others. Pilgrims document and disseminate experiences and knowledge through weblogs and online diaries. One mentioned:

> *I have created a weblog to share Hajj activities and allow people to learn and share it. I also uploaded short videos with my friends to educate themselves and take it as an example for making their Hajj in the future. Additionally I share Hajj experiences with places I visit and*

> *allowing friends to ask and learn. I created a forum as well about these activities to generate and share knowledge later with followers.*

This experience and information-sharing suggests the idea of a pilgrim community of practice. Through such interactions, pilgrims develop habits that aid short- and long-term learning (Caidi, 2023; Hattingh, 2019). Previous studies note how collaborative processes meet immediate needs and foster continuous spiritual learning, enabling meaningful problem-solving that transcends mere information exchange (Kari, 2007; Nangia and Ruthven, 2023; Park, 2005, 2010). As shared knowledge expands, it establishes markers of fundamental information, enabling pilgrims to confront obstacles and improve the community learning experience. Additionally, pilgrims can share and adapt guidelines, ideas, best practices and lessons learnt with other community members to enhance learning, thereby indirectly contributing to what Van der Beek (2019) refers to as '*digital rituals*'. It may be argued that this could enhance the transfer of spiritual knowledge across social media platforms, thereby supporting short-term and long-term learning objectives (Tisdell, 2017).

Van der Beek (2019) has also noted the effectiveness of storytelling in disseminating existing knowledge and facilitating reflective thinking. Storytelling transcends mere information dissemination; it embodies wisdom and experiences, enabling the acquisition of knowledge over an extended period (McDowell, 2021). Finally, embodied information, an essential element in long-distance walking, has relevance for pilgrimage, where physical and sensory experiences are fundamental to learning and knowledge sharing (Munro et al., 2022; Innocenti et al., 2022; Hyatt et al., 2021). Embodied information enables pilgrims to immerse themselves in physically challenging rituals and multiple social interactions, cultivating tacit knowledge understood through individual and collective experience.

Conclusion and next steps

This study shows that the Hajj constitutes a transformative experience in which information behaviours, learning strategies and spiritual practices intersect. The survey results highlight the pivotal roles of trust, accessibility and community in supporting and influencing pilgrims' experiences; the blending of traditional and digital resources; and the importance of a communal environment for learning and fostering spiritual development. Building on the survey insights, interviews with Hajj pilgrims were carried out in 2024 for a more granular understanding of these phenomena.

Further research might address cross-cultural pilgrimage practices, the analysis of gender and age roles in shaping experiences, and the investigation of technology's influence on spiritual development. Such studies could enhance our comprehension of how pilgrims from varied cultural backgrounds adjust to the interaction between modern technology and traditional practices in their spiritual journeys.

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Genre knowledge: a metacognitive approach to exploring document practices in science

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Abstract

Introduction. This paper examines genre knowledge and its influence on scientists' interactions with various document types, or genres, throughout the scientific process.

Method. The paper reviews genre theory, including its applications in prior research within library and information science. Then, it presents a scenario involving a molecular biologist, based on findings from science and technology studies.

Analysis. The analysis traces the biologist's activities within the scenario, outlining the creation and use of various genres during data collection, analysis and reporting.

Results. A research agenda based on genre knowledge is proposed to help scholars and practitioners in library and information science better understand and support scientists' interactions with genres.

Conclusion. The paper advocates for studying genre knowledge to further develop theoretical and practical insights into scientists' document practices. This approach bridges cognitive and sociocultural perspectives on information interactions, and may clarify how emerging scientists acquire these skills.

Introduction

What if seemingly mundane documents are crucial to science? This paper explores the significance of genres in the scientific process. It contributes to library and information science by proposing a research agenda that investigates why scientists interact with genres. Regardless of their disciplines, scientists – from astronomers to zoologists – must interact with documents as part of their professional activities.

Genre knowledge is an individual's metacognitive understanding of how and when to use different types of documents, also known as *genres* (Berkenkotter and Huckin, 1995; Tardy, 2009). Genre knowledge is a form of situated cognition embedded in disciplinary ways of knowing and doing. Scientists engage with various genres to conduct their work; however, library and information science predominantly focusses on the scientific products held in libraries (e.g., journal articles and data sets). This paper argues that additional genres, such as manuals, notebooks, proposals and standards, play important roles in the making of science and deserve scholarly and professional attention. Although this paper focuses on science, genre knowledge is relevant to other professional and everyday contexts (e.g., Andersen, 2017; Reiff and Bawarshi, 2016; Spilka, 1993). The knowledge, abilities and skills involved in creating and using genres are of interest in this paper.

Budd (2001) explains that epistemological positions significantly influence how library and information science scholars and practitioners think of their work. This paper adopts a *constructivist* approach, which portrays science as an *epistemic culture* that shapes and is shaped by scientists (Knorr-Cetina, 1999). Constructivism posits that scientific knowledge is the product of scientists' practices within their socio-material contexts (Hacking, 1999; Knorr-Cetina, 1981; Kuhn, 1962). These practices bring together assemblages of people, technology, methods, models, theories and numerous other epistemic devices necessary for carrying out science (Pickering, 1995). Frohmann (2004) argues that these practices also involve the ways scientists create and use documents. Constructivism challenges the notion that documents only serve as carriers of facts or representations of the world, a dominant epistemic view in library and information science (Day, 2001). Conceptualising knowledge as something scientists create, rather than as an ideal and unified abstraction, necessitates studying the processes by which scientists generate, validate and communicate facts (Rouse, 1996). This perspective reconsiders the traditional focus on the products of science, emphasising instead the integral role of reading and writing, broadly understood, throughout the scientific process.

Given the importance of documents to science, a number of questions arise, including:

- What genres do scientists interact with?
- What tasks do scientists apply these genres to?
- How do emerging scientists learn to recognise, create, use and apply various genres?

This paper argues that genre knowledge provides an approach to addressing these and other questions concerning scientists' information interactions. To outline this research agenda, I review genre theory and the concept of genre knowledge. I also connect genre knowledge with existing work in library and information science. Drawing on the science and technology studies literature, I provide a scenario that describes some of the genres involved in laboratory work. This scenario also illustrates how genre knowledge mediates the production of scientific knowledge. I propose that studying genre knowledge would further develop theoretical and practical understandings of scientists' document practices. This includes the role of genre knowledge in individuals' transitions from newcomers to emerging scientists. I conclude by offering suggestions for future enquiries.

Genre

A *genre* is a type of document, such as a patent, report or textbook, characterised by its content, form and communicative function (Bawarshi and Reiff, 2010; Devitt, 2004). While this paper focuses on genres of textual documents, future work could investigate other types of communication with which scientists interact, such as gestures or visual representations (e.g., Coopmans et al., 2014; Fogarty-Bourget et al., 2019; Kostelnick and Hassett, 2003). Recognising the characteristics of content, form and function enables individuals to coordinate their activities through the appropriate application of various genres.

Each genre provides content intended for one or more tasks. Therefore, applying the appropriate genre to a task is crucial for the efficiency and effectiveness of work (Spinuzzi, 2003). Genres are *typified* by their repeated applications within a social context. Miller (1984, p. 163) explains, '*genre refers to a conventional category of discourse based in large-scale typification of rhetorical action; as action, it acquires meaning from situation and from the social context in which that situation arose*'. Similarly, Devitt (2004, p. 31) describes genres as '*a nexus between an individual's actions and socially defined context*'. In this way, genre theory conceptually bridges cognitive (i.e., individualistic) and sociocultural perspectives, explaining that members of a discipline recognise recurring tasks and the necessary genres to address the information needs associated with those tasks (cf. Byström, 2007; Freund, 2008). Genre theory has been applied in library and information science to a wide range of contexts (e.g., Andersen, 2008; Andersen, 2015; Brannon et al., 2022; Foscarini, 2013; Gorichanaz, 2017; McKenzie and Davies, 2012). By analysing the form, content and function of genres, researchers can better understand disciplinary practices, including why individuals in specific situations interact with certain documents and not others (Freund, 2013; Huvila, 2019).

Creativity and imagination are important in the scientific process; however, an individual can only push the form, content or function of a genre so far before the genre becomes unrecognisable to others. This is not to suggest that genres are fixed. They are, instead, '*stable-enough-for-now*' (Schryer, 1993, p. 229). Diachronic genre analyses, such as the studies by Bazerman (1988) and Gross et al. (2002) on scientific journal articles, describe how genres can change over time. Miller and Kelly (2017) also provide theoretical insights into the *emergence* and *evolution* of genres. They argue, '*Because genres are dynamic sites of tension between stability and change, they are also sites of inventive potential*' (Miller and Kelly, 2017, p. v).

Similar to how musicians are expected to have a repertoire, scientists must interact with a number of genres (Berkenkotter and Huckin, 1995; Swales, 2004). Scholars have conceptualised the genres associated with a social group as *chains* (Swales, 2004), *ecologies* (Spinuzzi and Zachry, 2000), *networks* (Tardy, 2009), *repertoires* (Orlikowski and Yates, 1994), *sets* (Devitt, 1991) and *systems* (Bazerman, 1994). Together, this body of work recognises the interconnected nature of genres, where members of social groups interact with multiple genres to perform recurring tasks.

Genre theory considers the variety of genres and their purposes within a given context. Dodson et al. (2024) and Freund et al. (2005), for example, identify significant correlations between genres and tasks in engineering. This indicates that genres function as specialised tools, employed in specific situations. However, the library and information science literature concerning scientists has predominantly focussed on a single genre: the journal article. While journal articles are crucial for communicating scientific findings, other genres, such as datasheets, manuals and lab notebooks, also mediate scientific work. Information behaviour studies and scientometric analyses that focus on journal articles are valuable; however, these works offer a limited perspective, because scientists interact with more than journal articles. Broadening the focus to other genres will provide insights into the making of science. Shankar (2009), for instance, highlights the role of lab notebooks in establishing evidence of the rigour and trustworthiness of scientific knowledge claims.

Scenario

The science and technology studies literature has described *science in action*, particularly through ethnographic studies of the places and sites of science (see Knorr-Cetina (2001) for an overview of laboratory studies, and Bowker (1994) and Kohler (2002) for research on field-based science). Latour and Woolgar (1979) portrayed laboratories as *inscription machines*, where scientists generate knowledge through cycles of document creation and use. Their case study details the work of molecular biologists, which I reinterpret through a genre theory lens in the following scenario:

> *Rui collects a tissue sample from a mouse that has been treated with a test substance, prepares the tissue for analysis and inputs the sample into a mass spectrometer. This instrument transforms the sample into a spectrum of light waves, which represents the chemical composition of the tissue. Rui then compares this spectrum to those of previously collected samples from the experimental and control groups using specialised data analysis software. Rui interprets the statistical results to determine the efficacy of the treatment. Rui records each procedure and result in a lab notebook. These notes will be essential when Rui writes the lab report.*

Documents and associated practices are crucial *infrastructure* that supports science (Shankar et al., 2017). Tracing the document practices for operating this inscription machine reveals the reading and writing that Rui must undertake. Rui's information interactions can be nonlinear, as the relationships between genres are complex and often form rhizomatic connections (Spinuzzi, 2015). Such understandings have been theorised in the science and technology studies literature in ways that articulate the work performed by documents (Frohmann, 2004; Knorr-Cetina, 1981; Latour and Woolgar, 1979). In library and information science, Day (2021) frames Latour's (1996) conceptualisation of information within the concept of *documentality* (cf. Buckland, 2014; Frohmann, 2013). This framework views '*documentary evidence and meaning as constructed through an indexical relationship between documents and the real, using genre conventions, social practices, technologies and techniques, and other epistemic devices*' (Day, 2021, p. 7). Documentality underscores the work that documents do and the agency they hold (Frohmann, 2009). Scientists must have the skills and abilities to engage with various genres to conduct their daily tasks. This raises several questions. For example, how did Rui learn to perform the following tasks:

- Configuring (and troubleshooting) the mass spectrometer using its manual
- Using the data analysis software by referring to its documentation
- Recording the experiment's procedures and findings in a lab notebook, and so forth?

Scientists' document practices warrant further investigation. In addition to building upon existing research (e.g., Hammarfelt, 2022; Huvila et al., 2022; Palmer et al., 2007; Shankar, 2007; Trace, 2017), these enquiries could leverage the concept of genre knowledge.

Genre knowledge

Genre knowledge refers to an individual's metacognitive understanding of the form, content and function of the genres created and used in their discipline (Artemeva and Fox, 2010; Devitt, 2007; Tardy, 2009). As alluded to in the scenario, a genre-aware individual understands what genres are at their disposal, how to create and use those genres and when to apply genres to different tasks.

Internalising document practices is a necessary part of becoming a scientist; however, scholars and teachers have identified numerous challenges in teaching and learning genre knowledge. Developing the abilities to recognise, create, use and apply genres is a lengthy and complex process for learners (Artemeva, 2008; Shankar, 2009; Winsor, 2001). Individuals often continue to develop these skills throughout their careers (Artemeva and Fox, 2010; Devitt, 2007; Winsor, 2003). The

time required for developing genre knowledge is understandable, as Beaufort (2007), Berkenkotter and Huckin (1995) and Tardy (2009) have argued that genre knowledge depends on other types of knowledge, including subject-matter expertise. There are longstanding and ongoing debates about whether genre knowledge can be taught through explicit instruction or only through authentic hands-on trial and error (Dias et al., 1999; Dias and Paré, 2000; Tardy, 2009).

The genre knowledge and labour involved in building, maintaining and operating inscription machines is often obscured in the communication of scientific knowledge (Knorr-Cetina, 1981; Latour, 1987). This concealment hides the underlying incentives, values and cultural, social and technical processes that influence science (Daston and Galison, 2021; Haraway, 1997; Longino, 2002). As a result, journal articles often present evidence as *natural*, *objective* and *self-evident* facts, as if they were discovered rather than created. This presentation necessitates contextualisation and interpretation. When the products of science are accepted without scrutiny, the labour of producing them becomes invisible and risks being devalued.

A research agenda focussed on genre knowledge could help library and information science scholars and practitioners better understand i) how scientists use documents in their work, and ii) how students, as emerging scientists, learn to interact with documents. Understanding how and why scientists interact with genres will enable library and information professionals to better serve their needs by designing and providing tailored services. For example, librarians could use the genre–task maps by Dodson et al. (2024) and Freund et al. (2005) in information literacy instruction to teach students the appropriate use of different genres. This research agenda could address the questions posed in the Introduction by pursuing the following objectives to:

- Develop and validate instruments to assess scientists' genre knowledge.
- Investigate the tasks in which scientists create and use genres, identifying patterns and differences across disciplines.
- Examine the processes through which emerging scientists acquire genre knowledge, including formal education, mentorship and practical experience.
- Assess the effectiveness of information literacy instruction in fostering genre knowledge among emerging scientists, identifying best practices and areas for further development.

Summary

This paper advocates for the concept of genre knowledge and considers its implications for studying scientists. The paper explored the development and uptake of document practices among emerging scientists. Genre knowledge is particularly useful in this context as it bridges cognitive and sociocultural framings of information interactions, thus contributing to understandings of how individuals are enculturated into science. By bringing together previous work on genre and the sociology of scientific knowledge, the paper points to future work that investigates open research questions requiring empirical and theoretical attention to the role of document practices in the creation of scientific knowledge.

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‘Making the building blocks small’ - the participative and capital-enhancing development of digital literacies in older adults

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Abstract

Introduction. Older adults are disproportionately affected by deficits in digital literacy development and by present learning environments which are either difficult to access or not conducive to their specific needs. Participatory research frameworks offer compelling approaches to these convergent issues, and opportunities to build capital-enhancing networks around such skills development could place socially situated learning at the heart of effective provision here.

Method and analysis. Data was collected via structured surveys and in-person workshop sessions from a cohort of self-defined older adults (N=7) active within the Scottish public library network. The data was examined by quantitative methods and thematic analysis using the NVIVO software.

Results. Older adults themselves respond positively to working within a participative ethos, which here allows them to identify, assess and understand their own digital literacy needs and to directly challenge the causes of them. A re-evaluation of both the learning environment and of its consequences on fear and confidence around digital literacies is emergent.

Conclusions. Older adults place high value on the creation of peer-led-and-supported social spaces in which to develop digital literacy skillsets. Utilising participative approaches can positively impact this development and shape future research agendas, whilst also unlocking the ongoing and sustainable social capital benefits to be gained from engagement in this way.

Introduction

Public policy measures centred around the sustainable development of digital literacies continue to occupy much societal discourse, particularly for demographic groups such as older adults who are often most impacted by the negative real-world consequences deficits here can bring (Allman and Wong, 2021; Richardson, 2018). *Digital literacy* has been defined as '*the set of skills, knowledge and attitudes required to access digital information effectively and ethically*' (Julien, 2017, p. 2243), a foundational outline further widened to include '*knowing how to evaluate digital information and how to use it in decision-making*' (Julien, 2017, p. 2243). Extant research on the development of digital literacies in older adults is abundant in the present landscape, yet projects approaching this subject from participatory perspectives remain conspicuously small herein. Recent academic swings towards a *participatory turn* in related contexts (LaMonica et al., 2021) do not address this specific issue in any direct way, despite a range of studies outlining the criticality of fostering technological capabilities to aid even normative functions within contemporary life for those in their third age (Richardson, 2018; OFCOM, 2022). Older adults are disproportionately affected by deficits here in intersectional ways, in both digital skills development (Seifert et al., 2021) and in a present research environment which often does not consider their compound needs or in creating favourable conditions to develop these (Formosa, 2010; Gates and Wilson-Menzfeld, 2022). Alongside this is recognition that the context-specific social nature of learning in participatory situations may offer optimal forms of engagement (Tavares et al., 2011) leading to a convergence of research opportunities which this paper seeks to address. These imperatives are urgent, with much political emphasis currently exerted in setting agendas to redress age-related digital imbalances (European Commission, 2023; UK GOV, 2025), and so it could be time to bring user-centred ways to achieve these goals into focus.

Recent research has demonstrated the value of developing social capital outputs to circumnavigate deficits in digital literacy competencies within under-represented communities (Smit et al., 2024), but there are few comparable studies which approach this issue from generative skills standpoints. This is also a significant deficit, as work elsewhere indicates that nurturing effective socio-relational resources is a contributory factor in developing effective information literacy skillsets, fostering positive later-life well-being and enhancing use of wider social technologies (Lund and Wang, 2022; Wilson et al., 2023). Opportunities exist to explore capital benefits derived from tackling digital literacy deficits in socially situated ways, with participatory frameworks offering avenues to unlock these ***hidden*** influences and outcomes. Putnam's (2020) conceptual description of social capital theory is illustrative here in that this refers to:

> *features of social organizations, such as networks, norms and trust that facilitate action and cooperation for mutual benefit.* (Putnam, 2020, p. 35)

The data outlined here summatively addresses these emergent issues. It was collected as part of a pilot programme of participatory engagement with a small cohort of self-defined older adults active within the Scottish public library system, in preparation for a larger schedule of longitudinal work building upon these initial findings. Situated within these contexts the paper therefore addresses the following research question:

RQ: How do older adults assess their own digital literacy needs and what factors influence these?

Research design

The complex non-uniform process of ageing and an academic environment in which '*the involvement of older adults as partners in the research process is still relatively rare*' (Blair and Minkler, 2009, p. 651) sit alongside a burgeoning older adult population (World Health Organization, 2023) which in large part self-assesses itself to lack the ability to understand and evaluate digital media content to a degree comparable with younger adults (OFCOM, 2022). Studies

have shown that tailored forms of engagement have been proven to work well with this cohort (Elgamal et al., 2024) and that participative research specifically can have '*unique advantages for older people*' (Richardson, 2018, p. 47). Such approaches have already proven to be particularly beneficial within public library environments, where of course holistically '*the promotion of literacy is a raison d'etre*' (McShane, 2011, p. 383). These latent notions come against a backdrop of UK research organisations having strategic commitments to public engagement in its fullest forms (UK Research Integrity Office, 2019), meaning that opportunities for research and educational engagement with this demographic could prove to be optimal particularly when their own specific needs are being addressed.

This paper employs a participatory action research (PAR) methodology to engage with a group of self-defined older adults and to empower them to assess their own needs in terms of developing effective digital literacies. PAR is defined as a process of:

> *systematic enquiry, with the participation of those affected by the problem being studied, for the purposes of education and action or affecting social change.* (Green et al., 1995, p. 2)

PAR approaches foster, develop and proliferate formative agency in research participants and centrally involve them at all stages of this process, from conception and development through to outcome implementation and impact assessment.

To participate in this project, participants must be a) self-defined as *older adults* and b) regular users of library services within Scotland. This self-definition of age is important as it can be a critical inflection point in the '*socio-ecological, lifestyle and lifecourse aspects of digital learning and participation*' (McCosker et al., 2021, p. 17).

Demographic Information	N	%
Age (years):		
65 – 70	2	30
71 - upwards	5	70
Gender:		
Female	5	70
Male	2	30
Self-description of age:		
Of working age	1	14
Recently retired	0	0
Comfortably retired	3	43
Longer-term retired	3	43

Table 1: Participant demographics.

Participants were recruited through existing networks within the Scottish public library sector. Each participant completed an initial survey designed to provide self-assessed foundational data on existing digital skillsets. This survey was based around the UK Government's National Standards for Essential Digital Skills (2019) framework. Two in-person group workshop sessions were scheduled centring on the central research question at hand.

A follow-up final survey was collectively compiled and completed based on the qualitative issues arising from the workshop sessions. All cumulative qualitative data was transcribed, anonymised and thematically analysed in line with the assertions of Clarke and Braun (2017) using the NVIVO 20 software.

Results and analysis

The initial self-assessment survey outlined that all participants (N=7) generally considered '*my skills are currently adequate to do the things I need to do*', with a majority professing confidence specifically in skills such as accessing the Internet (N=4), using email (N=5) and keeping in touch with friends and family (N=4). More nuanced hesitancy in skills such as using social media (N=4) and taking and sharing digital photographs (N=4) was also outlined alongside significant feelings of '*no confidence at all*' in skills such as accessing health information (N=5) and financial services (N=5). A variety of ongoing developmental needs were identified, summed up by participant P106 thus:

> *I would like to become more familiar with a fuller range of potential actions in the digital world and to understanding the possibilities that go along with these.*

The conceptual foundations of these skills needs were explored in more detail during the in-person sessions. Qualitative data generated here outlined four main themes of interest with two further sub-themes:

Themes	Sub-themes
Effective support for skills development	The learning environment
Issues of fear & confidence	The ageing process
Understanding terminologies	
The motivation to learn	

Table 2: Themes and subthemes.

From the number of codes resultant in these themes the most significant areas of interest lay in having effective support for skills development and its associated learning environment (N=61) and issues of fear and confidence alongside the ageing process itself (N=40), and consequently these focuses will form the basis of the following discussion. These central themes and sub-themes assessed not only developmental needs but also the participants' perceived causes of these.

Effective support for skills development and the learning environment

Within the workshop sessions, much discussion and emphasis were placed on a desire both to access digital support appropriate to need and to develop skills individually in line with this. Participant P104 considered that effective support:

> *Is a bit of a comfort blanket ...which in turns gives me confidence to try new things. Support should help and explain but also be understandable.*

P105 expanded these notions further:

> *There is a huge difference in having support and in having someone do it for you. I have to stop my family for example saying 'alright - do this and this' by saying 'slow down – show me how to do it myself'.*

A desire for this kind of practical, hands-on learning was also expressed quantitively in the initial survey with a majority of participants stating: '*I would like to develop my skills and learn new things*' (N=6) and '*having someone to help me really boosts my confidence*' (N=6).

An environmental understanding of how skills are developed in the first instance helps to centralise these critical notions of support, with P101 stating:

> *If I go back to my schooldays we were supported to learn maths and English. As an adult I never received any schooling in IT – I was basically shown how to do things at work and left to it.*

The inadequacy of earlier formal learning experiences was also highlighted by P102:

> *I was never exposed to digital skills – they were essentially a work-related thing that someone else devised and we were simply expected to learn and follow.*

P107 however offered an alternative view, considering:

> *I have always thought it is important to learn socially – to create the right environment in which to learn with a range of abilities but where everyone is more or less on the same level.*

Issues of fear and confidence and the ageing process

This deficit of organised and specialised digital learning opportunities also fed directly into notions of fear and a lack of confidence when faced with an increasingly digital world. P107 here stated:

> *Fear and a lack of confidence is my biggest challenge with all of this – quite often I feel like a rabbit in the headlights.*

P103 expanded on this theme by explaining:

> *For me a lack of formal training means a lack of basic understanding – what training I did have was very specific to work, and so I have a fear of trying things outwith this.*

P101 suggested that the ageing process itself plays a key part in these feelings of fear and of lacking in confidence, outlining:

> *I also think our brains obviously decline as we get older – I can be told something and not actually retain it and therefore my confidence dips. If I did things myself with help I probably could though.*

A route to tackling these latent issues was forwarded by P105, positing:

> *I think that trying to build confidence has a social aspect to it? Having a social group that did active sessions would be good because creating a sense of achievement builds confidence.*

Discussion

The participatory methodology employed here is critical to the findings outlined above. Through this the participant group themselves established the key deficits and causes in their own digital literacy needs as they directly assessed them, the first steps towards what Grigorovich et al. term '*structural transformation and empowerment for older adults*' (Grigorovich et al., 2022, p. 328). Having a lack of suitable – and relatable – support is a principal challenge here; while all participants initially professed feelings of adequacy with their current skillsets these quickly changed when tasks outwith their *normal* digital routines were assessed. Support in developing more unfamiliar skills therefore is of paramount importance to an older cohort, but this support must be clear, demonstrable and supplemented by practical learning opportunities wherever possible. Such an environment acts in contrast to the piecemeal, often workplace-based digital training the participants largely encountered in the past, which in line with Formosa's (2010, p. 201) suggestion could be seen to be one which '*prioritised the adjustment of older adults to the shifting social order*', rather than one which favoured moulding the conditions of learning to the needs of

the learners themselves. Providing opportunities to develop and access this support is therefore key – P105 stated this clearly in the follow-up survey:

> *I appreciate I now need to motivate myself to find & ask for help when I need this.*

Equally issues of fear and confidence when assessing digital skills development are brought to the fore using this participatory methodological approach. Here participants posited that such issues were prohibitive to successful learning, outlining that a fear of making irretrievable errors for example was tied to a lack of specific and targeted training opportunities in line with their own peculiar needs. Most formal training they had previously experienced was task-specific and non-contemporaneous – the majority (N=6) of participants considered themselves '*comfortably*' or '*longer-term*' retirees – and as such felt real reticence and a lack of overall confidence when approaching their present digital needs. Ideas around age exacerbated these notions, echoing the theories of Mannheim et al. (2023) and Gates et al. (2022) that perceptions of ageing can have an influential impact on the development of digital literacies within this particular cohort.

The participants considered these issues could be challenged by the creation and employment of socialised networks of learners like themselves – with comparable skills and levels of knowledge – to assist each other and to create functional learning environments where each can prosper and all can address the issues they collectively face. They suggested socialised environments could address issues of concern by not only providing applicable support and learning activities conducive to need, but also by building confidence through holistic peer supported-and-led interactions where achievement is relatable and obtainable. Here social capital outcomes become key, recognising not only that socialisation components and active learning opportunities play a crucial role with such digital skills development (Elgamal et al., 2024) but also that this social capital can be viewed as a general overall *good* and a collective trait available to all within the network to utilise (Putnam, 2020).

Conclusion

This study details that older adults themselves have very clear and objective ideas about their specific developmental needs in terms of the skills attributes required to navigate an increasingly digital-by-default society, ideas which find some resonance in existing academic discourse but which in turn also deepen and enhance it. For a demographic cohort who often find themselves at the sharp end of what Selwyn and Facer called '*the inequalities and injustices associated with the use of technology today*' (2014, p. 489), the employment of participative methodologies here not only encourages challenging these hegemonies but actively empowers its participants to do so. A critical self-evaluation of skills foregrounds the need for different approaches to developing these, placing socialisation and capital network-building at the centre of desirable digital skills provision for an older adult cohort. In doing so, this work also calibrates positionality for further research along similarly participatory lines.

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The body as misinformation – examining the role of bodily information in the formation of false health beliefs

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Abstract

Introduction. There is scant research into the convergence of embodied information and misinformation. This paper aims to address that gap by examining the intersection of information embodiment and health misinformation.

Method. Literature from LIS and adjacent disciplines is synthesised to develop the concept of embodied health misinformation, with particular attention paid to how cognitive biases can influence the formation of false health beliefs based on bodily signals.

Analysis. Although bodily information offers valuable insights into health, the body can act as a site of misinformation generation and substantiation due to breakdowns in interoceptive accuracy and cognitive biases in information processing that apply to bodily information.

Results. Embodied health misinformation is identified as a significant avenue of future study in LIS because of its potential to illuminate the intractability and deeper epistemic conflicts that underpin health misinformation.

Conclusion. A deeper understanding of how misinformation is born and lives within the body can facilitate more sensitive study and evaluation of health misinformation.

Introduction

Although recent research trends in LIS have turned toward both the body-focused study of information embodiment and the society-level concern of misinformation (Huvila and Gorichanaz, 2025), very rarely have those two concepts been woven together in a meaningful way. Yet when it comes to human health, there is profound and complex overlap between our understanding of the body as a source of information and our understanding of health misinformation. This paper will synthesise existing literature on both information embodiment and health misinformation in order to better establish the concept of embodied misinformation, and in doing so, argue that understanding the body's role in misinformation creation and substantiation is significant for the study of health misinformation.

Defining health misinformation

For the purposes of this paper, health misinformation is defined as false or misleading information about human health, where facticity is judged against the current best available scientific evidence and/or consensus from health experts. Drawn from a few key sources (Altay et al., 2023; Vraga and Bode, 2020; Wang et al., 2022), this definition includes misleadingness in order to acknowledge that misinformation is often much more complex than can be captured in a simple true/false binary. Additionally, although health is both contextual and subjective, it is grounded in the physical world – the biological functioning of our bodies and their interactions with our environments. Thus, health misinformation is information that does not cohere with current scientific knowledge of how these systems function to achieve and maintain health.

In this view, health expertise is grounded in a deep knowledge of the physical world, constructed through years of biomedical and clinical practice, or in the case of lay experts, extensive experiential knowledge (Halloy et al., 2023). Ideally, biomedical expertise and lay expertise go hand in hand, with biomedical evidence offering generalisable, population-level understandings of health phenomena, while lay expertise offers more contextual knowledge and includes patients' embodied information.

It is important to acknowledge that this framing primarily reflects a western orientation towards health and does not fully encompass the perspectives of other knowledge systems, (e.g., Indigenous concepts of well-being). While there is a strong case for integrating insights from multiple epistemologies into discussions of health, this paper operates within a more materialist, biomedical framework.

Embodied information

Since there is some terminological ambiguity around embodied information, it is worth clarifying the meanings that are intended here. Marcia Bates (2018, p. 242) offers an expansive definition of embodied information, which she describes as '*the corporeal expression or manifestation of information previously in encoded form*,' where '*encoded*' refers to '*signal-based patterns of organization*'. These patterns exist in the sensory signalling that occurs in our nervous systems and combines with stored memories to give us subjective experience of our bodies in the world. Bates (2018, p. 244) refers to this form of embodied information as experienced information: '*within a brain full of encoded information, we somehow create a lived experience of embodiment of our environment and our bodies*'. This type of embodied information is aligned with Lloyd's (2010, para. 2) definition of corporeal information, '*information that is experienced through the situated and sensory body*'. Both these definitions encompass the form of health information that is the focus here: internal information about a person's health status that they access through interpreting their own bodily sensations. As such, although the term embodied information covers a wider concept, in this paper, it is taken to be specifically the experienced, corporeal form.

This type of embodied information is closely tied to interoception, the process by which the nervous system uses bodily signals to provide '*a moment-by-moment mapping of the internal landscape of the body*' (Berntson and Khalsa, 2021, p. 18). It is possible to consciously tap into these signals to glean information about the state of the inner body, a concept known as interoceptive awareness.

This experienced form of embodied information is highly subjective, and largely hidden from everyone except the experiencers themselves. As such, much of the investigation of embodied health information in the LIS literature comes from qualitative studies of people whose complex health status has led them to careful interrogation of their own bodies, e.g., individuals with chronic illnesses (Chen, 2015; Godbold, 2013; Whitman et al., 2021). For example, patients with kidney disease report that bodily information is '*continuously attended to, managed, worked to assess and understand, and leveraged to sustain favorable outcomes from treatment*' (Whitman et al., 2021, p. 10). These studies have reported that there is significant information work involved in accessing and making sense of the health information that originates in one's own body, and in doing so, reveal the importance of taking the body seriously as a source of health information. Indeed, disbelieving a person's account of their own bodily experience is a deeply harmful form of epistemic injustice (Carel and Kidd, 2017), and is implicated in the development of mistrust in science and medicine (Annesley, 2020).

With that said, the work of learning to read one's body does not rest exclusively on using corporeal information. Rather, one's own embodied information is commonly integrated with information from other, external sources in order to inform health behaviours, beliefs and decision making (Huttunen, 2022; Oliphant et al., 2022; St. Jean et al., 2018; Veinot and Pierce, 2019). For instance, Hicks and Lloyd (2022) find that, in assessing the risks of the Covid-19 vaccine, individuals put their own experiential and bodily information in conversation with other sources of confirmatory or disconfirmatory information. As Lloyd et al. (2014) argue, the process of orienting within the landscape of diverse information sources is an important health information practice unto itself, and is a core component of what it means to be health literate.

The body as a site of misinformation creation and substantiation

In part, learning how to read one's own body requires significant information work *because* it is possible to be wrong about what the body is saying. When that is the case, embodied information can contribute to the formation of false beliefs about how bodies function, thus creating a situation of embodied misinformation.

In neuroscience and psychology, awareness of interoceptive information is increasingly seen as distinct from the ability to accurately interpret what that information means physiologically (Garfinkel et al., 2015). Interoceptive accuracy is affected by a number of factors, including body image (Zamariola et al., 2017), mental health (Pollatos et al., 2009) and other lifestyle factors (Mulder et al., 2024). In other words, how well we can interpret our corporeal information is dependent on a kaleidoscope of factors; just because we feel a sensation does not mean that we necessarily understand what it means, or have a complete picture of what is actually happening within our bodies.

Moreover, the same cognitive biases that contribute to the formation of false beliefs based on external information sources can also apply to information originating from within the body. For instance, human judgement is subject to availability bias, the tendency to place more weight on the information that is most readily available or easily brought to mind (Van Boven, 2007), which goes hand in hand with fluency effects, or our tendency to interpret ease of processing as a marker for truth (Marsh and Yang, 2021). When the topic at hand is health, it is reasonable to suggest that the immediate and visceral nature of embodied information makes it much more salient than broad, population-level statistics about health and disease. As such, corporeal information can be

highly impactful when forming beliefs about health, even if that information is not fully representative of the reality of what is actually occurring within the body, or broader knowledge of human health.

The immediacy and intimacy of bodily information coalescences with other cognitive biases as well. In studies of health misinformation and formation of false beliefs, there has been much discussion of confirmation bias, the tendency to look for and interpret information in a way that is consistent with one's pre-existing beliefs (e.g., Savolainen, 2022). When it comes to bodily listening, it stands to reason that a person is more likely to tune into information from their own body when it coheres with other parts of their worldview. For instance, the energy healing evangelist who believes meditating with a crystal should cure their cold is primed to notice any sign that their sniffles are abating after a treatment, even if there is no plausible biological basis for crystal healing (Peterson et al., 2022).

Relatedly, the human brain also tends towards apophenia, searching for patterns in randomness (Merriam-Webster, n.d.). This tendency contributes to the illusion of causation, which underpins many false beliefs about health (Matute et al., 2015). Confirmation bias and apophenia are both implicated in the placebo effect, which can lead to beliefs about the efficacy of treatments that are, on a broader scale, ineffective (Watson et al., 2012). When a person makes a change in their health behaviour and then perceives a change in how they feel, it is easy and intuitive to assume a causal relationship, even where one does not exist. In this way, our bodies can mislead us.

Lueg (2014) suggests that the gaps between what we sense and what we perceive are important considerations for understanding human information behaviour. As such, questions of perception should colour the way we approach embodied information. Although our bodies provide valuable health information, it can be treacherous to rely too heavily on internal, bodily information to develop beliefs about human health more generally. Because it is possible to create and substantiate misinformation within our own bodies, it is vital that embodied information is kept in its appropriate personal context, and interrogated in conjunction with other information sources.

Embodied misinformation in the literature

Embodied misinformation has not been systematically documented in the LIS literature, although some studies of embodied information do acknowledge that corporeal information can be inaccurate, misleading or challenging to interpret (Godbold, 2013; Wella and Webber, 2018). With that said, there is some evidence of embodied misinformation from adjacent fields. Sociologists Topham and Smith (2023) use the phrase *embodied misinformation* to characterise the information in wellness influencers' messaging around detox diets and cleanses, health practices that are widely discredited (Klein and Kiat, 2015). In their study, they report a case of embodied misinformation about diet wherein '*it no longer matters whether detoxes, diets, and other patterns of eating are scientifically validated. What matters is how this knowledge is embodied and lived, and how it makes us feel*' (Topham and Smith, 2023, p. 692). Relatedly, working in philosophy and communications, Versteeg and her colleagues (2018) have explored discourses around ADHD medication and aspartame, identifying how bodily listening is deployed to negate biomedical evidence and '*transform personal health choices into advice that does not need to be supported by factual or scientific sources*' (Versteeg et al., 2018, p. 436). Both these studies illustrate how embodied misinformation appears where there is an inappropriate extension of internal, bodily knowledge to generate and reinforce claims that do not align with current, best evidence of how the physical body works.

Significance of embodied misinformation

Understanding embodied misinformation is significant for the study of misinformation in a number of ways. First, further exploring embodied misinformation can illuminate some of the features that make health misinformation both persuasive and challenging to assess. Claims based on corporeal

information are so intimate and subjective that they are often insulated from fact checking, enabling bodily information to act as a core of truth around which false health claims are packaged. The bundling together of true personal narratives and false claims is particularly troublesome; misinformation that is tinted with some elements of truth tends to be received as more credible and persuasive (Hameleers et al., 2023; Zhao and Tsang, 2024). Research does suggest that it is difficult to judge the veracity of health information when the claims are couched in personal narratives, with some people believing that information based on personal experience cannot be misinformation (Tang et al., 2024). The willingness to believe other people's personal experiences is reasonable, and in fact crucial for ensuring epistemic justice, yet becomes problematic when those experiences are framed as evidence for claims that are, broadly-speaking, untrue. This tension speaks to the importance of source triangulation in information practice; a person's corporeal experience can be respected as a valuable source of information while also being situated in conversation with information from other social and epistemic modalities (Lloyd, 2010).

Finally, scholars suggest that some problems of misinformation can be traced to differing sets of ideals about how to evaluate and achieve knowledge – for example, considering personal experience to be a more reliable way of knowing than scientific inquiry (Chinn et al., 2020). Embodied health misinformation often represents just such a tension, and studying it can illuminate cases of misinformation that are shaped by deeper epistemic conflicts. In better understanding these tensions, it is possible to develop more nuanced approaches to health misinformation in which individuals' internal health experiences are given the value they are due, while also being kept in an appropriate epistemic context.

Conclusion

In this paper, I argue that bodily information can be simultaneously true and misleading, and in that way, bodies are powerful vehicles for the creation and reinforcement of health misinformation. By unpacking the interplay between personal health experiences and broader health knowledge, future studies of embodied health misinformation will offer LIS the opportunity to bring nuance to our discussions of misinformation, empowering us to combat health misinformation in a way that remains sensitive to diverse forms of knowledge.

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Not all who wander are lost: an argument for searching to browse as a separate information behaviour

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Abstract

Introduction. The relationship between search and browse has long been framed as separate, interleaved and sometimes equal activities. With the shift to nearly exclusive online behaviour, this relationship is changing

Method. In light of some surprising incidental research findings, we conduct a critical literature synthesis of literature on search typologies, exploratory search and browsing, especially digital browsing.

Analysis. Based on the results of previous work, we identify a gap in previous models of search, specifically searching to browse.

Results. The notion of searching to browse changes the relationship between searching and browsing, particularly in a digital context. This new form of both searching and browsing creates a need for new interfaces, particularly for collecting items of interest.

Conclusion(s). We argue for searching to browse as a new form of information behaviour, one that is slowly being accommodated by digital information systems. We recommend that more digital information systems take searching to browse into account.

Introduction

The interaction between searching and browsing in information seeking behaviour has long been characterised by approaches that see them as separate, and only sometimes equal. They are discrete activities in many of the major information seeking models, including Marchionini's model (Marchionini, 1997), Kuhlthau's model (Kuhlthau, 1991) and Ellis' model (Ellis, 1989). Where they do co-occur, they are described as *interleaved*.

In this framing, searching is positioned as an approach to information seeking that has a clear goal, while browsing is an approach for people with less well-defined goals (Ellis, 1989; Marchionini, 1997). The underlying assumption is that people mostly browse to increase their confidence in their goals and move towards a search session that will provide a single document that meets their needs (Kuhlthau, 1991). The other use for browsing in this framing is to winnow out irrelevant documents returned by the search (Ellis, 1989; Kuhlthau, 1991). There is a body of literature on searching that does not deal with an explicit goal, the literature on exploratory searching (Marchionini, 2006; Medlar et al., 2024; White and Roth, 2009), but it, too, largely ignores browsing as an activity.

Literature on browsing, though, demonstrates that it can be a primary goal: that people do it for pleasure, exploration or collection sensemaking (Apted and Choo, 1971; Bates, 1989; Dervin, 1998; McKay et al., 2019; McKay et al., 2020). This has often happened in physical spaces, though (McKay et al., 2019; McKay et al., 2020; Rice et al., 2001; Zhang et al., 2022), and dedicated digital browsing tools have largely been unsuccessful as they have not met all of the requirements for successful browsing (McKay et al., 2018). Nonetheless, there is a nascent literature on digital browsing that shows that people co-opt digital tools to create their own browsing structures (Zhang et al., 2022).

The authors of this paper have a century of experience between them studying how people find information, often with a specific emphasis on browsing. Incidental findings in our own research (McKay et al., 2019; Zhang et al., 2022; Zhang et al., 2024) and conversations with colleagues (Witten et al., 2009) hinted at searching to browse as an activity, and a literature scan revealed it to be little discussed in the literature. Throughout this paper we draw together literature on searching, browsing and information seeking to argue for an under-recognised interaction between searching and browsing: the specific act of searching to browse. This activity is important as a key function of digital browsing, but it turns one of the fundamental assumptions of search, that people searching are looking for a single answer (Robertson, 2008), on its head. Understanding searching to browse is a new challenge in information behaviour and information interaction and retrieval, and will be a key driver of digital systems that support online browsing.

The rest of this paper is divided up as follows: first, we present the literature on browsing offering a working definition of browsing, and identifying some of the changes in digital browsing. Next, we look at searching, particularly typologies of search and exploratory search. Third, we cover the interactions between searching and browsing in the literature, first discussing information behavioural models, then turning to digital search. Then, we make a clear case for searching to browse as an explicit information behaviour that has not previously been identified in the literature, and give examples of how it might occur. Finally, we draw the conclusion that this is an important and under-recognised form of information seeking, and point to avenues for future research.

On the nature of browsing

Browsing has often been defined in opposition to searching: a search is a targeted approach to a clearly defined information goal, and browsing is trying to meet loosely defined information needs (Apted and Choo, 1971; Ellis, 1989; Herner, 1970; Kuhlthau, 1991; Levine, 1969; Toms, 2000; Wilson, 1999). The term browsing is also used to describe shopping based activities and sequentially examining web pages (Rice et al., 2001), which again fit with the loosely defined goals: we do not browse when we know we only need milk and bread, or when we need a specific piece of

information. The loosely defined goals, therefore, are a key reflection of the requirements of the information seeker, but do not describe the activity of browsing, nor what is being browsed.

Examining what is being browsed, there are two distinctions made by (Marchionini, 1997). The first is browsing an actual document versus browsing a representation of a document (a distinction also discussed by Apted and Choo (1971). In this paper we are focusing on surrogates, as this encompasses nearly all digital browsing (searching for documents, shopping without a list) with the exclusion of web browsing, which is a learning activity. The second distinction made in *what* people browse is whether they are browsing within a single document or between documents (Marchionini, 1997). Browsing within a document is typically done to assess its suitability to meet an information need (Apted and Choo, 1971; Marchionini, 2006), whereas between-document browsing is browsing between objects to hunt for useful objects (Apted and Choo, 1971; Marchionini, 1997), to seek serendipity, or simply for pleasure (Levine, 1969). The discussion in this paper will focus on this latter, between-object browsing.

Turning to browsing activity, a clear distinction made in every early discussion of browsing is between *purposive* or *intentional* browsing, where the information goal is clear (if not readily described), in comparison to serendipitous, exploratory browsing (Apted and Choo, 1971; Herner, 1970; Levine, 1969). Information needs that used to be met using directed forms of browsing are now commonly addressed using search tools (McKay et al., 2019), as predicted by Bates (Bates, 1979). Even where it is hard for the searcher to formulate a query, more modern search tools are better able to cope with complexity, as predicted by (Belkin et al., 1995). If this complexity is addressed by search, true browsing necessarily requires a loosely defined goal (Toms, 2000), or a desire or willingness to consider more than one object to meet a need (Bates, 2007).

We thus have a loose definition of the kind of browsing we address in this paper: it is not searching (although it may include search), it is between objects and the goal is loosely defined and may be met by more than one possible object. What remains, then, is the activity of browsing, and for that we may begin with Bates' excellent description (Bates, 2007):

1. *glimpsing a field of vision,*
2. *selecting or sampling a physical or representational object from the field,*
3. *examining the object, and*
4. *physically or conceptually acquiring the examined object, or abandoning it.*

This definition captures not just browsing for information objects, such as books or documents, but also other forms of browsing, such as shopping. It does describe examining objects in isolation, though, which is unrealistic in a world where we have limited resources to consume information or acquire objects (Pirolli and Card, 1999). Thus, as Kwasnik notes (Kwasnik, 1992), we also compare objects while browsing, as noted in McKay's definition: *'browsing is an exploration of information objects in the context of their relationship to each other'* (McKay et al., 2019).

This leaves one final component of browsing: *where* it happens. The majority of studies of browsing (e.g. Hancock-Beaulieu, 1993; Kwasnik, 1992; McKay et al., 2019) have been done in physical libraries. Attempts to create digital browsing systems have been largely unsuccessful, because the needs of browsers have not been met in a single system (McKay et al., 2018). Recent research, though, has demonstrated that people do manage to construct browsing experiences online, albeit by co-opting several systems in concert. The first stage in this process is finding a collection: i.e., Bates' field of vision, or a patch for foraging (Pirolli and Card, 1999) or berrypicking (Bates, 1989). Collections may be found in a variety of ways, including returning to a previously used collection (which has analogues with McKay's location seeded browsing (McKay et al., 2019)), constructing a collection (Xia, 2010) or searching to locate a collection (McKay et al., 2019; Rowley, 2002). This search for collections is the seed of searching to browse.

On search

Since the introduction of interactive search in the first publicly accessible library catalogues, how people use search tools has been the subject of extensive research. Even before that point, library and information science was a fundamental contributor to the conception and development of computer-based search technologies (e.g. Hancock-Beaulieu, 1993a, 1993b). That involvement is exemplified by the evolution of the Cranfield methodology (Cleverdon, 1967) that still underpins the evaluation of search engine technologies today (Robertson, 2008). The fundamental assumption of both those experiments and early search technologies was that the sought information existed, and that it could be found in a fixed, small number of documents.

While browsing predates the digital computer, and is possibly almost biological in origin (Bates, 2007), searching is in contrast fundamentally tied to modern computing. Even early conceptions of the potential of search technologies, as seen in 1940s publications such as Vannevar Bush's 'As We May Think' (Bush, 1945) anticipated and depended upon the already understood capabilities of contemporary electronics. From that beginning, the development of search technologies has evolved in lock-step with the capabilities of computing technology. Technology has affected the limitations of each successive generation of search facilities (Baeza-Yates and Ribeiro-Neto, 2011). Search technologies have progressed rapidly because of both advances in computer hardware and increasingly sophisticated evaluation techniques improving upon the underlying Cranfield method, right up to today's AI-enhanced searches.

Once search was no longer a library technology, and instead became an internet technology, what people could search for and how they searched became a more open question. Early examinations of web search took the *what* very literally, and focused on the actual materials people sought (Jansen et al., 1998; Spink et al., 2001); later studies addressed the what more conceptually, forming typologies of search (e.g. Broder, 2002). Exploratory search emerged as a form of search that broke many of the assumptions about search; search that cannot be met by a fixed small number of documents, and which may evolve in nature due to the complexity of the task. While researchers in information retrieval have consistently centred the role of search in exploratory search, we argue that it is critical to return the central focus to the goals of the information seeker. In this section we will describe the literature on different kinds of searching, noting relationships to browsing as we progress.

Search typologies

Andrei Broder introduced the earliest and still influential differentiation of search activity (Broder, 2002). He delineated three forms of query: informational, transactional and navigational. Informational queries corresponded closely with the platonic ideal of search that dated from the 1940s: searches done to discover information on a particular topic or theme. The found information would exist (on the Internet) in a static form. The ideal target would either be one or a small set of highly relevant documents. In contrast, transactional search was undertaken to find places (e.g. a database or web-based retail store) where further interactive work would be done, rather than a document or set of documents. Navigational queries were more limited in scope, seeking for a known website, or a website that the searcher had a strong plausible belief would exist. All that they lacked, ultimately, was a known URL to locate the underlying website at. In this type of query, Broder argued, there is almost always a single ideal or correct URL that was the correct result.

While superficially, we might believe that navigational search may be part of browsing, it would be more accurate to say that at best the ideal result is a website which the user may subsequently browse. Consequently, a navigational search may precede someone's browsing activity, but it is not inherently interconnected with it beyond that.

Rose and Levinson (2004) updated this taxonomy to further refine informational search into five categories: directed (where one wishes to learn something about a topic), undirected, in which

people have a *tell me about* information need, advice, locating where a real world product can be accessed, and list, which is to get a list of websites that help to meet some underlying goal. The latter two forms of search may well be associated with browsing, the first physical browsing in the form of shopping, the second digital browsing. This typology further breaks down resource searching (called transactional in Broder's taxonomy) into searches where the person searching is looking to interact or be entertained, both of which fit into the possible experiences of browsing described above.

Those who have drawn on these taxonomies have noted the possible interplay between searching and browsing: e.g. Thatcher (2008). However, they have used the term browsing to denote a searcher's navigation within a website using hyperlinks (i.e. something akin to Marchionini's within-document browsing) rather than in the sense traditionally meant in information science. Browsing in information science would typically involve an information seeker seeking and scanning lists and hierarchical structures that index a large collection (see e.g. Ellis, 1989), in line with Marchionini's between-objects browsing. This focus on browsing as an activity within a conceptual document or work, is reinforced by Thatcher's own words, as he describes the information seeker '*reading over information and selecting information to focus on*', which reflects the web browsing described above. Indeed, Thatcher's use of the term browsing for this is especially confusing, as he covers both within-document browsing and browsing between objects in a large collection.

There are tantalising allusions to behaviour that might be or contain browsing in these typologies, but only limited specific reference to it. This is perhaps unsurprising, as typologies by their nature are intended to reduce complexity, but these typologies also do not capture some of the very complex interactions we see searchers engage in. To begin to see these, we need to turn to Kim's search task classification (Kim, 2009), which includes factual tasks, interpretive tasks and exploratory tasks. This latter describes more open-ended activities, those that are typically assigned to browsing in information seeking models. This draws on conceptions of 'exploratory search, which we will explore in more depth below.

Exploratory search

Marchionini introduced the concept of exploratory search in 2006, noting it was a complex search activity usually made up of multiple queries, where the searcher wanted to explore or learn something (Marchionini, 2006). In contrast to conventional models of search, which focused on finding useful material, he depicted exploratory search as widening the context of search to include learning and investigation. Many conventional search goals could be met effectively by using analytical search strategies (typically planned series of carefully crafted queries). In contrast, Marchionini argued that increasingly a new type of search was emerging in which in-process learning and evaluation mattered at least as much.

In this newly described form of search, there was an extended process of intentional trial and rework as the information seeker learned about the contexts of knowledge related to their interests. In addition, information seekers would knowingly try speculative searches and even likely dead-ends in order to better understand a domain and the information within it. In this original form, exploration through tentative leads, deliberate negation and hypothesis testing went hand-in-hand with learning and moments of more conventional search activity.

What actually constitutes an exploratory search is contested. Marchionini's original definition includes exploration and searching to learn, whereas White's more recent and comprehensive definition moves more explicitly towards learning as a goal (White and Roth, 2009). This focus has led to the notion of *search as learning* (Vakkari, 2016), a concept that has had broad uptake in the information retrieval community, (e.g. Eickhoff et al., 2017). More recent conceptualisations move back towards breadth, with (Palagi et al., 2017) describing it as requiring a '*serendipitous attitude*'

on the part of the searcher, and focusing on open-ended goals with evolving, complex information needs. Complexity is further reinforced as a key feature of exploratory search in (Athukorala et al., 2016), although this discovery is again downplayed in this work.

While Marchionini's definition (Marchionini, 2006) included searches that were specifically exploratory, exploring a topic or problem space, the definition of exploratory search began to narrow in 2009, when White and Roth defined it explicitly as search where information seekers were trying to learn something, rather than merely explore (White and Roth, 2009).

Over time, the formulation of exploratory search has moved closer to a series of searches that follow from each other as the information seeker becomes more aware of a domain: a conception that is much closer to search as learning, and neglects, or by design excludes, browsing other than conventional web browsing.

This phenomenon has been commented on most pointedly by (Medlar et al., 2024), in their extensive literature review on exploratory search. They note that seventy-seven per cent of the literature that they synthesised focused narrowly on novel search interfaces, and a further twenty per cent of papers were themselves purely literature-based. Furthermore, a full half of those literature-based papers drew solely on articles and papers from computer science. This leaves a mere three per cent of studies primarily focused on information seeker behaviours or elements of exploratory search beyond the search specifically. Even there, Medlar et al. (2024) note with disappointment a predominance of university students and staff in the participants of each study, a dearth of qualitative investigations, a limited range of highly stereotyped tasks and that most questionnaires used to assess the systems being studied had not been validated. In general, the burgeoning of a literature on exploratory search has not comprised of a balanced range of methods, participant groups, varieties of tasks and study designs. Rather, we have an abundance of information on novel designs for search interfaces, and precious little on the wider range of activities involved in learning and investigation.

Marchionini's original conception of exploratory search (Marchionini, 2006), included more unconventional, less analytical search strategies, and information discovery methods beyond search. These actions, though, are almost entirely absent from the literature on exploratory search. White and Roth (2009) also set exploratory search within a wider canvas of information behaviours. They highlighted relationships with other concepts such as Marcia Bates' highly-regarded berrypicking model (Bates, 1993), which are technology-agnostic and do not presume the presence or absence of any single information seeking tool. A different perspective on exploratory search notes that it does not map well to traditional information seeking models, such as Marchionini's own model or Ellis' model, which include browsing. This is notable, given that a '*serendipitous attitude*' (Palagi et al., 2017) (strongly associated with browsing (Foster and Ford, 2003)) is a key element of exploratory search, and that discovery and exploration, typically associated with browsing, were part of the early definition. White and Roth explicitly note '*exploratory browsing*' as part of exploratory searching, although they do not define this as an activity. It is clear that exploratory searching and browsing are likely to interact, but how?

The relationship between search and browse

While descriptions of both searching and browsing hint at each other, the two activities are predominantly treated as separate, for example, as portrayed in (Marchionini, 1997). This separation is found in many early models of information seeking (e.g. Ellis, 1989; Kuhlthau, 1991). We will next look at how searching and browsing are depicted in different models and are related to or contrast with each other. As we shall see, this separation further reflects a separation in research communities between, for example, information retrieval versus information science. In turn, that separation has underpinned a dearth of empirical work that explores digital browsing.

Information seeking and behaviour models

Early information seeking models all treat searching and browsing as separate activities, (Ellis, 1989; Kuhlthau, 1991; Marchionini, 1997). Marchionini explicitly notes that searching and browsing are interleaved in the digital information seeking experience, and that information seekers likely cycle between them (Marchionini, 1997). Ellis depicts browsing as '*undirected searching*' and that systems need only to simply surface metadata to facilitate browsing (Ellis, 1989). Kuhlthau's model has an exploratory investigative stage at the beginning of the model, where she notes that interactions between information seekers and systems is awkward (Kuhlthau, 1991). While in her model, information seekers move towards more focused information searching, she does note that they may cycle between these phases. Each of these models allows for the possibility that information seekers may wish to begin with browsing, but they each also have a clear focus on search. This is in contrast to Wilson's overview of models, which, while it does not explicitly mention browsing, does clearly note that information search is not the entirety of information behaviour (Wilson, 2010). Foster's nonlinear model further eschews search as a core component of information seeking, instead putting it on a par with browsing as an opening move. Neither move has to happen, but both might, depending on other features such as the context of the information need and the openness of the information seeker (Foster, 2004).

There are orthogonal models of information seeking and behaviour that may more effectively reflect browsing as an activity. While Pirolli and Card's information foraging model (Pirolli and Card, 1999) is primarily a behavioural economic model of information behaviour, the goal of information seekers in this model is to find a rich patch of information. That said patch might conceivably represent Bates' *interesting scene* (Bates, 2007). Bates' own berrypicking model (Bates, 1989), one of the earliest descriptions of and reflections on the need for digital browsing, is a form of situated action model (Suchman, 1987), where the information seeker and the environment interact in ways that change the trajectory of the information seeking. The information gathering described in Bates' model, though, is explicitly an outcome of browsing, and the comparative selection mirrors the comparison described by both (Kwasnik, 1992) and (McKay et al., 2019). A final clue to the relationship between searching and browsing is found in Foster and Ford's discussion of serendipity in interdisciplinary research, in which they note that, '*paradoxically, researchers may have an idea about where potentially useful material may be found – but be unsure about the exact nature of the content that may be expected*' (Foster and Ford, 2003, p. 333). This suggests that these researchers may engage in navigation to these locations, possibly using search, but that their goals when they reach them are open-ended. This suggests a form of information seeking where searching may be subordinate to browsing, even in a digital context.

Information retrieval and digital browsing

Far and away the vast majority of work on digital interfaces that help find information has focused on search. Search is a natively digital technology, as noted earlier, and therefore the paradigm lends itself better to digital development. The discipline of information retrieval has been born out of mechanisms that quantify the quality of search, and therefore make it easier to compare different approaches to the same problem (Baeza-Yates and Ribeiro-Neto, 1999; Fidel, 2012). The information retrieval community, when browsing is mentioned, typically assumes browsing of a search results page, possibly with facets to narrow a broad, exploratory search space (Ballard and Blaine, 2011; Suominen et al., 2007; White and Morris, 2007). Fundamentally, though, these interfaces, do not provide the rich, search-free experience that browsing requires (McKay et al., 2018), and so the browsing that occurs in them is a very limited simulacrum of what is possible.

The division between information retrieval, which deals in search, and information behaviour, which encompasses browsing, is perhaps most eloquently captured by Raya Fidel in chapter 10 of her book (Fidel, 2012). She notes that search engines get developed because information retrieval folk are instrumentalist, and they have metrics to determine whether changes make a search

engine better. In contrast information scientists, in her view, lack the technical capability necessary to digitally instantiate the behaviours they study, and cannot provide concrete enough goals to interest information retrieval specialists. A clear example of the disjunction in understanding comes from Olston's work on scent trails: browsing is described as '*inefficient*' because of '*weak scent trails*' (Olston and Chi, 2003). This approach fundamentally misunderstands browsing: efficiency is not a core component of the browsing experience, which is about pleasure, serendipity and exploration (Foster and Ford, 2003; McKay et al., 2020). The canon of the one true answer in information retrieval has been repeatedly critiqued (Bates, 1984; Burrows, 2012; Cooksey, 2004; Dörk et al., 2011; Helberger, 2011; McKay et al., 2020), with commentators calling for diversity, visual interfaces and serendipity to support better digital information experiences, including search. The need for search-free interaction is specifically noted as a requirement by some commentators (Kwasnik, 1992; McKay et al., 2018; McKay et al., 2020; Thudt et al., 2012): there is a genuine need for browse-first interactions that focus on browsing and exploration.

Some interfaces have been developed specifically to support exploration (Kleiner et al., 2013; Thudt et al., 2012), but they, too, lack many of the characteristics of successful physical browsing interfaces (and potentially the vast support of information retrieval researchers) to be widely utilised or successful (McKay et al., 2018). This is particularly surprising given the financial incentives to get browsing right: it is a key component of the physical shopping experience (Xia, 2010), and people want it online (Rowley, 2002), but the tools are unsatisfying (Detlor et al., 2003) and limit what shoppers can actually achieve (Detlor et al., 2003). Nonetheless, studies of people actually attempting digital browsing have shown that they are effective at co-opting a series of tools to create broadly satisfying browsing experiences that are recognisably browsing, in the definition offered in this paper (Zhang et al., 2022). One of the key tools in digital browsing is search, perhaps because of its dominance in online interaction. Nonetheless, the use of search as a prop for browsing does not occur in the major information seeking models, which are predominantly search-first, nor in search typologies. This is a previously un- or under-recognised activity, and one that cuts across many classifications of search, as we will see in the next section.

Searching to browse

The literature on interactions between searching and browsing predominantly positions browsing as a subordinate or less-than information activity, a fallback when search does not or cannot work (Ellis, 1989; Kuhlthau, 1991; Marchionini, 1997; Wilson, 1999). Search typologies (Broder, 2002; Rose and Levinson, 2004) and the literature on exploratory search (e.g. Athukorala et al., 2016; Marchionini, 2006; Medlar et al., 2024; Palagi et al., 2017; White and Roth, 2009) barely mention browsing, and digital information interfaces have focused predominantly on search. However, others have noted the relationship between searching and browsing. In digital libraries, Witten's Greenstone project was field leading (all three authors had the privilege of spending time on it). Witten argued that in large collections, search was a vital tool to reduce the quantity of material to browse down to a workable size (Witten et al., 2009). They argued that keyphrases and other indexes were a potential alternative that also could enable browsing, as demonstrated in (Paynter et al., 2000). However, such alternatives are seldom found in today's even larger digital collections.

The contribution of this paper is to add to the search typologies an under-recognised form of searching: searching to browse. In this form of searching, the goal is certainly not to find a single object. Rather the goal is instead a collection of things that can be browsed for selection, serendipity, or leisure (Bates, 2007; Celoria, 1969; Herner, 1970; Rice et al., 2001). Searching to browse has been identified in some previous literature on physical browsing, including McKay's typology (McKay et al., 2019), and Kwasnik's work (Kwasnik, 1992), although only tangentially.

In contrast, when we turn to digital browsing, Zhang's description highlights how important search is for digital browsing, noting that the first action of digital browsing is to select a collection to browse (Zhang et al., 2022). This action is one that is rarely seen in the physical context, as the time

cost of physically moving between collections is often prohibitive: for example, a reader having gone to the British Library would face over an hour's travel to switch to the library of the UK National Archives, although both are in London. When the collections are online, though, searching becomes a key means of locating or generating a collection: for example, one can rapidly relocate from an online collection in the British Library to another related one hosted by the National Library of New Zealand.

Some examples of searching to browse involve simple navigational searches to a known source: Zhang gives an example of a browser searching for a previously seen social media feed (Zhang et al., 2022). Similarly, Rowley describes shoppers searching for a name brand to identify a website where they might shop (Rowley, 2002).

Searching to browse can also be what Rose and Levinson termed an informational list search (Rose and Levinson, 2004), where searchers generate a list of candidates to be consumed. This is described in Zhang's work (Zhang et al., 2022), where one of her participants searched Google for '2021 *best sci-fi novels list*', which produces both a collection (seen in Figure 1 below), and a list of other collections that may be useful (examples at the bottom of Figure 1). The existence of the Google presented collection is one example of a craft-informed, if not scientifically based, recognition of searching to browse, and shows one way that searching to browse might be incorporated even into the most mainstream interfaces.

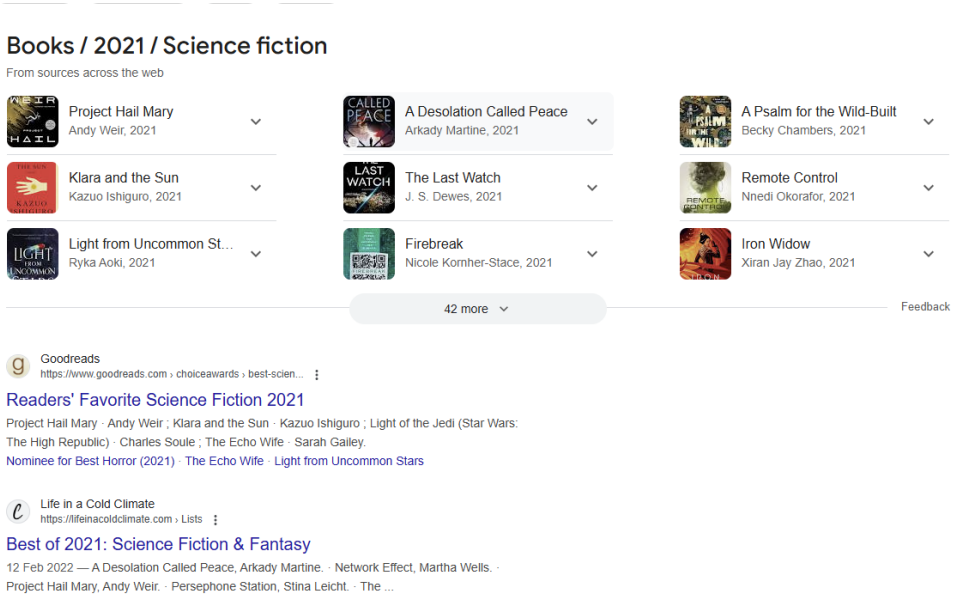

Figure 1. Google results for '2021 *best sci-fi novels list*'

Finally, some observed searches are exploratory, berrypicking style, searches to generate a candidate list. Zhang notes this in her study, where people used tabs and wishlists to create persistent collections they could go back to and browse at leisure (Zhang et al., 2022). Fan and Chiu also described this phenomenon, calling the created collection an '*intermediate candidate list*' (Fan and Chiu, 2022).

As we can see, searching to browse is a cross-cutting search activity, with targets including stores, social media accounts, individual items to be curated into a collection and algorithmically generated collections. Existing search typologies do not adequately account for this behaviour, nor does the distinction between searching and browsing. Discussions of interleaved (Marchionini, 1997) search and browse approach this type of searching, but do not explicitly describe it, and descriptions in the previous literature on physical browsing have been glancing.

The descriptions of searching to browse in this paper are based on empirical data as reported by the authors of the cited papers (Fan and Chiu, 2022; McKay et al., 2019; Rowley, 2002; Zhang et al., 2022), but are unlikely to be comprehensive; it seems likely for example that searchers may turn to generative AI tools to generate candidate lists in the future. We also do not have a clear picture of the process of searching to browse, which is likely to be as complex and detailed as other forms of search. The identification of searching to browse as an information seeking behaviour offers a novel opportunity to further investigate this behaviour, but also to develop search interfaces that specifically recognise and support this kind of search. Better searching to browse interfaces will improve experiences of both digital searching, by supporting an unrecognised goal, and digital browsing, by creating empirically grounded interfaces to support it.

Conclusion

In this paper we have conducted an extensive review of literature on information seeking, searching and browsing. We have closely examined descriptions of the relationship between searching and browsing in the literature, and looked at historical reasons for the lack of support for digital browsing. We have also looked at novel studies of digital browsing, noting previously unrecognised strategies for generating browsing experiences that do not rely on specific tools.

Through our analysis, we have identified a previously unrecognised form of search: searching to browse, where the goal is not an item or items, but instead a (possibly nondeterministic) set of items that allows for the serendipity, selection and pleasure associated with browsing.

The explicit framing of searching to browse affords new opportunities to develop effective digital information seeking interfaces, but also requires further study of this newly identified behaviour. Adequate, much less effective or enjoyable, support for digital between-document browsing has proven a difficult research challenge; one this novel perspective on the relationship between search and browse may help to address. Not all who wander among search results are lost: some are deliberately enjoying the scenery, and digital interfaces can, and must, support this activity.

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'There's no onboarding, no orientation:' the role of neoliberal university structures in the lives of precarious academics

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Abstract

Introduction. Increasingly, universities rely on casualised labour for teaching and research activities. Previous research demonstrates that the information practices of academics working in these conditions are significantly compromised, making their information work more difficult. This paper further explores the context in which contract academic staff work and provides a more holistic picture of their information environment.

Method. To gain a better understanding of the academic context, semi-structured interviews were conducted with twelve heads of academic units working in various disciplines and across Canadian universities.

Analysis. Interview data were analysed using reflexive thematic analysis, informed by the theoretical frameworks of neoliberalism and information marginalisation.

Results. Two themes were generated from the analysis. 1. Casualisation destabilises and creates divisions. Relying on casualised labour means more and shifting work for permanent staff and the creation of unequal power relationships based between permanent and casualised academics. 2. Contractual status influences access to information and departmental engagement. Based on their contract status, casualised academics are often excluded from the places where workplace information, limiting their access to information.

Conclusion. Neoliberalism and information marginalisation provide frameworks to better understand complex information environments and the systemic issues that influence information practices.

Introduction and background

As the number of academics hired casually or on short-term contracts increases in universities across the Western world (e.g., Bolitzer, 2019; Parfitt, 2018; Ross et al., 2021), it is important to understand the larger structures and neoliberal contexts that influence this shift towards precarious employment. Within academia, shifts toward neoliberal policies have resulted in increasingly demanding hiring and working conditions, blurred boundaries between working and personal lives, demands for increased flexibility and quantification of activities, and growing labour precarity (Allmer, 2018). Rather than academics being provided with structures to support and foster their work, universities increasingly shift these responsibilities towards individuals, thus forcing them to self-manage their own career development, employment duties and personal security (Bone, 2020).

Contract academic staff (also known as adjunct faculty, contingent faculty, casual academics, sessionals, limited-term appointments and related terms), are increasingly relied upon for their inexpensive labour by universities (e.g., al-Gharbi, 2020). These staff make vital contributions to teaching and research but face increasingly challenging and precarious working conditions (Willson et al., 2024b). As academic work is information intensive, involving specialised needs, resources, knowledge and skills, many academics on short-term contracts face added challenges. Concerns include workplace marginalisation (Lopes and Dewan, 2014; Willson, 2016), gaps in accessing and understanding required workplace and career information (Dolan, 2011; Kezar, 2013; Willson, 2016) and being made to feel undervalued and insecure in their positions (Foster and Birdsell Bauer, 2018, Jolley et al., 2013).

The influence of neoliberal doctrines on professional areas of library and information science has been addressed, for instance in archival (Cifor and Lee, 2017) and library (Nicholson, 2019; Seale, 2016) work. However, direct discussions of how broader political-economic structures and theories shape information activities are largely absent from information practices-related research. Indeed, despite interests in the information practices of academics and researchers, few studies have explored the situations and experiences of those at the margins of academic work.

There are approaches to information practices that place greater emphasis on systemic forces (Costello and Floegel, 2021; Gibson and Martin, 2019), broader understandings of information experiences (Polkinghorne and Given, 2021), and influences of precarity (Espinoza Vasquez and Oltmann, 2023; Stewart-Robertson, 2022). However, the lack of attention to the role of neoliberalism in shaping information practices and information research may suggest an underlying need to shift from a focus on individual activities to one that also attends to the structural, political and economic aspects of information contexts.

This paper discusses findings from this nationally funded project, which focused on academic casualisation among academics on short-term contracts at Canadian universities. Previous papers from this study present results on the experiences of casual academic staff (Willson et al., 2023; 2024a; 2024b), suggesting the ways university structures isolate, individualise and immobilise their information practices. This paper extends that work and further highlights influences of neoliberal doctrines by drawing from the experiences of department chairs, working between administrative policies, educational mandates, departmental requirements and the needs of permanent and casualised academic staff.

Research aims and questions

The research aims are twofold. The first aim is to test the theoretical frameworks of neoliberalism and information marginalisation (described in the next section) in the contexts of higher education and academic casualisation. While the field of library and information science has a large body of literature examining academics within higher education, relatively few (e.g., Hammarfelt et al., 2016; Mehra, 2024; Willson, 2018) take a more critical stance about their position and their work.

The second aim is to explore the context and provide a holistic picture of the situation in which contract academic staff work. While it is important to document the voices of those working contract to contract (e.g., Willson et al., 2023; 2024a, 2024b), it is also important to hear from those working in management positions to better understand the systemic issues at play. As part of a larger study on academic casualisation, those with managerial responsibilities in academic units (typically called *chairs* in Canada) were interviewed about their work with precarious academics and the effects of casualisation, broadly.

The study addressed the following research questions:

1. In what ways do the application of neoliberalism and information marginalisation help to contextualise the information practices and experiences of academics on short-term contracts?
2. What information work is required of heads of academic units (i.e., chairs) when working with precarious academics?
3. What is the impact of casualisation, generally, on academic units (i.e., departments, schools)?

Research design

The study was conducted in Canada and used a qualitative research design. Following ethics approval, the team conducted in-depth online interviews with unit chairs (i.e., academic school and/or department heads).

Theoretical approach

This work used two theoretical frameworks to guide data collection and analysis. The first is neoliberalism, a hegemonic discourse defined as,

> A *theory of political economic practices that proposes that human well-being can be best advanced by liberating individual entrepreneurial freedoms and skills within an institutional framework characterized by strong private property rights, free markets, and free trade. The role of the state is to create and preserve an institutional framework appropriate to such practices.* (Harvey, 2005, p. 2)

Neoliberalism shapes the political and institutional conditions of academic work. For instance, governments require that universities demonstrate their economic contributions, and universities require academic programmes to prove their economic viability, particularly when government funding models are linked to student enrolments. Universities have moved '*towards a corporate business model*,' characterised by '*precarity*' and a focus on the '*bottom line*' (Chomsky, 2015, para. 1). Over the last two decades, many academics have pointed to neoliberalism as a major contributor to a crisis in higher education (Chomsky, 2015; Côté and Allahar, 2011; Ginsberg, 2011; Mintz, 2021; Morrish, 2020).

The second framework is information marginalisation, or '*the systematic, interactive socio-technical processes that can push and hold certain groups of people at social "margins," where their needs are persistently ignored or overlooked*' (Gibson and Martin, 2019, p. 476). Information marginalisation is founded on Chatman's (1996) notion of information poverty; however, rather than focusing on the behaviour of those experiencing a gap in their access to information, it highlights the systemic and institutional forces that create information gaps. In addition, information marginalisation examines factors that influence social marginalisation and the resulting information practices (Gibson and Martin, 2019).

Participants

In-depth, semi-structured interviews were conducted with academic chairs. The team used purposive and snowball sampling to select potential participants from across Canada. From lists

created by searching staff lists available from university websites, emails were sent to chairs inviting them to participate. Complementing earlier interviews with 34 casual academic staff, twelve key informant interviews were conducted with chairs from across humanities, sciences and social sciences disciplines. Their experience in their current chair positions ranged from 1.5 to 11 years. Participants were assigned pseudonyms.

Data collection and analysis

Interviews were conducted over videoconferencing and lasted between 18-54 minutes, averaging 33 minutes. The interviews explored: 1) how contract academic staffing is managed in the academic unit; 2) how workplace information is provided to contract academic staff (e.g., through orientation); 3) whether information provision differs for tenure-track and contract academic staff; 4) efforts made to include contract academic staff in communications; and, 5) the benefits and issues hiring contract staff raises for the academic unit. Interview transcripts were analysed for initial findings using reflexive thematic analysis (Braun and Clarke, 2006; 2022). This approach to analysis includes a six-step procedure to deeply engage with data and to guide iterative rounds of code generation leading to the creation and refinement of themes. Members of the research team discussed, reviewed and revised the themes. Two primary themes were generated: *Casualisation destabilises and creates divisions* and *Contractual status influences access to information and departmental engagement*.

Findings and discussion

In attempting to understand the situation, a holistic perspective was adopted. The term holistic emphasises '*the importance of appreciating, contending with, and responding to, systems, groups, and issues in their entirety*' (Polkinghorne and Given, 2021, p. 2). A holistic perspective includes expanding ideas of what counts as information and people's information experiences, as well as examining structural issues.

Casualisation destabilises and creates divisions

The first theme generated in the analysis was about the broad effects of casualisation that influence the context in which chairs and contract academic staff work. Chairs had differing views about casualisation and its effects. For those working in professional disciplines (like law or education), they viewed casualisation as allowing them to hire practising professionals to share their expertise in the classroom. As Don, a chair in the social sciences, stated, '*I think it's actually a little bit good for the discipline because it takes away a purely academic framework, and it brings experience from the practitioner which is what originally [casual or contract] positions were meant to do, right*?' However, those who are employed full-time as practitioners and teach a course at a university are not the primary focus of concerns about casualisation. Many chairs are concerned about how casual labour is used as a long-term solution to hiring limitations and resulting shortages of permanent academics. Delaney, a chair in the sciences, stated,

> *So, for us in general, haven't seen it, the casualisation to be too impactful. But the issue has come, and I've pressured the dean and the associate dean about the growing enrolment in our programme. The faculty of science has to meet enrolment targets. … So, I've argued we need more full-time faculty to teach the courses. Our courses are getting larger and larger and student experience is diminishing. So, the response from the associate dean was just hire more, you know, [casual] instructors, which is to me maybe a short-term, very narrow-minded solution.*

Hiring academics on casual or short-term contracts is a significant amount of work every semester for chairs and others involved in the hiring process. It decreases stability within departments due to high staff turnover, and it can have far-reaching effects on the academic development of the discipline itself. Alex, a chair in nursing, described running a complex, accredited programme,

where casualisation led to less continuity, complicating external programme evaluations. In addition, Alex described a larger issue for their discipline,

> *Contractual positions are unfortunately, a big part of academic structures. But by increasing them, it just overburdens the full-time [staff]. So, if we're talking about the discipline itself, so the body of knowledge of nursing, how does that affect our capacities? We end up being managers; it's managing as opposed to building that knowledge base and working on things that would help us with patient care. What we are, what we're dealing with, is structures of our programmes.*

Alex describes how casualisation can change the nature of academic work, leading academics to become managers. While the impact on departments and programmes is concerning, casualisation effects can also be seen day-to-day in departments, including interpersonal dynamics between colleagues. Avery, a chair in the social sciences, discussed the power dynamics with those they hired on casual contracts,

> *It's an unequal relationship, and it's pretty much at my whim whether I assign these courses and then hire [casual or contract staff] or not. I don't like these kind of power relations. I recognise that they are friendly. They have been friendly with me before but now as head that kind of friendliness has a little bit more of a false touch to it. And I am not really sure how conflicts between [casuals] and department heads work out. I believe that the power differential is so that the [casual staff member] has just gone forever. That's something I find disturbing.*

Casey, a chair in the arts and humanities, described being stuck. Their institution does not have any provisions for long-term teaching positions, but the collective agreement allows turning a limited-term position into a '*tenure line position*' that includes teaching and research. However, those working on casual teaching contracts are so overworked that they cannot build their dossiers to be considered for ongoing, full-time positions, which changes how they are viewed in the department. They describe the result this way,

> *So that means that there is a kind of systemic infantilisation of teaching faculty on limited-term contracts. Full-time teaching faculty are just considered to not be capable of research or participating in collegiate governance. So, there's a strong bias against those folks [on course-to-course contracts] in the institution … Those [staff are] patching [roles] together, so there's a cap on the number of courses I can give them in a year. So that means they're not just teaching for me, they're teaching for one or two other institutions.*

Of particular concern are contract academic staff who must work at multiple institutions to '*patch*' together enough teaching to allow them to pay their bills. These working conditions lead to divisions between those working on different contracts and limits the possible advancement of those working in casualised positions.

Much of what chairs describe is the neoliberal approach to management in higher education – the increased pressure to use casualised labour (Gill, 2014; Loveday, 2018), higher workloads (Gill, 2014), the shift to manage others' labour (Hil, 2012) and '*labor servility*' (Chomsky, 2015, para. 1). This leaves academic units with destabilised labour – a consequence of neoliberalism. Bourdieu (1998) described neoliberalism as a system of working in which all is against all, with workers clinging to their jobs, and which is sustained by the '*existence of a* reserve army of employees rendered docile by these social processes that make their situations precarious, *as well as by the permanent threat of unemployment*' (para. 9, emphasis in original). Precarity is '*one of the defining experiences of contemporary academic life*' (Gill, 2009, p. 234). While many chairs are concerned about increased workloads, the shift to managing others' labour, and the power relations inherent between tenured/tenure-track and contract faculty, mean there is little that individual chairs can do to

address these systemic issues. It is this backdrop that contextualises and clarifies contract academic staff members' access to information.

Contractual status influences access to information and departmental engagement

The second generated theme was about contractual status influencing contact academic staff's access to information. Despite being hired for similar jobs, those working in permanent positions can have significantly different experiences by virtue of their contractual status. This includes a large disparity in access to work-related information. Access to orientation for new hires varied depending on their contracts. For some CAS, '*There's no onboarding, no orientation,*' as noted by Delaney. However, Casey mentioned '*an optional group meeting*' was all that could be provided to contract staff. They explained '*I can't require it unless I build it into the contract and reduce the number of working hours. So, it's an invitation.*' Noemi, a chair from the arts and humanities, described orientation for casual and contract staff this way,

> *All right so the [instructional limited-term appointments], they fall under [the union], so they're considered faculty. They will meet with [the union]. They often meet with the dean. I'm not sure what happens with HR, and of course they are always encouraged to do the [teaching] workshops, and the chair is again the contact person for them.*

Different contracts dictate the provision of orientation, where information is shared and workplace socialisation begins.

Departmental meetings are also sites of important workplace information exchange. Jessie, a chair in science, described contract academic staff's limited involvement in departmental meetings as, '*Well, we have regular departmental meetings. And [contract staff] are invited, they're non-voting, but they are invited to the meetings.*' This means they can attend but are not part of any decision-making process. Casey describes why contract academic staff are not part of meetings,

> *[Casual and contract] instructors are not included in our department meetings, so that's full-time faculty and staff. … participation in departmental governance is not included in the contract, and the faculty collective agreements are different union[s]. [The] faculty union defines who can be a member of a departmental committee, and part-time employees are not on that list.*

While some meeting membership is determined by collective agreements, in other instances chairs also have some discretion. Avery's department has monthly staff meetings and circulates the agenda and attachments, which are sent to the contract academic staff, as they are included in the meetings. In addition, Avery made the determination of who can vote in departmental meetings,

> *Yeah, [contract academic staff] are part of the staff meeting. Just now we had the voting policy back, last three months or so. So, I suggested anyone who attends a staff meeting has a vote because they're there and they are part of it. And we, so we have the [contract staff], the reps, the student rep, undergrad rep, and grad rep, the admin assistant, and the profs in the staff meetings. And they are all in the same way invited, get the same attachments and so on and so forth.*

While in some departments there is parity in terms of what workplace information is shared, not all contract academic staff are invited into the spaces where that information is shared.

Receiving information from the university was another area that varied widely. Some chairs described communication as working well; others described significant problems. Don described the situation as, '*The contract academic instructor, they're not kept informed of a whole lot of things*

that are, you know, happening in the university.' Providing information – whether through emails or through orientation – to contract academic staff was not always seen as a priority.

However, some of the communication issues were also due to the complexity of who was communicating with contract academic staff and how. All chairs described separate email lists for permanent faculty and contract academic staff. Kam, a chair in business, stated, *'There's lists for faculty only, faculty plus contract instructors, or faculty or staff only, faculty and staff, faculty staff and contract instructors, right?*' Frequently it was not always clear what information contract academic staff received. And sometimes issues were due to contract status. Blair, a chair in STEM, described the problem this way,

> *IT used to cut off their email the last day of the contract. And you can't do that, right? Because the contract is only maybe a day after grades are due, where are the students going to complain, right? So, we have a couple, in the department, we've kind of organised ways of helping do that. I was like, we'll create an email address for the whole class rather than just the instructor.*

Blair was not alone in having difficulties in communicating with contract academic staff, whose access to IT was tied to start and end dates. This demonstrates the structural invisibility of those working short-term contracts; that their experiences and needs are not being understood by institutions or provided for in processes.

Throughout their discussions of their academic units, chairs described the information marginalisation of contract academic staff – *'the systematic, interactive socio-technical processes that can push and hold certain groups of people at social 'margins,' where their needs are persistently ignored or overlooked*' (Gibson and Martin, 2019, p. 476). Sometimes access to information is unknown or haphazard – ensuring contract academic staff have the workplace information they need for their jobs is rarely made a priority. Sometimes access to information is deliberately restricted, as collective agreements may dictate who can be in meetings where information is shared, and departmental decisions are made. However, it is technology – both the creation of different email lists and the removal of IT access when contracts end – that most clearly demonstrates that access to information is tied to academic status. Those that do not have the right academic status experience information marginalisation. Information marginalisation may result from chairs' decisions or contract academic staff's actions. Information marginalisation shifts focus from individual responsibility and deficit-based understanding of individuals' actions to systemic elements and the tactical responses of marginalised groups (Kitzie et al., 2022).

Conclusion

These findings demonstrate the impact that academic casualisation can have on departments, disciplines and the working conditions of academics. When viewing the management of higher education through a neoliberal lens, a more complete picture of the context of universities and how they engage with contractual staff emerges. While many department chairs might welcome these staff at department meetings, for example, the institutional constraints imposed by enterprise staffing agreements and contract law dictate the extent to which middle-management is able to engage contracted staff in the day-to-day workings of the unit.

The general lack of an information ecosystem in support of contractual staff activities is exacerbated by these structural challenges. As individuals are hired by and supported at the local unit level, there are no easy ways to provide university-level information and support. As units design and offer courses independently (while working within institutional curricular and financial constraints), there is no one-size-fits-all approach to support contracted staff. In the sciences, for example, staff may need training on lab equipment or may be teaching a class combining lectures and tutorials; in the humanities, staff may need support with counselling students on writing

practices and plagiarism in long-form essays. Academia is not a monoculture, despite attempts to construct singular approaches to many administrative functions. This leads to unit-level interpretations of university policies, which must then filter down to staff. Without additional support at unit level to provide relevant, localised information and resources, contractual staff must often rely on other academics in the department or find their own pathways through trial and error. While challenges are numerous in supporting the information practices of these workers, the lenses of neoliberalism and information marginalisation provide interpretive frameworks to support a robust perspective on these complex information environments. Future research into academics and other workplace and everyday contexts may benefit from similar approaches.

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The information needs and behaviours of creative artists: a meta-ethnography of research, 2019-24

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Abstract

Introduction. The literature of library and information sciences (LIS) is replete with research exploring the information behaviour and needs of representatives of or participants in specific scholarly, professional or *serious leisure* interest-related contexts. The body of research related to the information behaviour of those engaged in creative endeavours (visual and applied arts and design, the performing arts, creative writing, and music performance and composition) has not warranted similar work, perhaps due to its relatively smaller volume.

Method. This study uses a *meta-ethnographic* approach to analyse 23 studies of creative artists' information behaviour published between 2019 and 2024.

Analysis. This project assesses the information behaviour of individuals involved in creative activity with the goal of illumination and establishing commonalities, themes and differences among them.

Results. Creative artists' information behaviours share several common characteristics, some of which distinguish them from representatives of other fields.

Conclusion. This study presents an overview of creative artists' information behaviours and needs, providing a basis for further study and comparison to the information behaviours and needs of representatives of other fields, such as scientists and social scientists. This paper also offers suggestions for information professionals who wish to provide services to creative artists.

Introduction

In the years since Dervin and Nilan's 1986 *Annual review of information science and technology* (ARIST), 'Information needs and uses' sparked the '*user-centered turn*' in information science (Talja and Hartel, 2007, unpaged), research exploring the information behaviour of members of groups sharing a common interest or goal has been a major focus of information science research. While it is perhaps less prominent than research about how information users behave '*in relation to places they encounter or technologies they use*' (Julien, 2018, unpaged), collective-focused information behaviour research constitutes a significant subcategory of research devoted to information behaviour, as illustrated by Huvila and Gorichanaz's (2024) review of information behaviour research published between 2016 and 2022, which includes studies of such diverse groups as journalists, doctoral students, cancer patients, people with disabilities, and migrants and refugees (p. 218).

A significant subcategory of this type of research focuses on the information behaviour of specific scholarly, professional and serious-leisure related collectives. For some user groups, the information behaviour literature is sufficiently copious to support meta-analysis of several studies. For example, over the past five years, authors have published meta-analyses or systematic reviews of research related to the information behaviours of graduate business students (Vinyard et al., 2025), visual artists (Kolyvas and Kostagiolas, 2024) health care professionals (Tan et al., 2023), maritime students (Chlomoudis et al., 2022), student teachers (Dahlqvist, 2021) and female lawyers (Jamshed, 2020).

While less voluminous than the body of research regarding, for example, scientists' information behaviour, the number of studies exploring the question of how individuals involved in specific areas of creative work engage with information is growing. Researchers have investigated the information-related activities of composers and performing musicians, visual artists, applied artists and crafters, dancers and choreographers, actors and writers, but with two exceptions, visual artists (Kolyvas and Kostagiolas, 2024) and musicians/composters (Lavranos et al., 2016), not to the point of generating a body of literature sufficiently large to support a meta-analysis of the research projects' premises, designs and findings.

Utilising a *meta-ethnographic* approach to this meta-research project, this study represents an effort to interrogate the body of research addressing the information behaviour of individuals involved in creative activity (referred to interchangeably in this text as *artists*, *creative artists*, *individuals involved in creative activity* and *creatives*) with the goal of establishing possible commonalities, themes and differences among them and providing a basis for further comparison of creatives' information behaviour to those of other categories of individuals or work, such as scientists and social scientists.

Research questions

1. Considered collectively and comparatively, do findings generated by information behaviour-related studies of artists suggest any commonalities?
2. If so, do themes emerge that might enhance our understanding of the role of information in creative endeavours (and what are they)?
3. What, if any, implications might these have for information professionals' practice?

Meta-research as methodology

The collection of methodological approaches categorised as *meta-research* are concerned with aggregating, analysing and developing conclusions about a collection of individual studies that share a common element. Most frequently, meta=research projects focus on either (or both) of two elements: the research method employed or the subject of the project within a larger body of research. Meta-research can be conducted in any disciplinary tradition with epistemological and

ontological bases that are developed cumulatively rather than iteratively and can provide benefits for the epistemological and ontological health of a discipline. In his presidential address to the 1981 International Communication Association's membership, Everett M. Rogers encouraged his colleagues to employ meta-research, claiming that taking '*a bird's eye view*' of the design, results and conclusions from a range of studies addressing the same or similar topics can promote '*the synthesis of primary research results into more general conclusions at the theoretical level*,' contributing to a discipline's epistemological framework. (p. 6)

Meta-research, according to Rogers, provides '*the intellectual cement that glues a research discipline together, that helps it understand where it is going and what it is finding*' (Rogers, 1981, p. 6). Pushing beyond the boundaries of the bibliographical essay or literature review, meta-analysis can have the more immediate effect of illuminating common ground among existing studies on similar topics, as well as allowing a discipline to '*identify knowledge gaps and suggest directions for future research*' (Ren, 2008, pp. 2-3).

Several approaches to meta-research are employed in a variety of disciplines. Differences between their respective methodological frameworks vary from those that might be considered significant to more inconsequential variances. Meta-analysis is perhaps the most common approach and refers to the collection and highly structured review of the elements and conclusions of a large collection of studies with a common focus. Typically focused on quantitative measures, meta-analyses determine the extent of agreement between individual works' findings. The systematic review approach developed for seeking, aggregating and analysing health-related information is closely related to meta-analysis. Meta-synthesis, on the other hand, aggregates and analyses interpretive or qualitative research works. Developing grounded theory to '*explicate processes, which are comprised of concepts and the dynamic relationships among them*' is often a goal of meta-synthesis (Finfgeld-Connett, 2018, unpaged).

Several recent information behaviour-related studies have employed a meta-research approach. As the systematic review approach is deeply ingrained in health informatics, it is unsurprising that this field is home to many of these studies. Chang and Huang (2020) conducted a systematic review and meta-analysis of health informatics literature to determine common antecedents among those seeking health information. Hallyburton and Evarts (2012) reviewed five survey-based studies to identify explanations for discrepancies between health information search behaviour as displayed by men and women, collectively. Ankem's (2006) statistical meta-analysis aggregated data generated by studies of cancer patients' information needs. Meta-research approaches have also been applied to studies outside the health informatics field: Liu (2021) applied Wilson's information needs framework to a meta-narrative synthesis of fifteen studies of student entrepreneurs' information needs, Perrier et al. (2018) applied a meta-ethnographic approach to exploring academic libraries' roles in research data management, and Catalano (2013) conducted quantitative and qualitative meta-analysis of studies about graduate students' information seeking behaviour.

Meta-ethnography

An approach to the meta-synthesis of qualitative research, meta-ethnography's focus on human experience renders it particularly appropriate for this project. In their overview of meta-ethnography, Noblit and Hare (1988, p. 10) describe the method as one that '*compares and analyses texts, creating new interpretations in the process*'. Meta-ethnography involves *translating* themes revealed by one study into another, with a goal not of generating analysis, but of interpretation and improved understanding.

Noblit and Hare (1988, p. 14) identify several goals of meta-ethnography:

1. more interpretive literature reviews
2. critical examination of multiple accounts of an event, situation, and so forth

3. systematic comparison of case studies to draw cross-case conclusions
4. a way of talking about our work and comparing it to the works of others
5. synthesis of ethnographic studies

Meta-ethnography involves several phases. Noblit and Hare emphasise that these are not discrete steps, but can, in fact, be iterative or occur in parallel.

1. Getting started: identifying the research issue of interest, ascertaining its appropriateness for a meta-ethnographic approach
2. Deciding what is relevant to the initial interest: determining which individual studies should be incorporated into the meta-ethnography to satisfy the initial interest.
3. Reading the studies
4. Determining how the studies are related: identifying the essential concepts and metaphors in individual studies for collective consideration
5. Translating the studies into one another: explaining the connections between studies, particularly their key similarities and differences. Noblit and Hare (1988) do not use the term '*translate*' in a literal sense; rather, meta-ethnographic translations involve '*salient categories of meaning*' (p. 77) When studies are about a similar topic, this phase involves '*reciprocal*' translation. Translations may also be '*refutational*', i.e., one or more study's findings might contradict those of one or more other studies.
6. Synthesising translations: '*making a whole into something more than the parts alone imply*' (Noblit and Hare, 1988, p. 29).
7. Expressing the synthesis: packaging the synthesis in a format appropriate for its subject and audience. This may manifest as a '*line-of-argument*' synthesis, presenting a holistic explanation for the collective translations of the synthesised works. Line-of-argument synthesis is closely related to grounded theoretical analysis, in which the data under review are used to generate a theoretical explanation for the phenomena they describe.

Strengths and weaknesses of meta-ethnography

Among approaches to meta-synthesis, meta-ethnography stands out for its capacity to '*retain the uniqueness and holism*' of individual works of research designed and conducted within an interpretive framework as we compare and synthesise them in analysis (Noblit and Hare, 1988, preface). As is the case with all approaches to meta-synthesis, however, according to Timulak (2014) those claiming to synthesise findings from a collection of research products run the risk of providing '*a particular synthesis coloured by an interpretive perspective*' of the individual performing the analysis (p. 492). The same author also makes the astute observation that those conducting meta-analysis of any kind are limited by the quality of the research they are analysing and '*can work only with the data that are available to them and can only transparently point to the problems (if they are present) in the original studies*' (Timulak, 2014, p. 493).

Research design

This project uses Noblit and Hare's meta-ethnographic model to explore the findings presented in 23 recent studies of artists' information-related experiences. These steps are described in the following section.

Getting started and determining relevant works

The objective of this project is reviewing the existing body of research related to artists' and creatives' information behaviour. Studies of the role of information in the creative process employ a variety of methods, are grounded in a range of theoretical frameworks and present multiple models for understanding creative artists' information behaviour.

The body of literature for analysis was collected using a structured search of the *Library and information sciences abstracts* (LISA), *Library and information science source* and *Library, information science, and technology abstracts* (LISTA) databases of LIS literature:

("information seeking" OR "information behavior") AND music*

This was repeated for each of the creative arts included in the study. The approach generated over 250 results published between 1996 and 2024, the abstracts of which were reviewed to assess relevance. Those papers that addressed arts-related *information as thing*, for example, information architecture or mechanisms for information retrieval, were discarded. Several studies addressed information behaviour of more than one type of artist and were included in multiple categories.

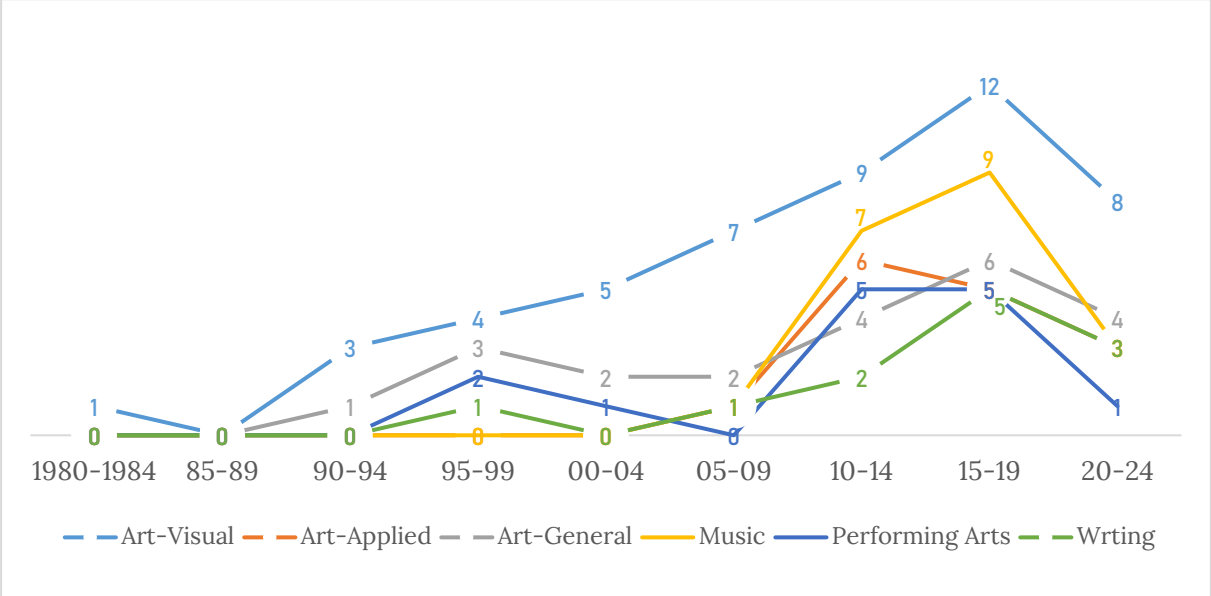

Figure 1. Arts-related information seeking and behaviour research by sub-field, 1980-2024.

While this volume of text would be appropriate for a quantitative content or meta-analysis, it is too large for a meta-ethnographic approach. Therefore, the publication date scope of the texts was limited to those published 2019-2024 (Please see *Corpus* for bibliographical information about studies included in the meta-ethnography).

Sub-Area	1996-2024	2019-24
Arts, General	20	3
Applied Arts	14	4
Visual Arts	52	4
Music	18	4
Performing Arts (incl. Dance, Theatre)	14	3
Literature	10	5

Table 1. Summary of publications by sub-area and date range.

Limiting the publication dates for the body of work to be synthesised generated a more manageable number of studies (23) for close analysis while preserving a reasonable distribution of individual creative fields.

Reading the studies and determining relationships

These studies were reviewed for the following characteristics:

- Creative field of study
- Focus of study (research questions, when articulated)
- Type of individual involved in study; number of participants, when available
- Method employed for data collection
- Major findings and conclusions

When applicable:

- Methodological and/or theoretical framework (study design)
- Implications of findings for information professionals

To these I added my own observations as I read, specifically, asking myself the following questions (articulated in the notes column, Table 2):

1. How are the artist and information each framed by the author?
    a. Is the artist the agent of interest in the study, or is information the entity of interest?
2. Is the author exploring *information in the life of the artist* as a person, i.e., holistically, or only regarding the process of creating their art?
3. Are information resources or specific formats emphasised, e.g., library collections, print materials, etc.

Studies were reviewed by topical subcollection rather than in alphabetical or chronological order. This allowed intermediate *translations* of themes within each creative activity prior to attempting integration of themes from all 23 studies.

A template for analysis was employed to guide close reading, an entry from which (Einarsson and Herzum's 2021 study of *makerspace makers*) is excerpted and annotated in Table 2.

Field	Focus	Population	Study design	Data collection	Results	Notes
Arts-applied	How makers obtain information for their makerspace projects.	13 makerspace makers	Serious leisure? Four investigated information sources are people, documents, experimentation, and prior knowledge across stages of making Directed content analysis (quant) w/ thick description	Semi structured Interviews – walk through of maker activity	(a) experimentation a prime source of information, (b) ease/pleasure dominant relevance criteria, (c) process/situation receive little attention, and (d) info sources vary across process stages. results emphasise the importance of experimentation; suggest it warrants closer attention in studies of makers' and creative pros' IB (1528) Many makers rely on people as guides	Making is a leisure activity. As such, IB might differ from that of creative professionals in same media Social aspect of making as or more important than creative design Experimentation is an important source of information and is under-studied quality of information assessment includes social aspect

Table 2. Example of entry, meta-ethnographic study analysis guide

An entry was completed for each of the 23 studies under review. This document was used to facilitate and support the translation process as described by Noblit and Hare.

Translations and synthesis (findings)

Rather than generating a definitive *answer* or concrete finding, meta-ethnography provides an opportunity to explore a subject and offer preliminary conclusions. In that spirit, I offer the themes and commonalities I observed during my close review of these texts, discussed in the sections that follow.

Studies of artists' information behaviour range from theoretical or philosophical discussions of artists' conceptualisation of information and its role in their creative lives, to models categorising artists' information needs and uses in relation to their creative endeavours (and the tangible products thereof). For organisational purposes, discussion of themes follows this progression. Research also reveals interesting themes regarding artists' experiences with information-as-thing to be evaluated and managed, discussion of which follows the coverage of information behaviour.

Information and the artists' endeavour

Meta-ethnographic analysis of this body of literature generates a number of observations regarding artists' information behaviour with regard to their creative work.

While the meaning of information remains contested in information science, artists' view of information reflects an expansive interpretation of the concept. Visual artists, writers and musicians all cite, at times, emotions, memories, observations and their lived environments as

sources of information to support their craft. This reflects another common theme: the high degree of vulnerability associated with and required by artistic creation. While not universal, some studies report on artists' emotions regarding their creativity-related information behaviour. Interestingly, few artists seem to report feeling frustrated or anxious if they are unable to locate information easily. This raises an interesting possibility regarding how artists view their relationship with information versus those engaged with information for other purposes. Is it possible that artists view engaging with information as an opportunity for engaging in creative dialogue rather than addressing a deficit?

Creation as informative process

Among the theoretical frameworks employed in studies of artists' information behaviour, sensemaking features prominently. Such discussions often reference artists' tendency to view creation itself as sensemaking, or *information-as-process*. Artists also describe creating art as engaging in a dialogue with themselves, one '*informed by prior knowledge and experiences, including learnings from prior projects*' (Einarsson and Hertzum, 2021, p. 1529). Art creation is often self-referential: visual and applied artists, musicians and composers, and writers in particular build a body of work that is frequently iterative, exploring similar themes and referring back to previous works of the artist's creation. Hunt and Jennings (2021, p. 51) remind us that artists' works are '*vehicles for understanding*' and are '*information in themselves*'. Krtalić and Dinneen (2024, p. 190) describe these prior experiences and documentation of them '*in the form of visual diaries, blogs and podcasts*' as a source of information.

In this way, we can consider the act of creation itself an informative process, '*centered on personal exploration or tacit knowledge*' (Hunt and Jennings, 2021, p. 38). Cooper (2023, unpaged) describes the process of creating art as '*dynamic information making*' involving artists' referencing themselves and their other work, a '*unique information*' process. Menzel (2022, p. 14) describes the research or information seeking writers do in support of their work as evolving into instances of '*introspective insight*'. Hunt and Jennings (2021, p. 33) describe this self-interrogation as '*knowledge creation*' for future work.

Internal and embodied sources of information

The theme of artists drawing upon *internalised* or experiential information relates closely to the concept of embodied information. While we might expect the idea of embodied information to appear in dancers' and musicians' accounts of their relationships with information, it is also common in those of visual artists and writers. In Hunt and Jennings' (2023, p. 37) words, '*the act of making or engaging in a regular artistic practice is also an embodied methodology for creating knowledge or resolving an inquiry*'. *Shadowing* individuals is mentioned frequently as a source of information and inspiration to support writing, and writers also indicate a strong preference for learning by doing.

In addition to conducting archival research, one of the visual artists Hunt and Jennings (2021, p. 44) discuss conducts research that is archival as well as sensory: '*I listen a lot. Like I listen and smell a lot*'. Rowlandson-O'Hara (2020, p. 107) quotes composers who mention, respectively, '*drugs (cannabis and psychedelics),*' '*exercising,*' and '*laying in a warm bed; going to sleep*' as sources of creative information or inspiration. Vamanu and Terronez's case study of Ballet Folklorico (2021) describes the importance of embodied information to dance and other performative arts in detail, extending the model of enacted information to include new ways of understanding information conveyed physically or through ambient factors such as music, audience and collective activity.

Artistic dialogue as information

Creating many types of art – visual, literary – is a solitary enterprise. Even those creative endeavours that are accomplished collectively, such as some types of dance, theatrical, and/or musical performance, have a highly individual element. Despite many artists' creative acts

occurring in isolation, a common finding in studies of their information behaviour is a strong preference for and reliance on personal connections as information sources. Many artists describe creating art as participating in a community and engaging in an ongoing dialogue, a '*conversation with being*' (Gorichanaz, 2019, p. 688). One of Krtalic´ and Dinneen's (2024, p. 190) study participants described incorporating themes and discussion of other authors' works '*as a way into a broader conversation and context to reveal stories and insights into who they are and why they do what they do*'. According to Cooper (2023, p. 30), engaging with others' work places artists '*in a larger, stimulating conversation*,' one that '*has the potential to be dialogic and embodied through materials and making*' (Hunt and Jennings, 2021, p. 38).

Artists' information behaviour(s)

Information needs and uses

Several of the reviewed studies include models of information needs and uses, many of which were informed or inspired by Susie Cobbledick's (1996) and Bradley Hemmig's (2008, 2009) models of visual artists' information behaviour. Based on a review of the existing literature and personal observation, Cobbledick (1996, p. 347) developed five categories for visual artists' information needs: inspiration, specific visual information (models), technical information, information about the art world, and business information. Hemmig (2008, p. 355) reviewed the literature published after Cobbledick's influential article and expanded the model to include '*information on subjects unrelated to art*'. Hemmig (2009, p. 694) refined Cobbledick's categories through a survey of practising visual artists. His model identified inspiration, specific visual elements, knowledge of materials and techniques, and marketing and career guidance as his subjects' information uses. Hemmig's characterisation of these activities as '*information uses*' feels deliberate, especially considering many other studies' conflation of *information need* and *information use*.

While Cobbledick's (1996) and Hemmig's (2008, 2009) models of information needs and uses were developed specifically for visual artists, researchers studying creators in other media have adapted them to describe the information needs and uses of their subject groups. Krtalic´ and Dinneen (2024, p. 190) describe writers and artists seeking information '*for inspiration, visual reference, technical information, information about exhibition and sales, and trends in the art world*' . Zhang and Capra (2020, p. 116) identified seven usage intents for information generated through search: '(1) *to learn how to do something*, (2) *to seek inspiration*, (3) *for ideation (e.g., generate new ideas)*, (4) *to evaluate and select ideas*, (5) *for project planning (e.g., conducting research to plan a project)*, (6) *to make a purchasing decision, and* (7) *to keep motivated*'.

Rather than focusing on information uses, Menzel (2022, p. 42) categorised fiction and poetry writers' information needs as fact seeking (specific), context seeking (broad or abstract), inspiration seeking (experiences), and activities and life (engaging with the world).

Information seeking

It is interesting to note that artists' information needs are diverse not only in terms of subject matter but also in level of complexity or sophistication. Artists are experts in many aspects of their work, requiring highly specialised and domain-specific information, while also needing very basic information about other subjects of interest. As a result, artists seek information from a wide variety of sources, sometimes in service of a single creative output.

The diversity of artists' information behaviours can render the appearance of their practices as haphazard or unstructured, but Cooper (2023) argues that the appearance of chaos is merely a reflection of this multidisciplinarity. Artists of all kinds skim magazines, formally and informally engage with experts, speak with colleagues and friends and query social media connections. They read, engage in *shadowing* behaviours and watch video demonstrations. According to several studies, artists of all kinds tend to engage with visual representations of information more than other user groups. Visual and applied artists, performers, musicians and composers, and writers

all discuss utilising visual representations to satisfy information needs as well as relying on images for inspirational information.

Other information behaviours

Some models incorporate information activities beyond needs and use. Cooper (2023, unpaged) expands Hemmig's (2009) and other models to include the information practices of sharing (engaging with other artists), feeding (collecting inspiration, deliberately or passively) and balancing (determining how much information to engage with, and in what manner), each of which features subtypes.

The subcategory of information behaviour classified as *avoidance* also plays a prominent role in artists' activities, and interestingly, is not typically viewed as negative. Cooper (2023) categorises information avoiding as a type of *balancing* behaviour through which artists protect their own vision, technique and capacity to create. Cooper described study participants as avoiding information in order to set boundaries or protective barriers around their own artistic practice. Hosier (2022) indicates some writers see excessive information seeking as a form of procrastination and believe gathering too much information can hamstring a writer if done too early in the process. In some cases, artists avoid information presented in human form, fearing excessive influence from colleagues or mentors (Einarsson and Hertzum, 2021). Artists also discuss editing or cutting information from their work as an aspect of information behaviour related to creativity.

Uses of information

The distinction between discussing why artists use information and what artists use information for is perhaps small but feels sufficiently significant to warrant discussion.

Information for inspiration and motivation

Across artistic domains, artists report using information to inspire their own work. Perhaps predictably, artists are highly creative in seeking information: one of Menzel's (2022, p. 65) writers described enrolling in a drawing class, hoping it would spur inspiration. A composer told Rowlandson-O'Hara (2020, p. 32) that they draw inspiration from poetry, while another gains insight from '*mathematical formulas and concepts*' (p. 37). Artists of all types also prize information discovered through browsing or *serendipity*, particularly as a source of inspiration. informational material frequently spurs inspiration, and the source can be impossible to anticipate. Lee et al. (2019, p. 703) describe artists' search for inspiration as '*an information-heavy process*' with '*varied, idiosyncratic*' sources that '*exist everywhere*'. Makri, et al. (2019, p. 776) describe '*inspirational search*' as a process through which information retrieved is '*intelligible but not predictable*', and Smyth et al. (2022, p. 401) make the point that '*[i][nspiration is inherently interconnected with the concepts of browsing and interdisciplinarity*'.

While not a direct reflection of artists' information behaviour, it is worth noting that several of the reviewed studies mention the extent to which non-artists fail to consider that creating art involves information as either a source of initial inspiration or during the creation process. In essence, non-artists believe in the notion of the *muse* implanting fully formed ideas in artists' heads. One composer quoted by Rowlandson-O'Hara (2020, p. 110) expressed frustration with this view, saying '*Argh! You clearly are of the opinion that artists "stumble" across creative inspiration*'. Another commented, more gently, '*the way this question is framed assumes that composers seek 'inspiration' or creative solutions outside of music itself. The problem with this is that it has the potential to reduce musical composition to an externally inspired art, rather than focusing on the hard work of learning the technical tools of the craft itself*' (Rowlandson-O'Hara, 2020, p. 107). Several authors cited Cobbledick's (1996) influential study of visual artists' information behaviours, in which she discussed the '*persistent myth of the artist as a divinely inspired genius, someone who draws on an inner well of creativity rather than looking to outside sources for inspiration or knowledge*' (Hosier,

2022, p. 1067). While some studies of creatives' information behaviour reflect this language, most make clear that artists' information behaviours are complex and driven by explicit and tacit need. Menzel (2022, p. 44) rejects the notion that '*inspiration and specific information*' represent dichotomous needs for writers, instead choosing to create a model of writers' '*information-seeking behavior using a spectrum of factual and experiential inquiry*'.

Studies also cited the motivating potential of information. One of Zhang and Capra's (2020, p. 119) respondents described finding information that would '*serve as a "motivation booster" to help her keep going on her project*'.

Information for accuracy, verisimilitude and authenticity

Although several studies discuss the importance of information for adding texture and depth to visual or literary portrayals, Cooper (2023, unpaged) points out, '*unlike other professionals, artists are not bound by information needing to be true … to be useful*'. Several studies did discuss the concept of *creative* or *artistic licence*, noting that artists' comfort with the idea of taking liberties with factual information was highly dependent upon context. The writers who participated in Menzel's (2022, p. 12) study used information to create '*their own meanings … often interpreting sources through creative motivations rather than full commitment to factual interpretation*'. Participants in the study were highly circumspect about the instances in which this was appropriate. One remarked, '*I want to be very factual. I don't want to be deemed not-factual in a book that talks about snippets of history*' (Menzel, 2022, p. 49). One of Zhang and Capra's (2020, p. 118) respondents sought information to increase the accuracy of a project. Respondents made judgements, however, about when and how to prioritise factual accuracy. One of Hosier's (2024, p. 801) respondents explained, '*I'm more comfortable playing around with stuff I really know, whereas if I don't really know it, I feel like I have to prove that I do*'. Another indicated accuracy is important, but sometimes '*the flowers have to talk*' (p. 801). Dalal (2023, p. 799) discusses the phenomenon of theatrical designers' fidelity to truthfully portraying the '*world of the play*' in an emotional or intellectual sense, although sometimes not literally.

Information evaluation management

In addition to discussing information needs, seeking and use, studies of artists' information behaviour also address their approaches to valuing and evaluating information and managing *information-as-thing*. As a rule, all types of creative artists find visual representations of information – images, videos, their surroundings – highly valuable. Helpful types of visual information mentioned in the studies reviewed included fine art observed during a museum visit as well as Pinterest boards and sketches. Many artists collect and '*organize for later use*' archives of images and other representations of information they believe might serve as sources of inspiration for future works (Lee et al., 2019, p. 704). Rowlandson-O'Hara (2020, p. 55) describes these collections as '*creative insight* [their preferred term for inspiration] *storage units*' (CISUs), which composers use to '*conceptualize pieces, draw out structures, and brainstorm*'. Dalal and Shane (2023, p. 2) describe theatrical designers creating a '*morgue*' of images '*categorized by historical period, age, and even types of injuries, to refer to as needed*'.

Artists self-archive, collecting and maintaining records about their own work, information seeking and use behaviours and creative processes. Krtalić and Dinneen (2024, p. 199) note authors see these collections as '*valuable … as a source of information for later reuse and inspiration*' but may not fully grasp their utility for others. Rowlandson-O'Hara's (2020) study of composers' information behaviours includes descriptions and visual representations of several participants' personal archives.

Implications for information professionals

Perhaps due to researchers' proximity to artist colleagues at their institutions, subjects of studies of artists' information behaviour are frequently affiliated with academic institutions of higher

education. As such, studies tend to discuss the challenges of fitting creative works in the model for scholarly outputs most typically endorsed by the academy. Similarly, some studies of artists' research and information seeking activities note librarians' and information professionals' failure to acknowledge the significant differences from the research needs and activities of students and faculty in the sciences, social sciences and humanities. Smyth, et al. (2022, p. 401) point out that 'Scholarship as Conversation,' one of the Association of College and Research Libraries' (ACRL) Framework[s] for Information Literacy '*applies just as much to creative work as it does to research with outputs traditionally valued more highly by the academy*'..

While some artists are affiliated with academic institutions as students or faculty and therefore have access to scholarly resources for their information needs, most artists have no such affiliation and are subject to practical considerations, such as the financial cost of high-quality information. Libraries could support artists' needs through increased outreach efforts to artist communities in their area, informing them of available resources and services to support their work.

The value artists place on browsing for and visual resources as information suggests several implications for information agencies who wish to better support their work. Several studies point out that libraries' traditional approaches to organising materials might stymie rather than support creative investigation. While none of the studies reviewed offered a solution to this problem, it was widely acknowledged as an issue. Studies did suggest that libraries might improve instructional offerings for creative artists, incorporating research and search skills training, visual literacy instruction and curated presentations of information specifically for creative user groups (Menzel, 2022, p. 78).

Conclusions and areas for future research

This project offers an impression of the commonalities among creative artists' experiences of information in relationship to their creative practices. Suggestions for immediate future research fall into three broad categories:

Expansion: broadening the collection of studies under analysis to include research published prior to 2019, which includes several influential studies.

The importance and informative value of experimentation in art creation emerged as an important theme in some of the research, one that deserves further study in ISB research.

Comparison/translation: reviewing this overview of artists' relationship with information in relation to studies of other large groups, such as social scientists, scientists, humanists and specific professions.

Application/verification: using the observations described in this meta-ethnography to conduct new studies of artists' information behaviours for verification and expansion purposes.

While there is a significant body of research related to visual artists' and musicians' and composers' information behaviour, the other performing arts, including acting, dance and singing, are especially under-studied, as are the creative writing fields. The applied arts and crafts have also not been addressed sufficiently and offer intriguing possibilities for incorporating folklife-based theoretical frameworks into the discussion of this area of practice.

The United States' National Endowment for the Arts (NEA, 2022, p. 10) 50 *states of arts participation* report describes US residents' engagement with the arts. In the most recent report, 52 per cent of (adult) respondents reported having created or performed art in the prior year. While the report does not provide data regarding frequency of respondents' engagement with creative activities, or the number of respondents creating art professionally, we can safely assume that a very large number of adults in the US are regularly engaged with creating art. Considering their activities

related to engaging with information in support of their creative activities also suggests promising, and distinct, areas of enquiry.

The growing body of research related to artists' information behaviours contradicts Jean Cocteau's assertion that '*an artist cannot speak about his art any more than a plant can discuss horticulture*' (Newsweek, 1955, p. 98). On the contrary, many artists describe their creative process and information's role in it eloquently and accessibly. As of this writing, however, there is a need for additional research in this area, both as a whole and in terms of practitioners of specific media and arts-related fields.

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About the author

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Overloaded and isolated? Preliminary findings on overcoming information challenges for incarcerated university students

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Abstract

Introduction. This paper outlines two tentative themes identified in the initial findings of a project focusing on the information behaviour of a particular group of incarcerated university students. These students are released on licence to attend lectures and study on campus, but are still affected by prison restrictions.

Theoretical background. Theories of information landscapes, small worlds and information behaviour in transition have informed this work.

Methods. This paper presents analysis of the first round of data collection, using a combination of progress logs and interviews.

Findings. The two key themes outlined here relate to issues of inclusion and exclusion in academic spaces. The first theme reveals issues around information overload, particularly during the induction period, while the second relates to how relationships and restrictions on and off campus affect informal information sharing.

Conclusions The identification of these issues can inform support arrangements for these students, with a focus on academic library support. While these issues are unique to a particular group, they have broader implications for other categories of *non-traditional* higher education (HE) students.

Introduction

This paper is an output from a doctoral project on the information behaviour of higher education (HE) students in prison, which aims to explore the experiences of a group of incarcerated students released on temporary licence to attend a UK university. These students occupy a unique position within the HE landscape, navigating challenges that set them apart from their peers. While able to participate in on-campus activities, such as attending lectures and accessing library resources, they must contend with prison restrictions on access to communication technologies and a perceived need to limit the personal information they share with fellow students. The research highlights stark contrasts between prison and university environments, affecting how students interact with information and their inclusion in the academic community. The study aims to:

1. Critically explore the experiences of this group around information access and use
2. Understand the development of individuals' information skills as they progress through a semester
3. Evaluate the support provided by academic libraries to this group.

This paper will outline some tentative themes that have been developed from the first round of data collection, which has revealed some ways in which the intersection of institutional restrictions and academic expectations influences these students' lives and contributes to broader patterns of inclusion and exclusion in HE. The research question for this paper is:

- How do incarcerated students' unique circumstances contribute to their sense of inclusion/exclusion in academic library spaces?

Theoretical background

Existing research on information behaviour in related contexts provides a strong foundation for this study. Lloyd et al. (2013) examined the information behaviour of refugees adapting to the practices of their new homeland, introducing the concept of '*information landscapes*', where groups share similar '*established methods of information production, reproduction, circulation and modes of access*' (Lloyd et al., 2013, p. 122). This concept applies to the divergent landscapes of prisons and universities. Student-prisoners must attempt to bridge the gap between the restrictive, risk-averse and largely paper-based information world of the prison and the open, collaborative, digitally-enabled university, while often missing out on opportunities to be socialised into it. The risk of failing to adapt, as Lloyd et al. (2013) explained, is exclusion and isolation. Lloyd et al. cite Vinson's (2009) definition of exclusion as having '*limited support networks, inability to access the labour market, alienation from society and poorer educational outcomes*'. These challenges already impact former prisoners, and feelings of being excluded from academic information spaces could exacerbate rather than alleviate these issues.

Chatman's (1999) concept of *small worlds* was developed in a prison setting and draws clear distinctions between *insiders* and *outsiders*. In this study, the small world of the prison collides with the larger worlds of the university and academia more broadly. University enrolment requires members of the prison community to reorientate their view to encompass the perspectives of outsiders, gaining a working knowledge of unfamiliar *codes* (Chatman, 1999) necessary to operate within the world of academia rather than the methods of finding and interpreting information that they may be used to (Britz, 2004). Chatman's earlier (1996) model of information poverty has been critiqued for focusing too much on exclusion at an individual level, rather than analysing the systemic patterns that reinforce the positioning of certain groups at the margins of *acceptable* information practice (Gibson and Martin, 2019). In this context, the task of developing new ways of learning can be guided and enabled (or obstructed and prohibited) by the other actors in the system: universities and prisons.

This research also draws on studies examining the information behaviour of groups undergoing significant transitions (e.g., Kennan et al., 2011; Ivins et al., 2016; Bronstein, 2018; Ruthven, 2022). Transition is acknowledged to be '*a complex and socially situated process*' (Hicks, 2022, p. 210) that impacts feelings of belonging in academic spaces.

Methods

This study is designed to highlight differences and similarities between individual experiences, generating rich qualitative data. Participants completed weekly semi-structured *progress logs*, an adaptation of the solicited diary method (Bartlett and Milligan, 2015) designed to capture individual-level qualitative data over the course of a semester, using prompts to address research questions while allowing opportunities for participant reflection and providing a narrative of progress (Virgo, 2024). Follow-up interviews were conducted to explore issues raised in the logs.

The first round of data collection occurred between January and June 2024. Two participants completed the progress logs and interviews, while a third discontinued their studies in week 5 (his contributions are not featured here). A fourth participant was interviewed but did not complete the logs. A second round is planned for the same period in 2025, recruiting from new students joining this small cohort.

This is a small sample, but the data generated is very rich. Reflexive thematic analysis (Braun and Clarke, 2006; 2022) has been used for the initial round of coding and crafting of themes from the interviews, while a more classificatory approach was taken with the progress logs.

Findings: two key themes

Here I present some tentative preliminary findings from this work in progress. I will focus particularly on two themes relating to sources of feelings of inclusion and exclusion in academic spaces that are evident across multiple participants' contributions.

Theme 1: information overload during transition: '*I wish I'd known that*!'

Participants were often challenged by the rapid transition from full incarceration to spending weekdays on campus. For those incarcerated for longer periods, this was particularly pronounced:

> *I was completely overwhelmed when I first started coming from prison where you have no interaction with the public for years on years and confined to a cell for 23 hours a day. It is absolutely mind blowing, trying to remember how to use a cash point, cross the road safely, there is no way I could take it all in during the first week.* [Terry, progress log]

During the interviews, which explored information gaps mentioned in the progress logs, participants often reported that it took time to understand aspects of academic practice or course-related information. The data analysis code I used for this was '*I wish I'd known that*!', from Terry's comment below:

> *It actually took me about the fourth week before I found out about the reading materials… And [lecturer] said 'read this one'. Week 4! I wish I'd known that!* [Terry, interview]

> *The reading resources are good but* using *them to my advantage is like … it's a skill in itself. It's a study skill isn't it? And I'm getting better, and I know that the resources* do *help.* [Dylan, interview]

Other instances included not knowing where to find their grades or of the existence of digital tools that would have helped them with a module.

Being permitted to continue studying on campus over the summer was identified as important by multiple participants, to reinforce skills development:

> *My plan is to study here over the summer, come here every day ... there's so many points that I need to improve on, so I'll just go through them one by one.* [Malik, interview]

The initial data analysis has suggested valuable recommendations for improvements to the bespoke library inductions delivered for these students to focus on *learning by doing*.

> *I think you can sit and explain something for ten hours, but until you start messing around with it, you ain't gonna get it anyway.* [Dylan, interview]

> *But I believe in, you know, getting the guys to do something, you know, have a little test... 'right, I'm going to get you to find this document' ... I bet you 75% of them won't come up with the answers. Shows they really don't know what to do. But then once they've learned where to look, they'll then remember and they'll go 'ah, I remember! There's somewhere I can find this'.* [Terry, interview]

Theme 2: multi-faceted isolation: 'nobody to *ask*'

The participants perceived risks in interacting with *outside* students and staff; particularly, the risk that they would be judged for being imprisoned:

> *I have not revealed any information about serving a prison sentence. I feel it would be received as such a shock that it may overcast their perception of me. I just want to be seen as just another student which is already slightly difficult given that I am also a mature student.* [Dylan, progress log]

Prohibitions on owning smartphones and using social media also distinguished these students. The identical non-smart phones mandated by the prison are a rare sight on campus and draw attention – often, ironically, reminding other students of *burner* phones used in criminal activity and thus raising suspicions.

Avoiding questions was an uphill battle which can lead to isolation:

> *So you've got to keep that distance so you're not even that kind of friendly, you know, so they wouldn't ask for your, you know, 'what's your socials?' I don't have socials.* [Terry, interview]

Other students were perceived to be using informal communication networks, particularly social media, from which these students are excluded. This prompted a feeling that they had '*nobody to ask*' when they were unsure about academic processes or coursework. While the prison cohort are a tight-knit group, they are all studying different subjects:

> *Because we're prisoners, we've got nobody to really ask, you know? We're not like a group of classmates, you know, you sit at night and* [discuss] *'how did you do that?' 'how would you do that?' 'oh, I've done it this way', and you get ideas.* [Terry, interview]

However, some did find information shared by students from the same prison who had been studying for longer to be helpful:

> *It is a safe and easily accessible place to get quick answers to questions from the same perspective as you. And can help with some of the nerves at the beginning.* [Dylan, progress log]

Participants commonly believed that some separation from other students was necessary, but still wanted to be able to take advantage of all of the opportunities offered by their course (e.g. field trips), which might mean disclosing their status to staff. All participants did, however, report positive responses from staff when they needed to confide in them.

Participants reported juggling multiple identities, amplifying feelings of exclusion. Reacting to questioning from prison officers about why they needed full days on campus for studying, Terry highlighted that other students could work evenings and weekends:

> *We can't do that. We're back with our prison faces, hard as nails, you know, having to be this prisoner, put this façade on. And then at the weekends, now we're starting to get to see our families, we have to adapt to being this loving, caring husband, who actually can't remember if he's a 'bad' prisoner, or if he's a student.* [Terry, interview]

All interviewed participants reported having supportive family relationships, and some called on family to help them with their studies:

> *When they start off they tell you what's a good source and what's a bad source. And also I've got my sister as well. So if there's any doubt, like if I if I use a reference from a source like Tutor2U or something like that she'd say 'nah, you can't use that, that's really bad'. So I'd then learn from that what I can use and can't.* [Malik, interview]

Discussion

The first theme identified here ('*I wish I'd known that!*') relates to the absorption of new information during transition. Information overload during transition to university has not been thoroughly examined in the literature, but transitions are associated with information overload (Briggs et al., 2012; Ruthven, 2022). The idea that the stresses of transition can prompt the development of information literacy practices suitable to the new environment is supported by Hicks (2022).

The second theme ('*nobody to ask*') highlights identity, belonging and informal information sharing. With a perceived need to maintain distance from coursemates and restrictions on use of communication technologies, these students have fewer informal sources of information and support. Du Toit et al. (2022) found that first-in-family students relied heavily on their existing social networks when they transitioned to university. All participants here reported family support, with some family members taking an active role in offering advice on topics such as referencing and the credibility of information sources. This actually puts them in a better situation than many first-generation students and protects them from some of the consequences of information exclusion identified by Lloyd (2013).

Together, these two themes reveal some barriers and forms of exclusion that are unique to these students' situation, but also issues that they may share with other students, especially those from disadvantaged and non-traditional student groups, such as information overload at induction and lacking confidence with digital technologies.

Conclusions

These students' experiences of the justice system shape their behaviours in far-reaching ways, and these preliminary findings reveal two ways in which their information behaviours are affected. The themes are related to belonging and identity in academic spaces, and demonstrate a finding that has been prominent in initial analysis: interpersonal information sharing is just as important for these students as finding more formal sources of information directly related to their studies.

The next round of data collection will introduce more perspectives. Every student is unique, and these students' range of life experiences influence their study habits, social connections and use of information. It will be interesting to see whether the themes above remain prominent in the final analysis.

This research has already prompted some local changes. I now act as a library representative on the steering group overseeing the university-prison collaboration. I deliver bespoke inductions for incoming incarcerated students. Based on the findings from theme 1 ('*I wish I'd known that!*'), I

ensure that these are paced and structured to mitigate the sense of being overwhelmed, with takeaway materials and opportunities to practise using the library discovery system. I am also creating a specific library web page for these students, part of a Google site designed to provide them with relevant information about university services.

Considering theme 2 ('*nobody to ask*'), it seems appropriate for the library to provide a named contact who already knows about these students' circumstances, removing the need for them to explain or hide details. This person can be consulted about issues that are specifically related to imprisonment and access to information resources. Through the establishment of these lasting protocols, I am committed to facilitating consistent, tailored support for this unique group of students.

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'It's a wide cluster of noise': experiencing and describing information from environmental sounds

Owen Stewart-Robertson

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Abstract

Introduction. Uses and applications of environmental sound recording are expanding rapidly, shaped by demands for understanding and documenting changing climates and resulting in the generation of massive quantities of data. Situations around the creation and processing of these recordings are complex, suggesting numerous information-related challenges. However, little information practices research has directly engaged with sounds or sound recording.

Method. Extending information research around sounds and embodied/sensory experiences, this qualitative study involved data generated from semi-structured interviews, participant observation and discourse materials. Participants were researchers working with environmental sound recording from various fields.

Analysis. Guided by situational analysis, an extension of grounded theory, analysis involved iterative coding, memo-writing and analytic mapping techniques.

Results. Preliminary findings are presented in two themes: noise, as concept and object, is constituted through participants' situated information practices; and identification and description of sounds is tied to subjective/embodied experiences and ways of knowing.

Conclusion. The ways situated knowledge and experiences shape how information from environmental sounds is created, sought and shared blur boundaries between signal-noise and between information activities. Embodied engagements with and descriptions of environmental sounds suggest the complexities of understanding related information practices and highlight the various relationships involved in knowledge production through environmental sounds.

Introduction

As the need to understand and document various environments becomes increasingly urgent, particularly in the face of increasing human activity/consumption and related global climate crises (e.g., Tong et al., 2022), uses and applications of environmental sound recording – audio recording of human and nonhuman sounds and acoustic environments – have expanded considerably (Ritts and Bakker, 2021). Facilitated by increasingly portable and affordable technologies, this growth has resulted in the production of millions of hours of sound recordings and many terabytes of data annually (Gibb et al., 2019). From a focus on the documentation of animal communications (e.g., bird calls), the recording of environmental sounds has expanded to practices of monitoring and recording broader acoustic environments and their habitats and communities. Information from environmental sound recordings is now involved in knowledge production from biology (Wood et al., 2023) and ecology (Choksi et al., 2023) to fields including geography (Turnbull et al., 2022), urban planning (Williams, 2021), and archaeology (Kolar et al., 2019).

Despite this growth, understandings of related practices are limited (Wright, 2017), perhaps complicated by the proliferation of new technologies and increasingly automated processes of recording and analysis (Kohlberg et al., 2024). Research involving environmental sound recording also faces information-related challenges, particularly as quantities of data generated expand and demands for sharing and preservation grow (Parsons et al., 2022). Given the complexity and variety of situations and practices, the recording of environmental sounds may be considered as involving a similarly complex range of information practices/experiences. While examinations of related information practices are increasingly important to understanding and supporting crucial research, information practices-related research has rarely focused directly on practices and experiences around sounds, listening and sound technologies (Stewart-Robertson, 2024).

Background

Sound recording/reproduction activities have been understood as involving and intertwined with embodied sonic skills (Bijsterveld, 2019), interactions with sound technologies, abilities (Thompson and Hagood, 2021), situated practices and listening techniques (Sterne, 2003). Sound, more broadly, has been comprehended as *'both an acoustic event, and a mode of knowledge production'* (Amsellem, 2020, p. 434). Mediated by various technologies (Amsellem, 2021) and conveying important information about places, communities, and activities (Droumeva, 2015; Sueur and Farina, 2015), acoustic environments and listening practices are increasingly varied and complex (Radicchi et al., 2021). While scientific sound recording has been described as rooted in communities of practice (Bruyninckx, 2019), processes of converting experiences of sounds into disembodied data (Droumeva, 2021), removed from contexts (yamomo and Titus, 2021), may also reflect settler-colonial approaches to environments as always knowable and possessable (Kanngieser, 2023). Given the increasing quantity, variety and importance of environmental sound recordings and related activities, holistic understandings of the practices involved are critical.

Information and sound

While some information practices-related studies have identified embodied, multisensorial aspects of listening practices (e.g., Nelson, 2019; Ripley, 2011) and complexities of interactions with sounds/sound technologies (e.g., Freeman et al., 2022; Tattersall Wallin, 2020), information practices research has yet to fully engage with sounds/listening. Studies emphasising embodied/sensory information experiences (e.g., Ocepek, 2018) and research exploring oral or music-related information practices (e.g., Griffin, 2020; Turner, 2010) have yet to directly address interactions with sounds themselves. Such gaps may derive from an emphasis on textual and visual documents in information-related disciplines (Cox, 2019) as well as from challenges around describing and seeking information from sounds themselves (Steele, 2018). Through research exploring the information practices involved in environmental sound recording, this short paper seeks to attend to a broader spectrum of sounds / sound-related practices, extend

embodied/sensory information practices research into less explicitly physical activities/settings, increase attention to non-textual/verbal information interactions and address information-related challenges facing environmental sound recording.

Methodology

Building from an information practices perspective, this study explored how researchers involved in environmental sound recording activities experience, create, seek, use and share information (Lee and Ocepek, 2022; Savolainen, 2008) and how such activities are constituted within situations and in relation to implicated actors/elements, power dynamics, and positionalities (Costello and Floegel, 2021; Gibson and Martin, 2019). The following questions guided this study: 1) How and in what ways do participants seek, perceive, interact with and describe information from environmental sounds? 2) What elements, relationships and experiences are meaningful for participants in the creation and analysis of environmental sound recordings? 3) What kinds of practices and discourses are involved in and constituted by participants' environmental sound recording activities?

Following situational analysis (Clarke et al., 2022), an elaboration of grounded theory, this study also involved relational and situated approaches to sounds and listening (Feld, 2015; Goh, 2017) and ecological/posthumanist approaches to scientific knowledge production (e.g., Barad, 2007; Haraway, 1988; Star, 1990). Researchers were recruited from across Canada and the United States using theoretical sampling. Between February and October 2024, I conducted 31 online semi-structured interviews (55-80 minutes) and eight participant observation sessions (six online, process-focused sessions and two in-person sessions at urban and wilderness locations). While interviews focused on participant experiences, decision-making and information-related activities, observations allowed for broader explorations of the elements and relationships involved in meaning-making and knowledge production through environmental sound recording. Data from extant discourse materials (e.g., sound libraries, websites, technical documents, webinars) were also collected. Concurrent analysis involved coding, memo-writing and analytic mapping techniques (Friese et al., 2021). Each participant was assigned a randomly generated pseudonym.

Findings and discussion

From the broader study, this paper discusses two related themes from the preliminary analysis of interview and observation memos and transcripts: noise, as concept and object, is constituted through participants' situated information practices; and, identification and description of sounds is tied to subjective/embodied experiences and ways of knowing.

Noise as situated information

> *[Recorders 1 and 2] are also detecting noise and only triggering a recording if hearing a certain threshold of high frequency noise. Whereas [recorder 3] is constantly recording. And that's where I go through the data manually and look whether there's a bat. Some evenings, there was a lot of insect noise, particularly at the three base sites. And that possibly masks some. I think on [recorder 2], I would see a wall of insect noise. And I'm like, 'oh, [recorder 1] saw [bats] there.'* - Mattie

From the data, numerous variations on the use of the word/concept of noise were identified. These variations highlight the complexities and situatedness of identifying and describing information from sounds (e.g., Kvsn et al., 2020; Odom et al., 2021). Mattie, a researcher studying bat populations, described discrepancies between how different recording devices capture sounds. Identifying sounds made by bats (largely beyond the limits of human hearing) required targeting certain frequencies for recording and various processes for differentiating those sounds from human and insect '*noise*'. Seeking and creating relevant information from these recordings involved aspects such as manual visual analysis of spectrograms, device settings selecting

what/when to record, frequency characteristics of species vocalisations and features of surrounding environments/habitats. Such practices intertwine the researcher's evolving knowledge and situated relationships (e.g., with recording devices, physical environments, technologies used, etc.) and complicate distinctions between information activities.

> *We would break down each recording into 10 second files. And we would visualise those files in the software … And essentially figure out how many or what species are present in each of those recordings … In these [rural/wilderness location] recordings, it's often hard to draw boxes wherever these birds, or other species, are calling. Because anywhere within a 10 second recording, we could have as many as 12 to 20 species of birds calling at the same time. It's a wide cluster of noise. So what we would do is listen to all that data. And we had a separate spreadsheet where we would mark ones or zeros for every species that we heard or saw in the spectrogram.* - Hollis

For Mattie, based on research goals and choices of technology and recording locations, discerning information sought was a relatively clear process of isolating bat calls from other environmental sounds. For Hollis, studying the complexity/diversity of an acoustic environment, where many sounds/signals potentially provide important information, different choices were required around how recordings were created and analysed. Shaped also by factors such as density of flora/fauna, lack of automated tools for discerning sounds within such density, recording and storage limitations, and labour challenges (i.e., the need for manual processing), information from these recordings was translated into statements of presence/absence and aggregated into broader analyses of the environment. Still, sounds excluded from Hollis's spreadsheet (e.g., human sounds, inanimate nature sounds) became '*noise*', through separating species identified from the wider '*cluster of noise*'. These examples connect to approaches challenging dualisms such as nature-culture, subject-object, or signal-noise in understanding knowledge production through sound (Goh, 2017) while also suggesting the importance of recognising the interrelatedness of information practices, structures/systems, and physical realities (Polkinghorne and Given, 2021).

Embodied descriptions of sounds

> *I went through the spectrogram, and every single sound I found, I would classify, put it in its own recording … But the most important thing is, how would you recognise it when you search for that file? So, just for me to remember which one it was, I use these silly names, like, [singing onomatopoeic word] or [onomatopoeic word], because it's like, [mimicking animal sound vocally]. Or, because it sounded like a brush or like knocks … Then I actually shared [the system] with different bioacousticians. And we found out that we actually called the same sounds with the same name. I find it pretty interesting that we need a system, but we don't really have one.* - Willow

While some researchers expressed few connections to aural characteristics (relying instead on visual and automated analysis), several participants involved nonverbal descriptors and personal associations in reproducing, describing and making meaning from recorded sounds. Willow, studying marine mammals, created personal classification systems based partly on onomatopoeic words or associations with everyday sounds. Meanwhile, Willow also expressed challenges around creating/sharing systems for organising sounds, especially given varying approaches and subjective aural interpretations. Another researcher studying marine mammals, Ida, in describing the particularities around discerning between some sounds (both visually and aurally), vocally imitated the similarities between motor vehicle sounds heard from below ice and bowhead whale vocalisations. Such accounts highlight the ways that deeply personal and embodied knowledges shape how information from environmental sounds is identified, shared and made meaningful (Lloyd, 2023).

> *In my field notebooks, I do a lot of annotating of their sounds just by hearing them. They have one song that we call the Beethoven song. Almost every male and some females sing a version of this that goes [sings Beethoven motif], like that. So you can note that that's different from – we have another one we call the La Cucaracha song that goes [whistles song]. So the pitches of their notes are useful, are right in our hearing range, right where we sing, right where we whistle … I guess I felt an affinity for them singing these musical phrases that match the kinds of frequency ranges that we vocalise in.* - Remi

Other researchers, such as Remi, studying avian communication, drew from cultural and theoretical musical knowledge/associations in analysing attributes of and variations between sounds. Remi's account highlights how meaning-making from such sounds, especially when experienced aurally, is also strongly connected to personal physical attributes/abilities (i.e., frequencies able to be heard/reproduced shape how information is identified and categorised). Such participant accounts suggest the importance of understanding how information practices bring the body, as an information source (Lloyd and Olsson, 2019), into relation with the entirety of elements/actors in a situation. Moreover, they suggest new, broader ways of understanding how information is created and shared aurally/orally (Turner, 2010).

Conclusions

Preliminary findings highlight how engagements with environmental sounds / sound recording blur distinctions between, for example, signal-noise and nature-culture and between information activities. Embodied information experiences and practices appear as enmeshed with individual abilities, technologies, discourses, environments, and human/nonhuman actors, and the need to further address how embodied/sensory interactions are both informative and involved in constituting information practices and knowledge is suggested. Processes of identifying, describing and categorising information from sounds draw from aural, visual, textual and algorithmic modes, suggesting causes of the interpretation and management challenges faced (Gasc et al., 2017; Hui, 2020; Vella et al., 2022) by these expanding areas. Greater attention towards and documentation of the unique skills and elements involved may suggest potential solutions to these challenges. More broadly, findings suggest theoretical challenges arising when sound/information is considered as both an event/object and as something through which knowledge is produced. Subsequent stages of analysis will connect the interview and observation data with the collected discourse materials to further develop holistic accounts of environmental sound recording practices.

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Charting the future of library and information science in Australia and New Zealand through research, education and practice partnerships

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Abstract

Introduction. This paper reports on a year-long research project examining the state of library and information science (LIS) in Australia and New Zealand (ANZ), where there is a decreasing number of LIS programmes and ensuing concerns around the future of LIS education, and hence LIS research and LIS practice.

Method. Data was collected through three workshops at three different LIS conferences in ANZ, where conference attendees participated through menti.com, an interactive audience-participation platform displaying live anonymous results, followed by an open discussion.

Analysis. Data was analysed using thematic content analysis and affinity diagramming of the menti.com anonymous data and the notes from the post-workshop discussions that arose dynamically from the live results.

Results. A majority of participants indicated LIS education to be of the most concern, tying it in with consequences for future research and professional practice, with other concerns including government and university policies, funding and research assessment.

Conclusions. One of the strongest conclusions that emerged from all the workshops was the role of LIS professional associations in bringing together theory, praxis and education through more dialogue and broad consultations that are inclusive of contemporary societal priorities while ensuring a future for the discipline.

Introduction

University-level library and information science (LIS) education in Australia emerged in the late 1950s and early 1960s, transitioning from practitioner-led training under the auspices of the Library Association of Australia to programmes within universities and higher education institutions (Wilson et al., 2012). This shift led to the academicisation of teaching staff. Prior to the movement to universities, educators had been experienced professionals. After the move to universities, educators were required to have formal academic qualifications such as a PhD and meet university expectations for academics to conduct and publish research (Wilson et al., 2010).

Thus, between 1964 and 2008 there was a notable rise in LIS higher education professional qualifications offered at universities, including research master's and PhDs, which enhanced educators' research expertise, disciplinary knowledge and scholarly communications skills (Wilson et al., 2010). However, after an initial rise, there has been a steady decline in the number of Australian LIS programmes. In 1988, Australia had sixteen higher education institutions offering LIS programmes. By 2008, this number had dropped to ten (Wilson et al., 2010). As of 2024, only three universities in Australia are still admitting students into LIS professional programmes, with two others phasing out their courses. In New Zealand, things have been fairly stable, and there are currently three LIS programmes: one online-only undergraduate, one face-to-face postgraduate and a hybrid, bilingual undergraduate degree for Māori speakers.

For many graduates, employment in the profession depends also on completion of a course accredited by a professional association. In Australia, this function is performed by the Australian Library and Information Association (ALIA), and in New Zealand it is overseen by the Library and Information Association of New Zealand Aotearoa (LIANZA). Other allied professional associations in the field include the Records and Information Management Professionals Alliance (RIMPA), the Australian Society of Archivists (ASA), the Australian School Libraries Association (ASLA), the Special Libraries Association (SLA) and the Archives and Records Association of New Zealand (ARANZ). Many of these professional associations and groups work in partnership with the higher education sector to ensure quality professional education and a high professional standard (Universities Australia, 2024; Universities New Zealand, 2025; New Zealand Qualifications Authority, 2023).

For LIS education to remain effective in Australia and New Zealand (ANZ), the curriculum must continuously integrate current published research and relevant local case studies from the profession. However, the dwindling number of educational institutions offering LIS programmes, along with the loss (retirement or move outside of the LIS fields) of educators and researchers from within these institutions, has created a twofold challenge. LIS doctoral graduates face limited academic career prospects, while libraries are finding it harder to fill available professional librarian positions due to a shrinking pool of accredited graduates – many of whom can secure better-paying jobs in other industries. Fewer LIS programmes have resulted in a decline in research output from both academia and the profession, and fewer collaborative practice-based research projects.

Based on the interconnected issues detailed above, this research started with the following research questions:

- RQ 1. How might we ensure that university LIS education in ANZ remains supported, understood and sustainable?
- RQ 2. How might we maintain integrity, trust and identity in the LIS professions in a rapidly changing world?
- RQ 3. How might we ensure that LIS research in ANZ stays relevant to LIS practice and to LIS education despite the decreasing number of LIS academics?

Underlying our research questions is the assumption that LIS practitioners are professionals working within a defined profession, and that a university education, informed by research in the LIS disciplines, is essential for qualifying them as professionals.

To address these questions, we adopted a collaborative and participatory approach, conducting research workshops at three LIS conferences in ANZ, with participation from LIS researchers, educators and practitioners.

Literature review

Since the advent of the Internet, there have been claims that the world will no longer need libraries. There are some, even within our own profession, who argue that a specific education in librarianship is not required to be a professional librarian. Others question whether librarianship meets the criteria for a profession. These claims, coupled with changes in Australian higher education funding priorities – particularly in the applied areas of research involving practitioner researchers and academic researchers (Middleton and Yates, 2014; Nguyen and Hider, 2018) – have contributed to a decline in LIS programmes in Australia. Several factors have contributed to this situation, including workforce stratification through varying levels of education; the merging of independent LIS schools into larger academic units in which LIS has diminished visibility and influence; tensions between education focused on *learning to be* and that focused on *learning to do*; and a lack of succession planning (Hider et al., 2023; Weech et al., 2019).

Libraries and other information organisations have found it increasingly difficult to hire graduates with accredited LIS degrees due to the reduced number of graduates entering the profession. This issue has been particularly pronounced in academic libraries, where an LIS degree or equivalent experience is typically required for professional roles. However, there is no clear explanation about what *equivalent experience* might include, and hence employers have used ad-hoc criteria to suit their own preferences. Covid-related voluntary retirements and forced redundancies have also contributed to staffing challenges (Universities Australia, 2021). As a result, individuals with non-LIS-specific backgrounds such as those with administration, teaching or research experience are increasingly being hired into librarian roles. These individuals bring valuable skills and new perspectives, but without an LIS education, often require significant on-the-job training and support to adapt to library work. They also face challenges in engaging with, or contributing to, LIS research. There is a pressing need for '*committed graduates who are not only knowledgeable and skilled but who are also actively engaged with the [LIS] professions and able to understand and articulate the value of their chosen professions to the wider community*' (Reynolds et al., 2016, p. 318).

The most recent data shows that while LIS institutions have remained relatively stable in terms of staffing, academic libraries were hit particularly hard by the pandemic and responses (Australian Library and Information Association, 2021). These complex sets of issues have also led to a reduction in research activities by both academics and practitioners, as well as diminished collaborative efforts, posing significant challenges for the profession as a whole. Additionally:

> *the merging of previously independent LIS schools to form part of other, generally larger, academic units within their parent institutions … with other 'information' fields such as computer science, information science, business, and communications … [has] resulted in a reduction of LIS educators as they share teaching with non-LIS educators in multidisciplinary or multi-field schools, …reducing the ability of LIS educators to advance LIS approaches in these areas of study.* (Kennan et al., 2018, p. 168)

A report by Middleton and Yates (2014), commissioned by the ALIA, found that publications reflect different professional concerns for practitioners and academics. The report indicated that most local publishing in Australia is undertaken by practitioners (60 per cent), with LIS academics contributing 14 per cent of publishing. However, the report does not differentiate between peer-

reviewed research publications and other types of publications. Australian LIS academics contribute a higher proportion of publications as primary authors in overseas journals (51 per cent), likely due to institutional pressure to publish in highly ranked international journals rather than in Australian journals. While this study is ten years old now, it highlights a need for more local publishing from academics to better inform and bridge the gap between research and practice.

For the profession to be sustainable, it needs to be informed by research and scholarship which creates new knowledge, helps us to understand the world around us and provides evidence to ground LIS education in helping produce future professionals and researchers in the field. The ALIA, previously the Library Association of Australia, has over time been the publisher of several journals, the longest running being the *Australian Library Journal* (ALJ) (1951-2016) and *Australian Academic and Research Libraries* (AARL) (1970-2016). Over time, the ALJ came to focus more on practice and applied research from all library sectors and the AARL on research and academic and collecting institutions. In 2016, the association decided to merge the two journals into one, which would focus on both domains and created the *Journal of the Library Association of Australia* (JALIA) (2017-present). While this had some positive effects in bringing research and practice together, it did diminish the local outlets available for ANZ research and practice-based papers and contracted the publishing of the journal to a commercial publisher (Weatherburn and Harvey, 2016).

Addressing these challenges necessitates active engagement, knowledge sharing and collaboration among LIS stakeholders. In response, we engaged with fellow researchers, practitioners and educators to participate in collaborative dialogue, aimed at envisioning a sustainable future for LIS.

Research design

We invited educators, researchers and practitioners to participate in our study at three LIS conferences held over one year: the Research Applications in Information and Library Studies (RAILS) 2023 conference in Wellington, New Zealand (November 2023); the ALIA Library Applied Research Kollective (LARK) Symposium 2024 in Brisbane, Australia (October 2024); and the RAILS 2024 conference in Perth, Australia (November 2024). All three conferences were aimed at LIS stakeholders and many of our participants also presented their own papers at these conferences. The three conferences were chosen as they are smaller, more affordable and collegial conferences in the region that bring theory and practice together. Importantly, these events were self-organised by LIS educators, researchers and practitioners (RAILS) and a community of practice (LARK), creating space for critical and candid conversations. While most participants were from ANZ, occasional international participants brought unique perspectives from their contexts, enriching the discussions. Institutional ethics clearance (UTS Ethics #ETH24-9765) was obtained for the collection of data through workshops in all three conferences.

Participants were generally experts in their field due to the nature of the conferences. This qualitative approach can be considered a heuristic evaluation by experts, for which five to eight participants is considered sufficient. Heuristic evaluations work best when performed by a group rather than a single evaluator, as even experts may overlook some issues (Nielsen, 1994).

Our approach drew on design methods and the co-design process, which emphasise collaboration, creativity and gathering diverse perspectives. This methodology builds on previous work applying design thinking in LIS contexts (Hider et al., 2024; Luca and Narayan, 2016; Luca and Ulyannikova, 2020). The first stage of the design thinking approach is the empathy stage, which, in an LIS context, focuses on understanding the needs, pain points and experiences of all stakeholders irrespective of their status in regard to the issue at hand.

Co-design is a participatory approach where designers, users, potential users and other stakeholders are all involved as co-designers of a solution (Hider et al., 2024). Co-design principles

have become a common framework for collaboratively designing library spaces and services. However, while co-design is often cited as a preferred approach, it rarely extends beyond consultation to achieve true participatory design (Wakeling et al., 2022). As a first step in this project, we prioritised designing a participatory environment where participants could meaningfully contribute towards shaping solutions for the challenges faced in LIS education, research and practice without repercussions for speaking up in public. We also drew on the concept of the teaching-research-practice nexus, which emphasises the interconnectedness of these domains as a framework to achieve sustainability in applied teaching through a holistic framework (Schneider et al., 2018).

Each workshop was conducted using post-it notes and menti.com, following a brief panel discussion from the authors. The menti.com questionnaire is summarised in Table 1. The workshops were 60-90 minutes in length and involved 14-39 participants. Conference workshops such as this can be considered a form of *deliberative discourse* within the discipline, which refers to a mode of communication aimed at carefully weighing options, exploring arguments and collaboratively reaching decisions or solutions through reasoned discussion (Michaels et al., 2008). It emphasises the exchange of ideas and evidence, fostering mutual understanding and informed decision-making within a group. In our workshops, participants (audience members) could join and leave the meeting anytime, or choose to listen but not participate. All audience members were informed in advance of the anonymous data being collected and provided with details of the institutional ethical clearance.

Question	Answer
1. What's your background?	Answer choices: Researcher, Educator, Practitioner (Information Professional) - participants could choose more than one.
2. Are you happy with the state of LIS in Australia and New Zealand?	Answer choices: Yes, No, Somewhat
3. What concerns you most in relation to LIS in Australia and NZ? Rank them in order.	Answer choices to rank were: LIS Education, LIS Research, LIS Professions, and Other
4. If you wrote Other what concerns you?	Free text answer
5. What concerns you most about LIS education?	Free text answer
6. What concerns you most about LIS research?	Free text answer
7. What concerns you most about LIS practice?	Free text answer
8. Do you have any further concerns?	Free text answer

Table 1. Summary of questions included in the menti.com survey.

Since menti.com is a live-answering system with real-time display, participants could see both their anonymised answers and others' responses live, promoting further dialogue and listening without identifying whose responses were being discussed. In the second and third workshops, we also briefly presented the findings from the previous workshops after participants had contributed their own views.

We had a total of 81 participants for the three workshops (14 in Wellington, 28 in Brisbane, and 39 in Perth), with just three people other than the authors who attended two of the workshops. In Wellington, almost all participants were academics with only two practitioners present; in

Brisbane, almost all were practitioners except four academics; and in Perth, the participants were evenly spread across the professional identities. Here, we should also note that many LIS academics had worked as librarians in the past, while some researchers were actually retired academics who continued to engage in research.

All the free text answers were imported into Miro, an online whiteboard tool, as digital post-it notes. These notes were initially categorised into LIS education, LIS research and LIS practice based on the menti.com questions. From here, the post-it notes were grouped into more specific categories using affinity mapping, an approach for grouping ideas based on similarity. Affinity mapping is commonly used in qualitative user experience research to organise large amounts of user data (Harboe and Huang, 2015).

Findings

The findings presented below are organised by the three main aspects of our questions and our reporting below integrates the findings from across all three workshops.

LIS education

The key issues highlighted in LIS education included the limited programme and course offerings, concerns about the relevance and breadth of curriculum content and questions regarding the value and recognition of LIS qualifications. A selection of themes and audience responses from the LIS education category are included in Table 2.

Emergent themes	Input from audience
Issues with the curriculum	Increasingly squeezed curriculum
	Simplification of the qualification
	Many specialised skills/knowledge not covered
	Capturing the breadth of librarianship contexts through the course of a qualification
	Too worried about structure instead of knowledge
	Not enough communication between education providers, the professional sectors and students to make sure relevant and current LIS education is offered
	Ensuring it's up to date with today's practices and social backgrounds
	Not tracking to new science and professional trajectories e.g. AI
	Short sighted; public library focused at the expense of everything else
	Not enough focus on management and problem solving. These skills are essential for promoting leadership in the profession. Technical skills can be learned on the job.
	Seems to be focused on what was not what is or will be
	Education not covering new and emerging technologies that are extremely relevant to current practice
Value of LIS qualifications	Qualifications are no longer valued by employers
	Alignment with AQF frameworks and the industrial awards which govern working conditions for practitioners
	Lack of support for it by library managers
	Having the right qualifications
	Advocacy to employers to emphasise value of quals
	Studying for a qualification and finding that it is not required to work in the sector
	Cost of studying LIS degree has gone up due to Aus Government privileging STEM and health degrees as priorities under their job-ready graduates initiative
	Point of difference to mean you hire a LIS graduate over another profession for a LIS job
Relevance of LIS education	Lack of agility and relevance to current LIS professions
	Lots of theory but does not apply to practice
	Desired skills in practice don't match what is taught?
	Irrelevance to actual professional work
	The need to understand how translate theories into current practice
	Lack of relevance to practice
	Capacity to make fundamental change and adapt
	Loss of opportunities
Value of LIS	Lack of institutional support
	Lack of support in wider society
	Lack of unis understanding our value and roles
	Seeming lack of government policies and funding model to support the programmes
	Recognised for importance
	Nobody knows what we do!
	Lack of knowledge affects university appreciation/support

Table 2. Selection of audience responses to Q5. What concerns you most about LIS education?

Many participants were concerned about the small number of LIS courses remaining in Australia, which not only limits options for students but also raises questions about the viability of the few programmes still available. All three remaining university-level LIS courses in Australia are offered in online-only mode. In contrast, vocational education and training in LIS is provided through technical and further education (TAFE) institutes, which are government-funded registered

training organisations. TAFE offers hands-on, face-to-face certificate and diploma courses, qualifying graduates as library assistants or technicians. Many TAFE graduates, school leavers and graduates from face-to-face bachelor's degrees in other disciplines who wish to pursue university-level studies in LIS find it challenging to complete these programmes entirely online.

Participants expressed concerns about access and its potential impact on diversity – not only in terms of the student cohort but also in maintaining a diversity of ideas and priorities necessary for the evolution of the profession. Some suggested that the reduction in programmes was linked to declining student numbers, and that education providers had not effectively demonstrated the continuing relevance of the profession. There were difficulties attracting students to the remaining courses, as the profession was becoming increasingly invisible due to the shrinking number of education providers, and the lack of PhD-qualified academic staff to deliver the programmes, exacerbated by hiring constraints and the casualisation of staff in universities.

Participants were concerned about the breadth of content that should be covered in an LIS qualification, believing that the curriculum did not address new and emerging trends necessary for current practice. They noted that capturing the full scope of librarianship within a single degree programme was a near impossible task, leading to a perception that qualifications had become overly simplified. One participant described their degree as '*public library focused at the expense of everything else*'. A lack of communication between education providers, professional sectors and students was cited as a barrier to maintaining relevance. Regarding contemporary content, participants suggested a need for greater emphasis on emerging technologies, particularly artificial intelligence, as well as a stronger focus on developing management and problem-solving skills. Others identified a lack of cultural competency and cultural perspectives in the curriculum, with a '*reliance on western knowledge, concepts and systems*'. Placement opportunities, particularly paid internships, were also a concern, with one participant asking, '*where's the drive from industry for this to happen?*'

Some participants questioned the value of LIS qualifications, citing that they are not required by hiring managers at all libraries. One participant mentioned studying for a qualification and later finding that it was not required to work in the sector. Another questioned what sets an LIS graduate apart from other professionals in the job market. Linked to this was a sense that the remaining degree programmes lacked agility and relevance to current professional practice. In follow-up discussions, some academic librarians noted that their LIS degrees had not prepared them for teaching pedagogy '*I was asked to do library instruction on the first day of my job - I had no training in teaching*'; almost all of them were routinely asked to teach classes to students, be it for information literacy or other library training. They also had no training in project management, which was now a routine part of their job. Similarly, public librarians felt their LIS degrees did not prepare them for the social work aspects of their roles. Many also expressed concerns about the lack of research training in their degrees, affecting their confidence and capacity to conduct research, although they were interested in generating research from practice.

Participants also shared views on the composition and availability of educational pathways. One expressed that the graduate diploma (often an exit qualification from the master's), often provides the same professional certification as a degree, but lacks sufficient LIS content to prepare students for practice. Many mentioned that professional associations, who normally provide continuing professional development opportunities, have also moved into the education space to provide alternative certification pathways, contributing to a level of confusion within the sector about the difference between education and vocational training. One participant, who has worked in both public and academic libraries, remarked:

> *we have obviously paid a lot to get an LIS degree from a university because we are passionate about the profession and it is very relevant to our contemporary world, so*

> *why are we being undermined with feel-good campaigns like 'hug a librarian day' which has nothing to do with the core principles of my job. I don't want the patrons to thank me (or touch me), I'm getting a wage for the job I do. I just need recognition and respect from the system, and from my professional association.*

LIS research

Participants expressed some familiar challenges in the research space: issues related to time, funding, institutional performance criteria and quality. Specific concerns in the LIS field included insufficient research activity, challenges translating research into practice and lack of research-practitioner collaboration. A selection of themes and audience responses are included in Table 3.

Emergent themes	Input from audience
Not enough research being done	Not enough being undertaken
	Lack of universities undertaking LIS research
	Not enough doing it in our region
	Critical mass
	Decline in number of researchers and areas they cover
	Not enough research into public libraries
	Fewer programmes emphasise actual LIS research and reward information research
	Gaps in research (topics not covered)
	Shrinking in size
	Lack of domestic PhD students
	Not enough number of PhD students, this matters sustaining future
Real-world impact	The impact on the real world
	Gap between research and implementation in practice
	Communication of findings to practitioners – impact
	Inability of research being translated to practice
	Relevance to practitioners
	Connection with practice
	Impractical. More needed in the communities
Practice-led research	Lack of recognition of practitioner research
	Practitioner research not being recognised as academic research
	Not official part of our role so need permission from leadership
	Lack of practitioner-led research
	Not enough support and incentive for practitioners to do research
	Australian LIS practitioners are expected to produce research to the same standard as tenured faculty in US contexts. This is not practical and means people just give up on publishing altogether.
	Practitioners largely do not want to do research, or are not interested in learning how to do it properly
	Research is not part of the job desc and KPI
	Many obstacles to do research while a practitioner
Research culture	Australia is not learning from the research of other countries
	Some of the most original research are conceptualised and done by individuals!
	LIS research is geared towards non-LIS issues.
	US domination
	The self serving nature that focus on sub cohorts of the sector
	Individual interests driving research agenda instead of a broader view
	Need a wider variety of researchers - very keen on research practitioners, but no one has time
	lack of connection between students while they are researching
	Lack of collaboration between library sectors
	Attracting new people with the same passion

Table 3. Selection of audience responses to Q6. What concerns you most about LIS research?

A key issue, from which many subsequent challenges followed, was that there simply was not enough LIS research being conducted in ANZ. This shortage was linked to the declining number of universities delivering LIS programmes, which in turn resulted in fewer people with research as a formal part of their employment and fewer areas of specialisation available. There was a sense that LIS research was shrinking in scope, with fewer opportunities for research, not enough work emphasising the local context and, overall, a lack of diverse voices and perspectives in research. Participants also expressed concerns about the research pipeline and succession planning, and hence the sustainability of LIS research, with fewer and fewer PhD students entering the field.

One participant noted that they rarely saw LIS research presented in the general media, while another felt that library leaders were not engaging with LIS research. Much of the media coverage on misinformation and disinformation often features scholars from cultural studies and media studies rather than information studies. This leaves LIS practitioners feeling alienated, as the crucial role of librarians in combating this phenomenon is seldom mentioned. Instead, librarians are mentioned mainly in the context of Library Lovers' Day and other feel-good campaigns, and participants felt this type of focus diminished the importance of their work.

In most cases, practitioner research is not part of job descriptions or listed as a key performance indicator, and there may be challenges in seeking approval from library leadership to undertake research. In fact, the Canadian Federation of Library Associations (CFLA) code of ethics is the only one that mentions research, that '*Librarians … participate in research and publication on professional matters*' (CFLA-FCAB, 2018). Many who worked outside of academic libraries also had issues getting institutional ethical clearance. Additionally, there are limited incentives for undertaking research. Unlike many academic libraries in the US, academic librarians in ANZ do not hold faculty status, and there is no expectation of research productivity (Kingsley et al., 2022). One participant felt that '*Australian LIS practitioners are expected to produce research to the same standard as tenured faculty in US contexts. This is not practical and means people just give up on publishing altogether*'. Many also mentioned they did not have much research training as part of their LIS degree and hence needed some academic mentors to initiate them into research; with the dwindling number of LIS programmes and LIS academics, mentors were hard to find.

Regarding the scholarly publishing landscape in ANZ, participants expressed concern about the declining number of LIS journals and the dilution of LIS content into non-LIS journals. Participants reported a lack of local venues to publish in, and that the Read and Publish / transformative agreements negotiated by the Council of Australasian University Librarians (Cook, 2024) did not include some key library journals.

The *Journal of the Australian Library and Information Association* (JALIA), Australia's major LIS research journal, was noted as being behind a paywall and thus not accessible to many librarians outside academic libraries. Although the journal is owned by the ALIA, ALIA personal membership does not include access to its journal. Some participants mentioned that the JALIA offers several article types beyond full research papers, including shorter papers that might be more accessible to practitioners (JALIA, 2024). However, for many researchers, institutional performance criteria for publishing mean that, all else being the same, they may prefer a higher-ranked journal based outside Australia for publishing research outcomes.

Finally, several participants commented on the role of professional associations, and what they considered a lack of support from the professional body for research. One participant asked: '*if [they] don't seem to think it's important, who does*?'

LIS practice

Participants discussed a range of overlapping issues in practice, with key issues including the recognition of LIS skills and qualifications, the changing nature of LIS roles and the need for innovation. A selection of themes and audience responses are included in Table 4.

Emergent themes	Input from audience
Library qualifications	Very willing to accept people for 'qualified' positions without qualifications
	Many roles filled by other qualifications – is a LIS qualification even relevant any more?
	Qualifications are not always considered as important by employers
	Qualifications are not valued
	Lack of understanding between what you learn in qualifications and practical work experience
	Workplaces misunderstanding what LIS practitioners do and thus not making roles specified calling positions for qualified librarians
	Employers have unrealistic expectations about qualifications
	LIS Qualifications not always required, sometimes avoided
	Unqualified staff / staff who work in libraries but have no interest in learning
	Lack of recognition of LIS qualifications and their value. Lack of support for training
	Employment of those that don't have library qualifications. How can a social worker use librarian in their title?
	Credentials shifting markets where some areas (urban) have an over supply of practitioners, and some regional areas have an under supply and funding to get practitioners in
Library work becoming less specialised	Movement towards generic roles and away from specialist knowledge
	Becoming more general purpose
	Non library work imposed on professionals
	Many practitioners are doing jobs that could be done by trained monkeys and they don't see the bigger picture
	Lack of support to develop staff with adjacent skills
	Library staff that don't know anything about core library duties
	It's done people with little or no LIS training
Role of librarianship	What is a librarian has become subjective
	What is LIS any more?
	Lack of appreciation and understanding of our knowledge
	Diminished professionalism
Relevance and innovation	'But this is how we've always done it ...'
	Sometimes short sighted, but sometimes very innovative
	Not looking long term
	Not seeing much inspiring or innovative practice or collaboration in public or education sector
	Isn't embracing new opportunity fast enough
	Staying important
	Staying relevant
	Stuck in the past
	The we've always done it this way mentality
	Innovation is isolated. Not consistent across the sectors. Also our old fashioned profile we have never dealt with this
	Holding on to old practices + fear of the future = a profession that is not future proofed and doesn't invest in itself
	Getting workplaces on board with the transition from older 'book warehouse' styles of LIS work to being digital literacy, research, and information education/knowledge workers

Table 4. Selection of audience responses to Q7. What concerns you most about LIS practice?

Several participants raised the '*marketing problem*' of the profession. However, the key concern appeared to be around LIS qualifications. Participants observed that increasingly, libraries are hiring individuals without ALIA-accredited qualifications for jobs that previously required them.

This led to a perspective that LIS qualifications were no longer considered important or valued. As one participant asked, '*how can a social worker use librarian in their title*?' Some believed this issue was a result of the short-sightedness of employers and hiring managers, who misunderstand what LIS practitioners do, and therefore do not distinguish between qualified librarians who are educated in the principles of LIS and applicants who may seemingly '*get the job done*'. Managers who were unaware of LIS values were at risk of making hiring and other strategic decisions without sufficient foresight.

Diminishing emphasis on LIS qualifications appeared to contribute to some interesting shifts in the profession. One participant stated that '*what a librarian is, has become subjective*', leading to diminished professionalism and a lack of appreciation or understanding of LIS knowledge. Concerns were raised about staff who '*don't know anything about core library duties*', and the lack of support and training to develop staff who may be coming to library work from another discipline. There was an overall perspective that professional development in general was not a priority for many institutions. Several participants shared that library work was becoming more general purpose, through a shift away from specialist knowledge, and library workers were increasingly taking up non-library work – one example being a shift towards more community and social services in public libraries.

Many participants said that LIS was not appealing to future generations, while some of the younger people who were interested in pursuing a career in LIS faced barriers gaining experience and entering the profession. Participants were significantly concerned about diversity, particularly that workforce diversity is not improving rapidly enough, especially at senior levels. Several public librarians noted the need for multilingual and multicultural staff, yet there were no clear pathways to train and employ existing volunteers from diverse communities within the library system.

Finally, capacity for innovation was seen as essential for maintaining a long-term future for LIS. While there were certainly pockets of innovation, these innovations often stayed local and hidden due to a lack of dissemination through publications.

Discussion

Our findings reaffirm the importance of retaining a nexus between LIS education, research and practice. Many of the key challenges identified by our participants are underpinned by the need for each of these areas to work together towards ensuring a sustainable future for LIS. However, our findings suggest that this nexus has been undermined in the current context, risking the sustainability of the LIS discipline and profession in the ANZ region.

In terms of answering our research questions, we found that our findings point to the following recommendations:

- RQ1: How might we ensure that university LIS education in Australia and New Zealand remains supported, understood and sustainable?
    - LIS education should be informed by both LIS research and LIS practice.
    - In addition, LIS students face high university fees and are scrutinising their return on investment for their degrees (ALIA, 2019). In these times libraries need to engage LIS students and graduates, while professional associations must continue to support and champion the profession and university-level education.
- RQ2: How might we maintain integrity, trust and identity in the LIS professions in a rapidly changing world?
    - LIS professionals should be involved in practice-led research, and observably be engaged with evidence-based practice.

    - Researchers, practitioners (including employers), educators and the professional association need to work towards better understanding each other's critical roles in the LIS professions, and communicate this more broadly in society.
- RQ3: How might we ensure that LIS research in ANZ stays relevant to LIS practice and to LIS education despite the decreasing number of LIS academics?
    - LIS academics should be cognisant of evolving practice, and engage in practice- and research-informed teaching.
    - More proactive engagement is needed between LIS practitioners, educators and researchers and the LIS professional associations.
    - LIS researchers could partner closely with researchers in the field of communication and cultural studies in work on information and misinformation.

In Figure 1, we adapt the model by Schneider and colleagues (2018) for LIS based on our research. The arrows reflect the connections between education, research and practice, and the feedback loop that ideally exists between them.

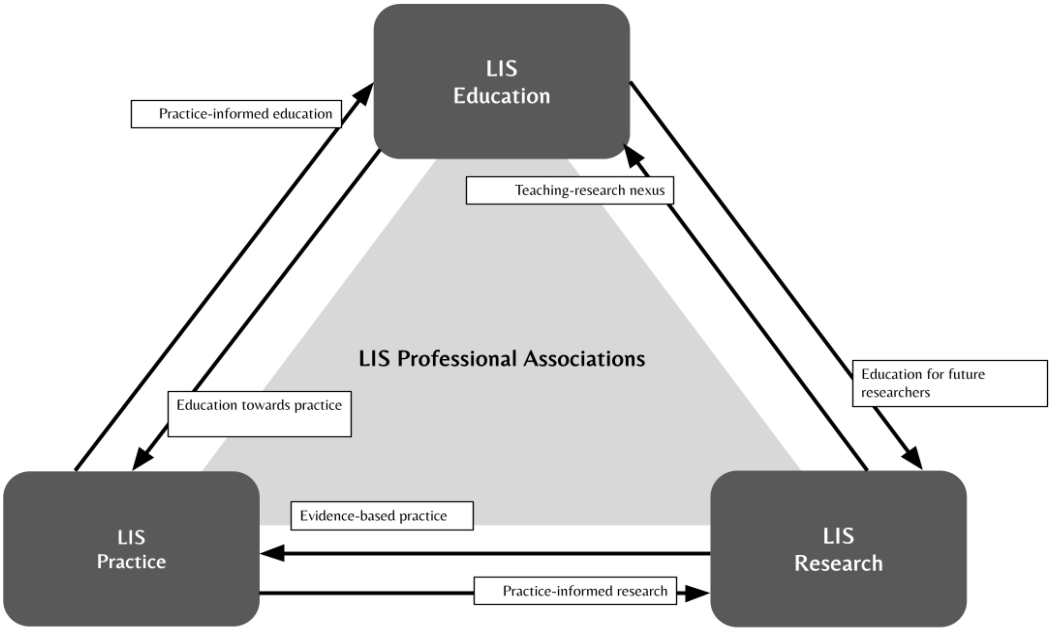

Figure 1. The LIS education-research-practice nexus, supported by LIS professional associations (adapted from Schneider et al., 2018).

Based on our findings, we have added a fourth component to Schneider et al.'s 2018 model, which is LIS professional associations. Although not part of our original research questions, our findings emphasise the need for LIS professional organisations to advocate for all three aspects of LIS and enable and facilitate connections between them in a proactive manner.

A path forward – rethinking the LIS nexus

As authors who are researchers, educators and practitioners, we are invested in LIS as a discipline and a profession. Over the course of a year, through three workshops designed to explore our research questions and through our reflections on these discussions, we identified several recurring themes across LIS education, research and practice. These themes reflect the shared challenges and opportunities within the profession, including the need to reinforce relevance, foreground values, promote recognition and advocate for diversity.

Reinforce LIS relevance to our contemporary digital society

Some participants described the profession as being old fashioned, '*stuck in the past*', with a mentality of *'but we've always done it this way*'. In the context of education, relevance was often discussed in terms of how well LIS degree programmes aligned with industry needs. Some participants said that the programmes were too theoretical, not sufficiently applicable to practice or unable to adapt quickly enough. These comments and others in this research highlight the commonly held conflation of education and training. An education fulfils a general and developmental purpose and provides students with the ability to acquire new skills and be flexible in times of change, and strives to induce a commitment to lifelong learning. It introduces the theory of a profession, and as students become new professionals, they also need specific skill sets for their employment (Kennan et al, 2014). This is where training comes in, as it prepares the learner for a specific task or job (Wallace, 2015, p. 311; Manuell, 2023). In other words, education equips students with a broad conceptual understanding of principles, concepts, philosophies and ethics that underpin the discipline, whereas training equips students with practical, hands-on skills to use particular systems or technologies. It is our view that it is incumbent upon educators to find the correct mix of education and training, and for employers and professional associations to understand that there is a role for both a discipline-specific higher education and ongoing employment-related training.

Other participants felt that research, too, was not keeping pace with changes in practice, and often lacked clear connections to real-world applications, and its value and benefits were unclear. In practice, relevance was described in terms of a lack of innovation and an inability to embrace new opportunities. Some of the solutions identified were, to:

- Embed flexible and adaptive curriculum design in LIS programmes to ensure alignment with contemporary practice and emerging trends.
- Develop stronger connections between LIS researchers and practitioners through collaborative, practice-informed research projects.
- Prioritise innovation and experimentation within LIS practice to better respond to technological and societal changes.

LIS is both a profession and an academic discipline and must operate with an awareness of the requirements of both.

> *If we consider the five attributes of a profession (Greenwood, 1957): systematic theory, authority, community sanction, ethical codes, and a culture, and what Abbott (1988, 1998) terms a profession's 'jurisdiction,' then we acknowledge that these are conferred within the structure of an education, most commonly at the university level and providing some kind of certification.* (Kennan et al., 2014 p. 669)

This research highlights the tensions of working within these dual identities.

Foreground LIS values and promote the value of LIS to society

The core values of the LIS discipline, librarians, library qualifications and library work were key themes across all categories. However, defining these values is not straightforward. Table 5 provides examples of how different professional associations define the core values and responsibilities of the profession.

Professional association	Extract from core values	Reference
Australian Library and Information Association (ALIA)	Core values include: 'Excellence, accountability, integrity and responsibility in service to our communities'.	(ALIA, 2024)
Chartered Institute of Library and Information Professionals (CILIP)	Vision statement: 'A professional community, dedicated to changing lives through quality information, services and expertise'.	(CILIP, n.d.)
American Library Association (ALA)	Core values of librarianship: access, equity, intellectual freedom and privacy, public good and sustainability.	(ALA, 2024)
Library and Information Association of New Zealand Aotearoa (LIANZA)	Core values: respect, equity, partnership and collaboration, empower and grow, trust, guardianship/custodianship.	(LIANZA, 2024)
Canadian Federation of Library Associations (CFLA)	Code of ethics: access to information, responsibilities to individual and society, privacy, secrecy and transparency, open access and intellectual property, neutrality, personal integrity and professional skills, and colleague and employer/employee relationship.	(CFLA-FCAB, 2018)

Table 5. Core values of LIS professional associations

Weissinger is critical of the idea of professional values as guiding principles for decision-making, arguing that '*such functions are not values at all*' (2003, p. 34). They further contend that defining core values based on consensus among librarians can be exclusionary, as it reinforces dominant perspectives and undermines efforts to diversify the profession. Instead, a non-operational, qualitative view of values recognises them as part of broader ethical frameworks that connect experiences, actions, beliefs, theoretical discourse and other value structures.

Regarding LIS education, participants felt there was a lack of understanding from universities about the value of LIS to the broader society, and even to the university. This, they argued, was contributing to a forced decline in course offerings. In research, while discussions about value were less direct, participants expressed concerns about the perceived lack of high-quality research, the absence of a cohesive research agenda and insufficient recognition of research by professional associations. In practice, participants felt that librarian skills were increasingly undervalued by employers, with a growing preference for generic skill sets or alternative credentials, often in emerging digital technologies. Some of the solutions identified in this area were:

- Develop sector-wide initiatives through professional associations that bring together LIS researchers, educators and practitioners to critically engage with and reflect on professional values and ethical frameworks.
- Engage in sector-wide efforts to communicate the unique contributions of LIS professionals to society.
- Strengthen advocacy within universities and professional associations for LIS research and education.

Promote LIS recognition within universities and within research agendas

This theme highlights a key issue for the discipline: a need to clearly define, communicate and advocate for its value in a rapidly changing landscape. A lack of consensus on the value of LIS, even within the profession, has dire implications for its recognition in broader society, and could lead to further watering down of the profession, undermining of its credentials, and ultimately the death of the profession. Some of the solutions identified in this area were:

- Develop a unified narrative that articulates the distinctiveness of LIS as a field and its critical contributions to knowledge and society.

- Engage with interdisciplinary challenges and megatrends to position LIS research as valuable in addressing wicked problems.
- Advocate for increased visibility and representation of LIS in national and institutional research agendas.

Advocate for deliberate and inclusive diversity initiatives across the profession

Recognition of the importance and need for greater diversity was clear from participants. There were some excellent examples of work in this space; however, at a sector level, this is uneven. In terms of the curriculum, participants observed a lack of cultural content and perspectives in degree programmes. In research, participants called for more diverse voices and inclusive perspectives. A broader range of issues were identified in the world of practice – both diversity within the workforce and in equipping professionals with the ability to support diverse client groups. In terms of the workforce, participants discussed the need for greater diversity particularly at the senior leadership level, and the need to provide greater support for neurodivergent staff. In supporting clients, participants identified the need for a stronger focus on equity, diversity, inclusion and accessibility, as well as the need for more meaningful commitment to decolonisation and cultural safety. The *National survey on Aboriginal and Torres Strait Islander employment in Australian libraries* identified significant gaps in both the number of Indigenous employees and support for employment pathways (Thorpe, 2023). In the New Zealand context, Lilley (2024) notes that organisations often do not include cultural competency in the required skills, attributes and expected experience for advertised roles, inhibiting their ability to transform into Indigenised institutions. More work is required by organisations to move beyond intention to meaningful action. Some of the solutions identified were:

- Review and revise LIS curricula to include diverse cultural perspectives and develop students' cultural competency.
- Promote diversity in LIS research by prioritising funding and support for projects led by underrepresented groups.
- Develop sector-wide strategies, through professional associations, to recruit, retain and support a more diverse LIS workforce, with particular focus on leadership pathways.
- Promote training and resources for LIS professionals to better support equity, diversity, inclusion, cultural competency and accessibility in practice.

Conclusion

It is our contention that the world will always need librarians, that librarianship is indeed a profession and that professional education for librarians is necessary to maintain the professional status and the salaries and roles associated with the profession, not to mention the trust, the reliability and the quality of the services.

Our findings emphasise the relationality, the reciprocity and the holistic interconnectedness of our respective knowledge systems within LIS, especially in the areas of research, education and practice. LIS educators, researchers and practitioners must work to actively engage with each other, share knowledge and expertise and work together to bridge gaps and advance the field.

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The relational dimension of librarianship

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Abstract

Introduction. As libraries increasingly are used as civic spaces, places for participation and community building, the implications for librarians need further consideration. This paper presents the concept relational librarianship, intended to provide a novel perspective on librarians' relational role.

Method. The paper presents and discusses scholarly work from library and information science (LIS) and introduces *relational competence* as a relevant perspective on librarianship.

Analysis. The analysis pays particular attention to how relational competence adds to librarianship and the competences and skills needed today.

Results. By embedding relational competence into professional training and practice, librarians can more effectively support social cohesion and community building. This perspective shifts the focus from individual interactions to the broader impact of librarians as facilitators of trust and inclusion within diverse communities.

Conclusion. *Relational librarianship* is a new concept that could prove fruitful for researchers, in practical librarianship and for LIS programmes, as it aligns the profession with the growing demand for social connection and inclusivity.

Introduction

Loneliness has recently been declared a global health threat by the World Health Organization (WHO), which launched the WHO Commission on Social Connection to address its impact on health and societal trust. As communities face these challenges, the necessity for a coordinated response has become evident. Libraries, often viewed as community hubs, present a significant opportunity to foster social connection, as highlighted in Library and Information Science (LIS) research (see for example Audunson et al., 2019).

This paper investigates the evolving role of libraries as platforms for social connectedness, focusing on the implications for librarians. Professionals and scholars have for some time raised the issue of skills and competencies within librarianship. Mary Ghikas of the American Library Association encouraged librarians to *turn outward* (2019), to support belonging and co-creation in local communities. Lankes et al. (2015) expanded discussions on skills needed by library and museum professionals in a participatory culture. They refer to librarians as potential '*positive change agents*' (2016) in their communities. Research also indicates that librarians observe the need for increased competence pertaining to the social processes they initiate with increased programming and outreach – perhaps especially to youth and marginalised groups, such as immigrants, (Johnston, Pálsdóttir, et al., 2022). Thus, the role of librarians needs to be related to building trust and relations both within the library, and the community.

The link between interpersonal trust, participation, social capital and democracy is evident through scholarly work in different research areas (see for example Sullivan and Transue, 1999), including library and information science, where researchers have explored how libraries help foster such qualities. These concepts are also relevant to discuss in relation to the *social turn* of public libraries, which repositions libraries as enablers of interpersonal social processes (Nolin and Söderholm 2015). Nolin and Söderholm add that it entails '*a turn in how library issues are framed: from a societal perspective to a social perspective, from the building of society to the building of relations*' (p. 244). Both public library practice and research have sought to discover how libraries contribute to community-building activities, which in turn can foster social and democratic sustainability (see for example Audunson et al., 2019). The rise of participatory culture and processes in libraries adds to these developments (Nguyen et al., 2012; Johnson, 2016; Rasmussen, 2016).

The catchphrase *from collection to connection* (Audunson and Aabø, 2013) reflects how the focus has shifted from the library collection to the social processes it enables. Libraries' role as facilitators of community interactions is further emphasised by Johnston, Jochumsen and Edquist (2022). However, central to this development is the librarians' responsibility for initiating and maintaining social processes within the library and broader community. To develop our understanding of how librarians contribute to fostering deeper, more meaningful, relationships and building trust within communities, I introduce the term *relational competence* and discuss its potential relevance for librarianship. I argue that we need to expand our vocabulary in terms of librarians' contribution to community building, and how we can move towards *relational librarianship*. This concept, I believe can highlight the pivotal role librarians play in nurturing and maintaining libraries as central hubs of community building, especially in diverse communities.

The paper is guided by the following research questions:

- How has the evolving role of libraries in community building increased the need for different skills and competencies among librarians?
- How can we understand relational competence, and what role can it play in librarianship?
- To what extent does relational competence have a role in LIS education?

This paper is structured as follows: First, it clarifies key concepts and considers how the role of libraries – particularly public libraries – has evolved in recent years, and how librarians are increasingly faced with added responsibilities regarding social engagement and community support. Perspectives on librarians' skills and competencies are presented, as well as a reflection on our understanding of what librarianship entails. Second, I propose a consideration of relational competence as part of librarians' proficiency. The concept is presented and discussed, more specifically related to community engagement and fostering relationships. The final part of the paper includes a discussion of *relational competence* in terms of librarianship and LIS education that takes its basis in Lankes' (2020) article 'Never neutral never alone', in which he argues that there is a need to reconsider the elements in LIS education programmes. The paper's aim is to establish a preliminary conceptualisation of relational librarianship and broaden our understanding of how fostering connections can be a goal-oriented approach for librarians to engage in community building.

Definitions and clarifications: community, diversity and relational competence

The following paragraphs specify three interrelated concepts used in this paper, namely community, diversity and relational competence. They are central aspects to the social turn of libraries, describing the context (community), one of the key aspects of communities (diversity), as well as one possible approach for librarians (relational competence).

The term community stems from the Latin *communitas*, meaning the same. Communitas in turn comes from *communis*, meaning 'shared by many' (Sullivan, 2009). Whether it is a neighbourhood, an organisation or a university, a community consists of people who *share* something, for example geography, interests, values, beliefs, practices or responsibilities. What the commonality is matters less than its presence. As Lankes stresses (2016), community is central to librarianship, as all librarians work within a community and provide services to community members.

When hearing the word community, we might associate it with kinship and social bonds. However, the degree to which people have strong bonds between them in a community varies. Scott (2011) looks at community in three ways: '*communities of interest*', '*spatial communities*' (Linley and Usherwood, 1998) and '*communities of relationships*'. She points out that while public libraries are well-known for contributing to building communities of interest, their potential of building relational communities and spatial communities are not fully reached. Johnston et al. (2022) consider that communities can have affective elements, meaning that people care about each other, and that libraries are among the institutions where affective ties can be formed. In this paper, I will look more closely at how librarians can contribute to relational communities.

In the introductory paragraph, I refer to *diverse communities*. Diversity – or the support for diversity – generally refers to the inclusion of traditionally marginalised groups. It '*involves acknowledging, respecting, and appreciating the differences that people have in terms of their appearance, beliefs, and lifestyle*' (Sullivan, 2009). Furthermore, there are primary and secondary dimensions of diversity, primary dimensions being those that are unchangeable, like ethnicity, sexual orientation, age, physical or mental abilities and so on. Secondary dimensions are changeable, and include socioeconomic factors, religion and relationship status. The more primary diversity dimensions are present, the harder it can be to establish trust (Sullivan, 2009). However, heterogeneous communities benefit because diversity fosters (1) the reduction of prejudice, (2) the vitality of groups by providing new perspectives, (3) productivity by providing a wider range of resources, (4) creative problem solving, and (5) perspective taking.

Hence, diversity – and certainly diverse communities – represents an area of which all librarians should be aware, especially public librarians, who are tasked with facilitating services for a broader

spectrum of users. Library services and programming directed towards marginalised groups are well-known, for example those targeting immigrant and newcomer communities (see for example Hoyer, 2013; Johnston, 2018; Johnston et al., 2024). However, there are other groups who have remained largely unacknowledged or invisible, such as those identifying as part of the queer community, or people with different disabilities. Building relationships with community members and different groups in the community is something librarians have always done, but as loneliness increases (Berlingieri et al., 2023; World Health Organization, 2023), and inclusion and participation become increasingly important, there is a need for developing these skills, both within the field of librarianship and within LIS education. As Johnston et al note: '*The social fabric of a community is shaped by the idea that only when we are connected and care for the well-being of the whole is a civil and democratic society created*' (2022 p. 9).'

While community often is held as an absolute ideal, we should also be able to consider a different perspective. Ahmed and Fortier (2003) argue that communities often rely on shared norms and values that can marginalise or silence those who do not conform. Also, community is intertwined with diversity and identity, both individual and collective. Alternative communities develop, sometimes in resistance to existing narratives, as we see with different subcultures or groups. The emotional and affective dimensions of community life, should also be factored in, highlighting how feelings of comfort and discomfort play a role in the inclusion and exclusion processes. Librarians, then, should have an awareness of how communities can be spaces of both solidarity and exclusion, which urges a continuous reflection on how they relate to groups and individuals.

Lastly, I would like to expand on the term relational competence, and its significance as a means of developing librarianship along the aforementioned social turn, and participatory culture in libraries. The concept is used in different fields and professions and is defined and understood in several ways. From the field of sociopsychology, Hansson et al. (1984, p. 273) explain it as '*characteristics of the individual that facilitate the acquisition, development, and maintenance of mutually satisfying relationships,*' and Carpenter (1993) observes it as consisting of two dimensions, 1) initiation and 2) enhancement through the maintenance of relationships.

While relational competence is often connected with personality and individual communication and wellbeing, there is a Nordic tradition of observing relational competence as part of a professional role, particularly within the helping professions (Aubert and Bakke, 2018; Klinge, 2021), but also for leaders and managers. It is used both to look more closely into the professionals' relationships with those they care for or teach, but also in terms of relationships with co-workers, management or similar. Thus, it is not a term that is limited to one type of relationship, for example between a teacher and a pupil, but encompasses any type of relationship. Aubert and Bakke (2018) stress that for professionals, relational competence is intertwined with their overall proficiency and helps guide them in situations where their professional qualifications and competence intersect with interpersonal communication and individual needs. It also entails a component of self-awareness and reflection when it comes to interactions with others.

Librarians' relational role in communities

How can we understand librarians' relational role in communities? This really comes down to the way librarians are engaging with library users. Likewise, how librarians create relationships with different community groups will affect how and if they experience the library as an inclusive space. The following section is intended to highlight some aspects of what I propose to be the relational role of librarians.

The relational aspects of librarianship have not been given much attention within empirical research, with some exceptions (Aranelo Douglas and Gadsby, 2019; Evjen 2021; Fuhr and Popowich, 2022). However, several studies shed light on librarians' knowledge and skills connected to communication, trust building or ability to engage and connect with others. This is especially

evident in studies of librarians' work with children or youth, or cooperation within an organisation – like school librarians, who depend on cooperation with both teaching staff and school management. Gärden (2017) shows the importance of close working relationships between the school librarian and teachers for the school library to reach its full pedagogical potential. Likewise, making the library's role and contribution visible to the management is important for its place in the school's organisation. Establishing such cooperation proves challenging for school librarians – but no less important (Latham et al., 2013). Similarly, for academic librarians, there is a need to connect both with students and student groups, as well as with teaching staff administration and management (Fuhr and Popowich, 2022).

For public librarians, there is a need to build relationships with community members, the local government and local government administration, as well as the community surroundings. To develop and maintain a wider range of services and projects, cooperation with local organisations is vital. Last, but not least, the ability to connect with the individual user is vital to establish the library as a welcoming and inclusive community knowledge hub. A challenge is of course to also be visible and available for those who do not regularly visit the library. Being aware of the importance of connection, and being able to work on relationship-building, run like a common thread through the librarian's professional practice. The work of Vårheim (2011, 2014), and Johnson (2012), are two examples that illustrate how librarians help foster trust and create community. Johnson (2012) observes that for some patrons '*libraries seemed to act as a kind of middle ground between close family and friends, and more formal helping agencies, such as school counselors or welfare agencies. It may be the neutrality of the library worker that is attractive to the patron – someone who will listen but will not get too involved in their problems*' (p.57). Yet, as findings from Johnson's study show, not all librarians are comfortable with establishing personal relationships with library patrons. Integrating relational competence in LIS education could be helpful for future librarians, not only to create awareness around the fact that as a librarian, you will have a relational role, but even more so, to establish this as part of a professional practice, not a personal one.

One main challenge, of course, presents itself when dimensions of diversity (both primary and secondary) are issues of debate or disagreement, like immigration, identity/gender issues or religion. According to the liberal-democratic principles on which librarianship is based, these discussions or opinions should not be muted. Still, the content might cause distress to already marginalised groups. Navigating these conversations while retaining the trust and inclusion of the community is a challenge for librarians (Carlsson et al., 2023; Nissen and Kann-Rasmussen, 2022)

As Johnston et al (2022) note, the decline in interaction between diverse community groups is another concern libraries, too, must consider. Research suggests that diversity can have a negative impact on trust – but also that it can be mitigated by social ties – connectedness on an individual or small group level (Stolle et al., 2008). Since libraries generally cater for a wide range of users, they offer an arena well-suited to promoting social connectedness, and indeed fostering relationships. Librarians, in turn, need to have the necessary relational competence to be able to facilitate these processes, engaging with community members, organisations, volunteers and so forth. As Johnston et al. (2022) note, small groups in particular can be especially beneficial in terms of establishing affective ties among individuals.

Building trust, maintaining dialogue and communication are core aspects of relational competence. For librarians, especially those operating in diverse communities, these aspects represent both a general competence, but also a more specific approach to enabling social connection between individuals and groups in the community.

Children and youth: an example of trust as a relational aspect of librarianship

Trust is recognised as a key component, not only in interpersonal relationships at the micro level, but at the macro level, for organisations, communities and even nation states (Fukuyama, 1995).

However, trust is a complex issue, one that scholars struggle to categorise, according to Nannestad (2008). In the literature it is described as an attitude, a decision, a relationship or '*a general outlook on human nature*' – to name a few. It is referred to as the most important ingredient of social capital and forms the basis of any relationship. Building trust is also a key component of relational competence. But how is trust built? How do we foster trust in diverse communities? This, of course, is a complex issue and certainly not for librarians to solve or answer alone. But an awareness that librarians, too, can – and should – contribute is the first step.

Building trust takes time. And of course, trust is interpersonal; it is a quality that exists between people, individuals and groups. Thus, people are more likely to trust one another after several interactions rather than on a first one-shot basis (Ostrom and Walker, 2003). Libraries are places that bring people together, whether it is as high or low intensive meeting places (Audunson, 2005). But does this alone foster trust? Research shows that it might: becoming aware of *otherness* in a non-threatening context. Some studies suggest that libraries could be a contributing factor in building social capital (see for example Vårheim 2011, 2014; Johnson 2012). But while libraries are important arenas, it will still be the librarians who initiate programmes, who welcome people in, who encourage conversations.

To illustrate, one example is how children's librarians work with trust and relationships. Johansson (2010) has studied children's librarians' self-perception and found that they describe themselves as a '*different kind of adult*', someone that the children trust, but someone for whom the children do not need to accomplish anything. A later study by Johansson and Hultgren (2018) confirms this impression, observing how teachers and parents tend to regulate children's behaviour when coming to the library. Evjen and Vold (2018) explore how library professionals work towards developing participation in a library for children between the ages of ten and fifteen. The librarians want an open and free environment for the children so they can participate as co-creators in developing the library. This, however, is contingent upon the children feeling safe so that they dare to take advantage of this freedom. For this to happen, rules that give the space predictability and create a safe environment are needed, and children need to be able to engage and connect with the staff. While developing trust between librarian and patron is important in any library, it is perhaps especially important when children are involved, thus elucidating the relational competence of children's librarians.

Librarians' competences and skills

The evolving demands of librarianship prompts a re-evaluation of competencies and skills, particularly in the context of relational librarianship. This section explores the distinctions between competencies and skills, the growing emphasis on interpersonal abilities and the role of education in preparing librarians to engage with communities effectively.

In his *Atlas of librarianship*, Lankes (2012, p. 137) makes a distinction between librarians' competencies and skills, the former being '*broad and durable approaches to fulfilling our mission*', while the latter refers to '*less broad and less durable means of fulfilling competencies*'. The four overarching competencies consist of '*access*, *knowledge*, *environment and motivation*'. Traditional skills include well-known areas such as knowledge organisation, collection management, administration and so forth. Each skill has in turn certain – varying or changing – technologies and techniques attached. These are distinctions to keep in mind while exploring *relational competence*.

Through a comprehensive review of literature discussing skills and competencies of LIS professionals, Nonthacumjane (2011) divides the findings into three broad categories: personal skills – like being flexible, creative or analytical; generic skills – like information literacy, communication or critical thinking; and lastly discipline specific knowledge – like metadata, database development or user needs. Koh and Abbas (2015) studied which competencies are

needed for information professionals in learning labs and makerspaces, and concluded that the ability to learn, adapt and collaborate was ranked as top three. Radford and Radford (2017) draw on interpersonal communication theory in their book *Library conversations* in which they underline the importance of communication in interpersonal encounters. Lankes (2012) also brings communication into focus when he reflects on the importance of conversation in library science and how conversations form a bridge between library science and communication. The skills needed for bringing these conversations to life are perhaps both personal and generic, but they are arguably also relational in the sense that they bring people together. His work is resonated in Johnston et al. (2022), who point out that conversations foster connections.

Several scholars have shed light on the skills and competencies of librarians that goes beyond discipline-specific knowledge. Matteson et al. (2019) explored academic librarians' practice and found that the librarians reported using '*a set of relational skills around interpersonal communication and interacting with people*' (p.437). The authors note that these skills aligned with other conceptual models of what soft skills are. Chow et al. (2011) did a comprehensive survey of library managers regarding LIS graduates' skills. Ranked as most important were skills related to communication and people management. When they rated satisfaction with graduates' skills in this area, the results were neutral to unsatisfactory. '*Some of the comments reflected the opinion that working in a library means working with people, and librarians need to be equipped with people skills*' (Chow et al., 2011 p. 15). When exploring what knowledge, skills and abilities are considered core for professional public librarians, Williams and Saunders (2020) found that soft skills, such as interpersonal communication and customer service were ranked highly among survey respondents consisting of LIS professionals, alumni and faculty. Gjestrum et al (2018) analysed job announcements from the library field and found that both ICT skills and communication were most frequently mentioned. A recent study of librarians' perceptions of their professional role suggests both that they are adapting to the social turn, and also that there are areas in which they need more competence. Some of these areas are *relational*, as they mention the roles of youth workers, social workers and integration consultants as relevant in the libraries (Johnston et al., 2021). Although these studies are different, both in design and perspective, they do point in the same direction: there is a need for relational competence in the professional field.

Relational competence and LIS education

The third issue this paper addresses is relational competence as part of LIS education. This paper does not review studies of LIS education components but presents studies on what skills librarians use in different community contexts, as well as what needs there are in the professional library field, seen in the context of the curriculum in LIS programmes.

While it is possible to discuss many aspects of librarianship and LIS education, this paper's focus is relational competence in a community context. Diverse communities might present librarians with added challenges. Librarians need skills that allow them to build trust and inclusion and mediate – rather than avoid – conflicting opinions. First, it should be noted that diversity could represent a challenge for LIS programmes. Jaeger et al. (2015) assert that the field of LIS has '*struggled with issues of diversity and inclusion in the composition of information professionals, in educational content, and in connecting with many communities*' (p. 150). The challenge, it seems, is not only to attract applicants from diverse backgrounds to LIS programmes, but also for librarians to reach out to their communities in a meaningful way.

However, addressing these challenges can yield significant benefits by preparing graduates to navigate complex social dynamics and promote social cohesion. By emphasising relational librarianship, LIS programmes can contribute to a transformative shift in librarianship that aligns with contemporary societal needs.

There are great differences in educational systems, which makes it difficult to compare programmes. However, it seems as if the knowledge and skills sought after by the library field do have common features, both in different areas of librarianship (academic, public, school), and also in different countries. A recent study by Saunders and Bajjaly (2021) suggests that a variety of soft skills are incorporated into LIS programmes in the US, but more through passive than active learning.

Saunders (2015) raises the important issue of what it is possible to teach in a classroom setting – are soft skills something that can really be taught? Relational competence certainly includes several of the soft skills the literature presents, which are more prevalent in certain personalities than in others. However, relational competence in a professional setting also encompasses your ability to combine hard and soft skills when communicating and networking with different groups and people, while being able to reflect on your own role and communication. The aspect of self-awareness and understanding your own role as you initiate and facilitate contact with others develops over time, but is clearly something students need to be aware of. In the context of librarianship, the individual component is less important than the discussion and understanding of *how* relational competence can contribute to improving communities and also to developing librarianship as a professional field. If we acknowledge that librarians not only need *soft* skills – which research indicates – but also comprehensive understanding of what these skills are, why they are needed and how they can be developed in different contexts, then we also acknowledge the need for relational competence.

Formal education is one side of librarianship; professional practice is another. Not all aspects of being a librarian can – or should – be put on the curriculum. Yet, if LIS programmes teach students how libraries evolve and the complexity of operating in diverse communities, they also have a responsibility to create awareness of the knowledge, competencies and skills librarians need to meet different community needs, including social connectedness and community building – as well as an understanding of how these will develop in professional practice. Students in LIS aspiring to careers in libraries should early on be made aware of the relational role libraries play in the communities they operate.

Relational librarianship – can it be taught?

Relational librarianship provides a framework where soft skills, as described by Saunders (2015), Matteson et al. (2016) and Williams and Saunders (2020) can be directly related to the librarian's role: as a bridge-builder both within and outside the library.

Matteson et al. (2016) relate that the term '*soft skill*' is rarely defined and is somewhat difficult to capture precisely. But they also stress the importance of such skills, and that they should be acknowledged by LIS education programmes. They are not satisfied that these types of skills can be learned '*on the job*' alone. '*Moving away from research to application, we identify a strong need for instructional materials to develop soft skills both in LIS coursework and in continuing education*' (Matteson et al., 2016, p. 85). Research shows that this type of competence is sought after in the professional field (Chow et al., 2011; Gjestrum et al., 2018; William and Saunders, 2020). While relational competence certainly develops over time and with experience, community and professional needs suggest that LIS education programmes should include learning outcomes related to relational competence.

Librarians are more and more expected to engage in community building, both within and outside of their organisational affiliation. Are they equipped and prepared to do so? The social turn of libraries is broadly accepted among library professionals, but there is also a recognition of lacking skills related to this development (Johnston et al., 2021). If the next generation of librarians are going to fulfil their mission to better communities (Lankes, 2012), be '*radical positive change agents*',

and truly contribute to social connectedness in their communities, they need increased awareness of their role as librarians – the relational aspects of librarianship – and how they can be developed.

Summing up: relational librarianship

In this paper, I have reflected on libraries' increased involvement in community building and the relevance of relational competence within librarianship and LIS education, in terms of both concept and content. I have introduced the concept of relational librarianship, to provide a perspective on the evolving social role of libraries, and the implications for library professionals. Relational librarianship redefines the profession by emphasising the relational dimensions of library work. By prioritising relational competence, libraries can better serve their communities, promote inclusivity and remain relevant in an increasingly interconnected world.

In my view, relational librarianship highlights how relational competence permeates librarians' practice. It includes the ability to reflect over one's professional role as a librarian in relation to others – patrons, colleagues, collaborators – and how one communicates. Still, empirical data is needed to test, clarify and adapt the dimensions to the librarians' professional context. A question that also needs addressing is whether these aspects can be translated into skills that together make out the relational competence, or if they need to be considered in a less specific manner.

If we look at what constitutes librarians' knowledge base, the relational aspects are not necessarily visible in curriculums and LIS programmes. However, studies exploring what skills the professional field calls for show that so-called soft skills are ranked highly (Chow et al., 2011; Saunders, 2015; Williams and Saunders, 2020). Librarians need to build relationships in terms of the service provision, cooperation and strategic positioning of the library.

Relational competence should not be viewed as a personal trait but as a professional skill integral to librarianship. By embedding relational competence into professional training and practice, librarians can more effectively support social cohesion and community building. This perspective shifts the focus from individual transactions to the broader impact of librarians as facilitators of trust and inclusion within diverse communities.

Being able to bring people together, navigate and handle different types of user needs, situations and settings while maintaining boundaries is part of librarians' professional role. Creating a safe space – for children and adults alike – needs active involvement and awareness. The ability to build networks, and community nodes and connect people and groups is something that librarians should aspire to have (Bourke, 2005). As Scott points out (2011), libraries have yet to reach their potential in building communities of relationships. That could be related to the fact that we have a) failed to recognise this as part of librarianship, and b) not included such competence in LIS education.

In conclusion, as this paper establishes, the introduction of relational librarianship presents a concept for advancing the role of libraries within communities, at a time when social connectedness is needed more than ever. The concept not only emphasises the importance of relational competence for librarians but also provides the necessary vocabulary to explore and cultivate this competence in both professional practice and LIS education. In doing so, it enriches the scholarly tradition of library and information science, fostering a deeper understanding of how social connections and relational skills can transform library services and strengthen community engagement. Ultimately, this framework advocates for a more relationally aware approach to LIS, one that meets the evolving needs of diverse communities.

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Combat and sacrifice: the culture of information crisis in teaching librarianship

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Abstract

Introduction. This paper extends recent research into the use of *information crisis* terminology within information studies to trace how the concept functions and is used within professional teaching librarian practice.

Method. Employing critical discourse analysis, the paper examines the conference proceedings from ten teaching librarian conferences (2014-2024), a database of information literacy lesson plans and the introductory chapters of selected practitioner-oriented handbooks to identify conventions of information crisis language within teaching librarianship.

Results. Findings suggest that teaching librarians' discourse of information crisis is shaped through considerations of time and affect, which position educational work as both urgent and intense.

Conclusion(s). Concern that the use of evocative images and metaphors obscures teaching librarian labour as well as a reliance on a growing industry of information crisis solutions suggests the need for continued critical interrogation of the use of this term within librarianship.

Introduction

The term *information crisis* evokes the rampant circulation of (and access to) the '*wrong type of information*,' be that *misinformation* and/or *fake news* (Hicks and Noone, 2023, p. 604). The use of a crisis framing, which marks a particular time as unprecedented or urgent, has been critiqued for presuming that contemporary information conditions are an exception to otherwise stable and uncontested knowledge systems (Kuo and Marwick, 2021); recent analysis of information studies literature, for example, demonstrates that the language of an '*information crisis* ignores the '*hegemonic orderings of race, gender, rationalism and class*' (Hicks and Noone, 2023, p. 606) that have long been encoded in information systems (Ibekwe, 2023) and library practices (Honma, 2005). In contrast, librarians and information professionals have responded to the information crisis diagnosis with a number of fixes, often in the form of information literacy education. However, given the confounded symptoms of this crisis, such suggested remedies give cause for concern about both the work that teaching librarians take on and the impact of this language on the culture of library practice. We apply Stuart Hall's (1980) understanding of culture as '*the lens*' through which everyday phenomena are experienced and interpreted. To this end, we ask: how does the language of information crisis operate in teaching librarian practice and what does this mean for librarianship? This question, which is explored through an analysis of teaching librarian resources, is important given the key role that discourse plays in shaping professional practice (cf. Hicks and Lloyd, 2021).

The work of teaching librarians

The work of teaching librarians remains surprisingly under-explored within the literature; while research has considered how librarians experience teaching roles (Julien and Genius, 2011) and a teaching identity (Wheeler and McKinney, 2015), less attention has been paid to how this work happens, despite the belief that librarianship should be evidence based (Pilerot and Lindberg, 2018). An exception is found in Nicholson and colleagues, who critically interrogate the shape of information literacy instruction through a lens of time (Nicholson, 2016) and labour (Mirza et al., 2023). Highlighting that information literacy instruction is shaped by a neoliberal temporal order (Nicholson, 2016), this literature also draws on Hicks and Lloyd (2021), who note the absence of librarians from professional documentation, to highlight the devaluing of care as well as other forms of work within instructional librarianship (Mirza et al., 2023). Yet, critical research into what and how librarians teach remains limited despite the growth in practitioner literature. This gap is seen most clearly in relation to misinformation, where literature had tended to be restricted to practical guidance such as '*do your research*' and '*check your sources*' (although see Sullivan, 2019a, 2019b for a useful critical take). Willenborg and Detmering (2025, n.p.) provide an interesting counterpoint in their study of teaching in the '*misinformation age*'. However, while they note feelings of '*angst*,' as librarians balance a perceived '*professional obligation*' to teach on the topic with a lack of time and expertise, the focus of the paper remains centred on the material conditions of instruction librarianship rather than the culture that shapes these tensions.

Methods: analysing professional literature

Assessing language's role in constructing cultures (Baker and Galasiński, 2001; Hall, 1980) we carried out a critical discourse analysis (Fairclough, 2010) of library practitioner teaching resources to identify how the information crisis is constructed in professional practice. Resources included the conference proceedings from ten international library practitioner conferences (2014-2024), a database of information literacy lesson plans and the introductory chapters of selected books in print (see Appendix 1), all of which foreground teaching knowledge exchange. We initially searched these texts for references to information crisis but, given that recent years have associated the information crisis with access to '*the wrong type of information*' (Hicks and Noone, 2023, p. 604), we later expanded the search to include related terms, such as fake news and misinformation. Coding was based on a close reading of each text and was carried out independently by each

researcher. We then came together to discuss the emerging analysis and the overarching discourses that we noticed within professional literature. Limitations of the study include the exclusion of journal articles and other forms of empirical practitioner work from the data set. We also acknowledge the need to explore school, public and health library conference proceedings to extend this research.

Findings: the information crisis within teaching librarianship

One of the most noticeable ways in which the information crisis shapes practitioner work is through the evocation of time and speed. Accelerated information environments, for example, are used to highlight the urgency of the crisis, with authors warning of '*24hr news cycles*' that value '*first mover advantage*' and social media algorithms that '*privilege viral content*' (Acosta, 2017, n.p.) alongside concerns that the accuracy of information is '*sacrificed*' (Acosta, 2017, n.p.) for the sake of the speed of dissemination (Ünal et al., 2021, p. 80). References to current events, including US presidential elections (Appedu and Kaye Hensley, 2021, p. 97) and protest movements (Maury and Gatty, 2021, p. 66), further establish the information crisis as immediate, while warnings that misinformation '*floats around online*' (Cooke, 2018, p. 2) suggest that it is also long-lasting. The temporal is often accompanied by spatial considerations, with the labelling of information as '*rampant*' (Mooney, 2018, p. 85), '*spread[ing] throughout the internet*' (Long and Hicks, 2019, p. 128) and crowding out reputable journalism (Center for News Literacy, n.d.) further fixing the crisis as both invasive and inescapable. In contrast, people are positioned as temporally and spatially limited, or narrow-minded (Frith and Webb, 2021, p. 26), trapped by their own biases (Acosta, 2017), and as having a short attention span (Phillips and Burkholder, 2022, n.p.). These labels, which introduce a deficit perspective, lay the groundwork for librarian interventions.

In contrast, solutions for the crisis often directly oppose these spatiotemporal framings with references to librarians and library interventions more typically emphasising leisurely deliberation. Interestingly, this was not always the case with earlier literature framing the information crisis as fixed through the application of '*low effort*' (Valant, 2018, n.p.) or timesaving (He et al., 2019, p. 51) fact-checking strategies (Oehrli, 2018, n.p.) and acronyms (Kiczenski, 2020, n.p.). As literature developed, however, librarian interventions became noticeably slower, with learners being encouraged to '*pause*' (Abdeljawad, 2022, p. 133), '*stop*' (Kiczenski, 2020, n.p.) and '*reflect*' (Phillips and Burkholder, 2022, n.p.) on the impact that information has upon them. Specific librarian-recommended techniques for managing the effects of the information crisis also became lengthier, with learners encouraged to '*thoroughly investigate*' (Frith and Webb, 2021, p. 26) a complex news story, including through checking library databases (Oehrli, 2018, n.p.), seeking out '*as much information externally as you can find*,' including from websites, articles and opposing perspectives (Kiczenski, 2020, n.p.) or working through lists of questions to investigate sources (Kiczenski, 2020, n.p.). Librarians also draw on time to justify their claim to the information crisis space in the shape of a longstanding engagement with information evaluation education (He et al., 2019, p. 49; Maury and Gatty, 2021, p.66).

The temporalities of information crisis subsequently translate into intensified affective demands in which library practitioners must calibrate to the intensities of battle. Practitioners frame the work of addressing fake news and misinformation through metaphors of conflict, with information environments broadly construed as under threat or unsafe. For example, Sanches et al. (2024, p. 151) issue a call to arms to those '*most committed to combating*' what they term as a '*catastrophic informational scenario*,' while further highlighting the need to '*protect … the most vulnerable*' in '*the disinformation fight*.' Similarly, the Social Sciences Libraries Section of IFLA (2022) brings together '*library professionals who are fighting fake information in and around their communities*,' a theme that is echoed in Revez and Corujo (2021), who place librarians '*on the front line against fake news*' and Ameem and Naeem (2020, p.17), who position fake news as a '*threat to peace*' as well as democracy. The establishment of librarians as a '*shield*' (Rajic, 2022) between fake information and

library patrons provides further evidence of the affective dimensions of librarianship when information crisis serves as a proxy for combat. Indeed, these are a small sample of instances where the work of librarianship is linked to emotional and physical confrontation. At the same time, the librarian is tasked with the additional affective work of staying positive during such battle, with reflections of '*we chose to embrace the positivity*' of crisis and '*share the success*' (IFLA, 2022). Indeed, Nick Poole (2024), former Chief Executive of CILIP, issued a rallying call for librarians to '*come together*' in the '*war on truth*' rather than to '*retreat*' in the face of conflict. The corollary of the pep rally alongside the rigours of combat reads as an exercise in keeping up morale through rituals of preparedness and recognition.

Drawing on Sara Ahmed's (2004) analysis of emotion and affect as cultural practices, we see how the prescribed responses to crisis symptoms – combat, resilience, resolve – presume that crisis is a collective experience that librarians are already primed and ready to address. Metaphors of defensive battle, which further nod to how vocational awe positions librarianship as tied to '*struggle, sacrifice, and obedience*,' (Ettarh, 2018, n.p.), additionally maintain the conceit that information environments were previously both egalitarian (see Honma, 2005) and stable (Hicks and Noone, 2023). In effect, the intensity expected of librarian responses escalate crisis rather than addressing the historical contingencies of information systems, including through harm reduction or mutual aid (Spade, 2020). Instead, these registers position teaching librarianship within what Ellcessor (2019) terms an '*infrastructure of feeling*' where a phenomenon becomes defined by its responses rather than the substance of the problem itself.

Discussion and conclusion

Asking questions about how the culture of information crisis plays out within teaching librarianship may seem unwarranted, or a betrayal of the pep rally spirit. Yet, the information crisis discourse not only takes contested knowledge structures for granted but also obscures the additional work demanded to maintain a crisis prognosis. Positioning information crisis as both urgent and unprecedented redirects librarian labour towards fast and actionable solutions, which favours specific analytical technologies and techniques (Lancaster and Rhodes, 2023, p. 4), and adds to teaching work by requiring the development of specific heuristics. The scale of threats creates additional resource implications by sapping attention from other educational initiatives. At the same time, the slow solutions proposed by librarians mask other forms of labour, including the care needed to re-centre visibility foreclosed by speed (Lancaster and Rhodes, 2023, p .4) as well as exploitative working arrangements. The positioning of '*sped-up people*' (Sharma, 2013, p. 126) as irresponsible, which reproduces the need for rationalistic enforcement, further problematically shapes work by reasserting the '*power of the institutional space*' (Sharma, 2013, p. 134).

To meet the demands of the information crisis culture, the teaching librarian literature points to private sector training programmes, software and apps as possible tactics to '*fight against fake news and misinformation*' (Strohecker, 2019). The referenced tools include Checkology, an e-learning platform sponsored by BigTech partners, and the Centre for News Literacy, which offers a Coursera course on *Making sense of the news*. These programmes and softwares broker an information expertise through a one-size-fits-all approach to information literacy, operating as proxy labour for information practitioners. Posing as solutions, tools such as Checkology evidence a commodification of information crisis within institutionalised critical librarianship (Seale, 2016). Moreover, software-driven techniques of information sorting, often positivist and algorithmic (Benjamin, 2019), fail to account for the complexity of information work and downplay consideration for the longstanding issues of hegemonic authority and truth within information environments (Kuo and Marwick, 2021). In effect, tertiary industries such as these simultaneously profit from and maintain a culture of crisis (Klein, 2007; Ellcessor, 2024).

The discourse of information crisis is not benign: it shapes a culture of practice. This short paper provides a framework to understand how this language operates in and is modelled through the

professional literature. Future research will include interviews with information professionals about their experiences. As a practice-focussed discipline, it is essential to interrogate what is taken for granted in these damaging discourses, given that expectations of working faster and with more force have the potential to reconfigure the shape of professional practice.

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Appendix 1: Texts Analysed

- Books
    - Burkhardt, J. M. (2017). *Combating fake news in the digital age*. American Library Association.
    - Cooke, N. A. (2018). *Fake news and alternative facts: information literacy in a post-truth era*. American Library Association.

- Conference Proceedings, 2014-2024.
    - American Library Association (ALA) (US)
    - Chartered Institute of Library and Information Professionals (CILIP) (UK)
    - International Federation of Library Associations (IFLA) (International)
    - Association of College and Research Libraries (ACRL) (US)
    - Information Literacy
    - Critical Librarianship and Pedagogy Symposium (CLAPS) (US)
    - European Conference on Information Literacy (ECIL) (Europe)
    - International Conference on Information Literacy (ICIL) (International)
    - Librarians' Information Literacy Conference (LILAC) (UK)
    - Library Orientation Exchange (LOEX) (US)
    - Workshop in Library Use (WILU) (Canada)

- Research Assignments
    - Community of Online Research Assignments (CORA)

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From realism and socio-cognitivism to AI constructs: enhancing domain analysis through artificial intelligence?

Martin Thellefsen and Alon Friedman

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Abstract

Introduction. This study explores the integration of artificial intelligence (AI) within the framework of domain analysis (DA), traditionally grounded in socio-cognitive and realist perspectives. The aim is to assess AI's potential to enhance DA's focus on contextual and disciplinary knowledge, while examining possible epistemological challenges.

Method. Building on established concepts from Hjørland's socio-cognitive DA framework, this paper employs a theoretical review to examine AI's capacity to augment DA by improving classification, retrieval and interdisciplinary mapping within knowledge organisation.

Analysis. The study critically analyses how AI may either enhance or disrupt DA's philosophical foundations by potentially reducing domain specificity. Particular attention is given to AI's tendency toward generalisation, which could dilute DA's contextual sensitivity.

Results. The findings suggest that while AI has transformative potentials for DA, there is a risk of oversimplifying epistemic structures. AI could reorient DA towards machine-centric interpretations, limiting DA's capacity to accommodate complex, domain-specific nuances.

Conclusion(s). The paper concludes that AI can benefit DA if carefully integrated, respecting its epistemological depth. Future research should focus on developing AI approaches that enhance DA without undermining its socio-cognitive foundations.

Introduction

Domain Analysis or DA was originally formulated by Birger Hjørland and Hanne Albrechtsen (Hjørland and Albrechtsen, 1995), as a socio-cognitive framework developed as an alternative to the user-centred cognitive view proposed by Nicolas Belkin (Belkin, 1990). While the cognitive view focused on how cognitive structures influence individual information behaviour and interactions with information systems, DA shifted the focus to a broader socio-cognitive perspective, and emphasised how social factors, such as culture, language, knowledge interests and context shape the conduct of individuals within information environments. In this view, understanding information behaviour necessitates examining not only individual mental states but also the broader social context that influences them. Therefore, DA stands as a critical response to the individualist epistemology inherent in the cognitive view.

Today, the advent of AI represents a significant disruptive force in both public and professional information environments. AI research is not only changing the theoretical landscape but also the methodologies by which we are searching for new knowledge. This technological shift calls for a recalibration of foundational theories within Library and Information Science (LIS) and knowledge organisation (KO). The emphasis on human cognition, socially motivated behaviour, intentionality and meaning-making, principles already central to DA, has become even more pertinent in the context of AI (Cox, 2023), raising questions about how or in what respect AI can simulate human cognition, social behaviour and interpretive processes. The underlying assumption of this paper is that AI, as a forceful transformative technology, has already reshaped tasks and functions within LIS and knowledge-producing communities. Given that AI impacts both individuals and communities, this paper examines how AI influences the information environment from a LIS standpoint.

The scope of the paper

While DA was introduced as a reorientation or a new horizon in information science (Hjørland and Albrechtsen, 1995), it was later developed methodologically by Hjørland (2002) and in an even more applied sense by Smiraglia (2015), both suggesting eleven non-exclusive methodological approaches to knowledge organisation (KO). Methodologically DA has also been discussed by Tennis (2003) seeking to encapsulate the breadth and depth of domains, in order to delineate what is being studied and what is excluded in a DA, a view that was incorporated in Smiraglia's methodological work.

Thus, the focus of this paper is aimed at whether AI technologies can improve DA and is guided by two primary questions:

1. In what ways can artificial intelligence integrate with and augment traditional domain analytical methodologies to facilitate the development of more adaptive and dynamic knowledge organization systems?

2. In what ways can artificial intelligence enrich DA by mitigating human-centred biases and improve the elucidation of knowledge structures, while safeguarding a sensitivity to the social and epistemological dimensions as articulated in DA?

This paper utilises artificial intelligence (AI) as both a conceptual and a methodological lens to explore its integration into domain analysis (DA). Since its conception in the mid-1950s, when John McCarthy envisioned simulating learning and intelligence in machines (McCarthy et al., 2007), AI has evolved into sophisticated models for data processing and decision-making, including subfields like Natural Language Processing (NLP) and, more recently, Large Language Models (LLMs) (Dwivedi et al., 2021; Goel, 2017). While LLMs such as ChatGPT analyse global linguistic resources, their effectiveness in handling domain-specific terminology can vary depending on context and training data (Ashcroft and Whitaker, 2024; Matarazzo and Torlone, 2025). To address

this, researchers are exploring DA's socio-cognitive framework to develop nuanced, domain-sensitive models that can advance AI's capacity to meet specialised knowledge organisation needs (Ge et al., 2024). This study examines how these AI developments could augment or challenge DA's focus on contextual and disciplinary knowledge.

Theoretical assumptions of DA

DA is primarily concerned with uncovering and understanding the structures and dynamics of knowledge domains. It focuses on how knowledge is produced, organised and used within specific communities. Theoretically the framework adopts a realist stance, leaning towards scientific or pragmatic realism (Hjørland, 2004). Hjørland's realist perspective, influenced by Thomas Kuhn's ideas on paradigms, argues that while theories shape our ontologies, reality resists arbitrary conceptual structures through anomalies which highlight the misalignments between concepts and the world.

In a similar vein, critical realism, as articulated by Roy Bhaskar (Bhaskar, 1978), provides a framework for understanding how reality encompasses both events and perceptions of those events. Perceptions fuel theories and assumptions, which are shaped by diverse epistemological views. Social constructivism, for instance, explains how conceptual knowledge is grounded in social processes, norms and ideals, while also recognising that reality imposes constraints on socially constructed views (see also Thellefsen, 2023). Concepts like democracy or human rights are socially motivated, evolving over time, but they encounter resistance from the more stable elements of reality.

This dialectical relationship between the real and the socially constructed is a fundamental foundation of DA, that emphasises the interplay between social processes and knowledge production within specific domains. Central to this analysis are communities of practice, or discourse communities, as domains are defined by shared goals, language, norms and tools. However, DA also recognises that the meaning and relevance of information are context-dependent and shaped by the situations in which they are used. However, even though DA does acknowledge the social conduct and context dependence of users' information behaviour, DA should avoid being based on arbitrary user needs or preferences, as this would tend to favour subjectivity over the pursuit of general domain knowledge (Hjørland, 2009).

Furthermore, DA is also sensitive to the often interdisciplinary nature of knowledge production, thus examining the interactions between different fields and how they influence each other. It explores the concept of epistemic cultures, which refers to the specific ways in which knowledge is produced and validated within a domain, echoing Thomas Kuhn's paradigm theory (Kuhn, 1962). However, interdisciplinarity also poses a significant challenge for DA, because each domain often has its own unique taxonomy, terminology and conceptual frameworks, which can be incommensurable with those of other domains. This means that the categories and concepts in one domain may not have direct equivalents in another, which makes it difficult to integrate or compare knowledge across domains.

The existence of interdisciplinarity in a scholarly community may be conflicting at an ontological level, but can intersect epistemologically and teleologically. For instance, a social scientist and a biologist might have different views on what constitutes an individual or a group, leading to ontological disagreements; however, both may use statistical analysis to interpret data, share methods of enquiry and pursue common goals.

As a result, interdisciplinarity can lead to the emergence of new domains. When scholars combine methods and insights from multiple disciplines to tackle complex problems, they often develop new frameworks and taxonomies. This process can be seen as the initial step in the formation of a new domain that encompasses aspects of the contributing fields.

It would seem that AI offers significant potentials to enhance DA both theoretically and methodologically. By automating and refining the time-consuming processes required in relation to developing specialised classification systems, conducting systematic information retrieval, performing user studies, bibliometrics and critical inquiry, AI may contribute to a cost effective and deeper understanding of how knowledge is structured, accessed and used across various domains. AI has the remarkable ability to perform a wide range of tasks, from gathering and processing vast and diverse datasets to analysing patterns and trends. It can then distil complex results into human-readable language, making it accessible. Those capabilities allow AI to excel in data-intensive applications, where it can efficiently gather, filter and interpret information far beyond human capacity. By automating these processes, AI not only enhances productivity, but also provides us with the ability to improve DA theoretically and methodologically.

This technological advancement may mitigate some of the challenges posed by interdisciplinarity and the incommensurability of domain-based taxonomies, as AI can identify and map connections between disparate fields. Moreover, by minimising reliance on arbitrary user needs or preferences, AI reduces subjectivity, aligning with the pursuit of general knowledge. This interplay between AI and DA not only enriches LIS research but also prompts a reassessment of how we conceptualise knowledge in an increasingly AI-driven world.

However, we will raise some critical questions in the discussion section regarding how AI fundamentally differs from human intelligible behavior in terms of reasoning, purpose and transparency.

LIS and epistemology of knowledge discovery

Throughout the history of LIS, epistemology has played a vital role, guiding researchers in exploring how knowledge is created, validated and shared. In LIS, epistemology influences the design of information systems, the organisation of knowledge and user interactions with information.

In the field of AI, Luger (2021) argues that AI systems embody an epistemic stance where knowledge is actively constructed, tested and revised through interactions with their environment. This approach aligns closely with pragmatic realism, which holds that truth is not absolute but emerges through practical success and adaptability. AI systems, much like humans, engage in a process of model-building that attempts to represent aspects of the world. The goal here is not to arrive at an objective truth, but to create models that function effectively in specific contexts, where their success is measured by utility and adaptability rather than by absolute accuracy.

Luger also suggests that AI systems reflect a constructivist epistemology, where knowledge is not passively received but actively built and continuously adjusted based on new data and experiences. This dynamic, iterative process highlights AI's role as a constantly evolving construct, much like human understanding.

Furthermore, Luger incorporates neopragmatic ideas from philosophers such as Kuhn and Rorty to emphasise that AI's pursuit of knowledge is grounded in specific applications and goals. Thus, AI is a tool which value is proven through practical use and relevance, contrasting it with traditional epistemological views that seek objective truths. As a result, AI embodies a form of pragmatic realism, where its validity is inherently contextual and action oriented.

Integrating AI with DA

In the domain of knowledge organisation (KO), Hjørland's analyses (Hjørland, 2013) delve into the progressive integration of user-centred and cognitive frameworks that began to prominently evolve during the 1970s and 1980s. He critically assesses instances where these frameworks have been claimed to focus on user preferences and cognitive strategies, such as in the Book House

system (Mark Pejtersen, 1989) and in the application of the word association method for thesaurus construction (Lykke Nielsen, 2002). Hjørland challenges these claims, arguing that they often mask a superficial integration of actual user needs, overshadowed by a combination of empirical research and the broad application of cognitive theories that may not truly reflect actual user data. Instead, Hjørland advocates for a more holistic and socially grounded understanding of users' information behaviour that is sensitive to domain-specific knowledge and the social nature of meaning-making processes.

Inspired by Hjørland's critical investigation of the cognitive view and user-centred approaches in KO, we identified six empirical research perspectives that are relevant for our discussion: *critical evaluation of user-centred designs*, *role of empirical data*, *cultural and disciplinary contexts*, *beyond one-size-fits-all approaches*, *interdisciplinary insights* and *future directions in context-sensitive cognition*.

Critical evaluation of user-centred designs: Hjørland (2002b, 2013) is critical of the assumptions underlying cognitive and user-centred approaches, particularly those that suggest a universal model of cognitive functions. He contends that such approaches overlook the deeply embedded, context-dependent nature of knowledge practices, which are shaped by social, cultural and disciplinary factors. Instead of relying on general models that presume a uniformity in user behavior, Hjørland insists that (KO) must be grounded in the specific realities of various domains. This means attending to how knowledge is constructed, shared and utilised within particular communities rather than seeing users as isolated from these broader social and epistemological structures.

In this respect, Torkamaan et al. (2024) propose a framework for designing systems that considers various dimensions, such as technology, user needs and broader human and societal concerns. While this approach acknowledges some of the factors that Hjørland emphasises, he would advocate for an even deeper integration of domain-specific perspectives. For Hjørland, the key lies in understanding that knowledge is not merely a product of user preferences but is embedded within the norms, values and practices of specific fields. Thus, systems should be informed by the nature of the knowledge itself, not just by user interactions.

This perspective is also relevant to the work of Förster et al. (2023) and Dodeja et al. (2023), who emphasise the importance of creating systems that users find intuitive and relevant. They focus on making systems more transparent and understandable, which is important for fostering trust and engagement. However, Hjørland would argue that systems must do more than respond to what users find immediately useful or satisfying: they must be developed with a sensitivity to the deeper structures of knowledge within specific disciplines. User-centred design should not be an end in itself, but rather a means to engage with the richness of the domain in which users are situated.

The approaches taken by Lombardi et al. (2017) and Lai et al. (2021), which emphasise the role of empirical data in refining and adapting systems, resonate with aspects of Hjørland's thought. They recognise the value of grounding systems in evidence from real-world interactions, which moves beyond purely theoretical constructs. Yet, for Hjørland, the true value of empirical data lies not just in its ability to reflect user behaviour but in its capacity to reveal how knowledge functions within different contexts. In this sense, the iterative refinement of systems should be guided by a deeper understanding of the principles that govern knowledge production and organisation within specific domains.

Rather than simply adapting to user feedback, Hjørland's view calls for a more holistic approach, one that integrates empirical observations with an appreciation for the socio-cultural and epistemological underpinnings of knowledge domains. Such an approach ensures that systems are not only responsive to immediate needs but are also aligned with the deeper currents that shape how knowledge is formed and communicated within particular communities. In doing so, the

design of knowledge systems can move beyond surface-level adjustments and instead engage more fully with the complexity of the knowledge landscapes they aim to serve.

Role of empirical data: For Hjørland, the value of empirical data lies in its ability to ground knowledge organisation theories in the realities of specific domains (Hjørland, 2013). He argues that data must not merely support abstract cognitive theories but should be used to reveal the dynamics of knowledge as it is practised within particular social and disciplinary contexts. Empirical data, in this view, is not just a means of refining models but a way to understand how knowledge structures operate within different fields, providing insights into how information is accessed, interpreted and utilised by communities.

This focus on empirical grounding finds some resonance in the work of Lai et al. (2021), who emphasise the importance of empirical frameworks for understanding decision-making processes. Their approach, which calls for using data to develop a foundational understanding of interactions, aligns in part with Hjørland's insistence on evidence-based inquiry. Yet, where Lai et al. focus on creating generalisable insights into human-AI interactions, Hjørland would emphasise that such generalisations must always be situated within the specific conditions of each knowledge domain. For him, the empirical inquiry should not aim for universality but rather for a deeper understanding of how knowledge functions within particular social and epistemological frameworks.

Similarly, Lombardi et al. (2017) highlight the role of empirical data in refining decision models through an iterative process. This approach, which seeks to adapt models continuously based on real-world interactions, aligns with Hjørland's critique of theories that rely too heavily on untested assumptions. Lombardi et al. recognise that empirical evidence can provide the necessary feedback to refine models, ensuring their relevance to practical contexts. However, Hjørland would argue that the iterative use of data must also be guided by an awareness of how knowledge is organised and validated within the domains themselves, so that empirical findings do not merely reflect user behaviours but are interpreted through the lens of domain-specific knowledge practices.

For Hjørland, then, the true strength of empirical data is not in its capacity to validate generic cognitive models but in its role as a tool for revealing the complexities of knowledge production in varied contexts. By focusing on how data can illuminate the ways in which knowledge is shaped by disciplinary norms and social structures, he encourages a more context-sensitive approach to knowledge organisation; one that respects the specificity of each domain rather than seeking to flatten knowledge into generalisable patterns. This approach ensures that empirical data is used not merely to refine systems but to deepen our understanding of the intricate relationships between knowledge and the communities that produce and use it.

Cultural and disciplinary contexts: Hjørland (2008, 2010) highlights the fundamental role that cultural and disciplinary contexts play in shaping information-seeking behaviours and the organisation of knowledge. He argues that understanding knowledge requires an appreciation of the specific social, cultural and disciplinary environments in which it is produced and utilised. This perspective challenges approaches that seek universal cognitive explanations, emphasising instead that knowledge is inherently situated within particular traditions, practices and values.

This understanding resonates with the observations of Jaillant and Caputo (2022), who address the complexities of bias and ethical considerations in AI applications within cultural heritage institutions. They argue that AI systems, if not carefully designed, risk overlooking the unique cultural dimensions that shape how information is preserved and accessed. Similarly, Ferrer et al. (2021) explore the layers of bias within AI systems, emphasising that bias can arise during modelling, training and implementation stages. They propose methods for assessing and addressing these biases, noting that effective mitigation requires attention to the interplay between technical, social, legal and ethical considerations.

In contrast to purely technical solutions, Ferrer et al. (2021) underscore the necessity of an interdisciplinary approach, one that aligns closely with Hjørland's insistence on considering the broader contexts in which knowledge systems operate. This means that addressing bias in AI cannot be isolated from the social realities and cultural frameworks that inform how information is processed and understood.

Dai et al. (2024) add to this conversation by focusing on the challenges and opportunities presented by generative AI in fields like professional communication training. They emphasise the importance of cultural sensitivity, emotional intelligence and cross-disciplinary collaboration, acknowledging that effective AI tools must be attuned to the diverse cultural contexts in which they are applied. This emphasis on cultural representation echoes Hjørland's critique of universal cognitive models, emphasising that systems must be aware of the specific environments in which they function.

Together, these studies reinforce the need for a nuanced and context-sensitive approach to designing and deploying information systems. While they tackle issues like bias and ethical challenges in AI, their broader message aligns with Hjørland's view: that knowledge cannot be understood in isolation from the contexts that shape it. Rather than seeking to impose uniform standards, effective systems must respect the rich variety of disciplinary and cultural perspectives that influence how information is created and accessed. By integrating these insights, we gain a deeper understanding of the complex interplay between technology, culture and human knowledge, moving beyond the limits of generic models to embrace the diversity inherent in knowledge practices.

Beyond one-size-fits-all approaches: Hjørland (2004b, 2013) argues against the use of universal cognitive models in knowledge organisation (KO), stressing the importance of creating systems that are flexible and adaptable to the specific needs of different user communities. He maintains that knowledge is not a monolithic entity but is shaped by the particularities of the social, cultural and disciplinary environments in which it is situated. Therefore, effective knowledge systems must be sensitive to these nuances, rather than relying on a uniform approach that assumes all users share the same cognitive frameworks.

This perspective finds resonance in the work of Kirk et al. (2024), who address the challenges of aligning large language models (LLMs) with the diverse values and needs of human users. Both Hjørland and Kirk et al. emphasise that one-size-fits-all solutions are inherently limited, as they fail to account for the varied and evolving nature of human values and knowledge practices. Instead, these authors advocate for systems that are aware of their context and can adapt to different user groups and their specific needs.

Meskó and Topol (2023) further highlight the need for regulatory oversight when it comes to the deployment of LLMs. They argue that given the complexity, flexibility and societal influence of these models, it is essential to develop regulatory frameworks that can evolve alongside technological advancements and respond to diverse applications. This call for adaptable governance echoes Hjørland's own insistence on the necessity of systems that can accommodate the unique conditions of each domain. Rather than imposing standardised models, effective regulation and design must consider the specific contexts in which knowledge and technology are applied.

Hjørland's critique thus extends beyond mere adaptability: it involves a deeper commitment to understanding how knowledge is produced and organised differently across fields. It calls for systems that are not only responsive to change but are grounded in the specific knowledge practices of the communities they serve. In this way, the discussion around LLMs and their societal impact parallels Hjørland's vision for KO; one that respects the diversity and complexity of human knowledge rather than attempting to reduce it to a uniform framework.

Interdisciplinary insights: Hjørland (2002a, 2008, 2015) emphasises that the enrichment of KO is best achieved by integrating insights from various fields such as psychology, anthropology and sociology. He argues that interdisciplinary approaches should delve deeply into the specific epistemological contexts of each discipline rather than merely blending knowledge from different fields. For Hjørland, true interdisciplinarity respects the unique ways in which different domains conceptualise and engage with knowledge, thus ensuring that each domain's contribution is valued on its own terms. This perspective aligns with the approach taken by Boyko et al. (2023), who explore how LLMs can enhance scientific enquiry by supporting human capabilities across different research stages. Their work illustrates how AI can act as a bridge between disciplines, fostering collaboration and facilitating new forms of enquiry. However, consistent with Hjørland's critique, the use of AI should remain sensitive to the specificities of each domain, ensuring that the integration of machine learning tools respects the situated nature of disciplinary knowledge rather than imposing a universal framework. Similarly, Kusters et al. (2020) highlight both the opportunities and the challenges inherent in interdisciplinary AI research. They stress the need for methodological rigor, collaboration and ethical awareness when working across disciplinary boundaries. This aligns with Hjørland's emphasis on grounding KO in a deep understanding of how different domains structure and interpret knowledge. Rather than seeking a simple synthesis, interdisciplinary approaches should aim to map out the relationships between fields, allowing for both the distinctiveness and the shared concerns of each domain to come into focus.

This reflects Hjørland's view that KO must be context-sensitive, recognising the particularities of knowledge practices within different fields. For Hjørland, interdisciplinary engagement should be guided by a respect for the traditions and values that shape each domain, ensuring that collaborative efforts do not dilute the richness of specialised knowledge. Together, these perspectives underline the value of an approach to interdisciplinarity that is consistent with Hjørland's critique of cognitive models. Rather than relying on a one-size-fits-all approach, they advocate for a practice that respects the diversity of knowledge while facilitating meaningful exchanges between disciplines. This view ensures that the integration of insights remain grounded in the specific contexts of each domain, ultimately enriching both the theory and practice of knowledge organisation. By doing so, it becomes possible to address complex challenges while recognising the depth and complexity of the knowledge systems that shape our understanding of the world.

Future directions in context-sensitive cognition: Although Hjørland does not directly address AI, his discussion of socio-cognitive epistemology (Hjørland, 2002b) indicates that cognition is deeply influenced by both immediate interactions and the broader historical and cultural contexts in which it occurs. These ideas present valuable opportunities for enhancing AI systems within KO, offering a framework that recognises the complex, context-sensitive nature of human thought and behaviour. Such a perspective aligns well with contemporary developments in AI, as seen in the work of Gill et al. (2024), who explore the intersection of AI and next-generation computing paradigms. Their focus on autonomic computing systems that can adapt to changing conditions mirrors the dynamic, adaptable nature of cognition that Hjørland describes. Zhao et al. (2022) provide a practical example of cognitive integration in AI, emphasising aspects like engagement, regulation, decision-making and discovery. Their approach to cognitive AI resonates with Hjørland's focus on situated and enculturated cognition, showing how these concepts can inform the design of AI systems that are more attuned to human contexts. They suggest future research directions that align with Hjørland's views, including:

Embodied AI: Developing systems that interact with the physical world in a manner similar to human experience.

Contextual understanding: Creating AI that adapts to a variety of cultural and social contexts.

Human-AI collaboration: Designing systems that work seamlessly with humans to solve complex problems.

Ethical AI: Ensuring that AI is developed and applied responsibly, with attention to societal values.

By pursuing these directions, it becomes possible to develop AI systems that go beyond efficient information processing to better understand and respond to human needs in a nuanced, context-sensitive way. While this discussion does not cover all potential intersections between Hjørland's DA and AI research, it highlights significant overlaps and possibilities for synergy.

The implications of AI in DA, let's discuss

The introduction of AI into DA represents a fundamental shift from traditional epistemological frameworks, challenging long-established concepts within LIS. While classical DA, as defined by Hjørland, is rooted in pragmatic realism (Hjørland, 2004a), linking knowledge to human and socially constructed contexts, AI disrupts these foundations by introducing a machine-driven, data-centred approach, shifting the focus from human interpretation to algorithmic processing and pattern recognition. AI thus challenges the concept of knowledge as a purely human-mediated process and consequently aligns more closely with a (data) constructivist epistemology, where knowledge is created rather than discovered, as argued by scholars like Floridi (2011). Floridi argues that AI-driven knowledge systems may emphasise functional utility over truth and prioritise patterns and correlations within data as valuable regardless of their ontological grounding.

The philosophical study of AI was pioneered by Alan Turing, who posed the question: '*Can machines think*?' (Turing, 1950/2009, p. 23). In his attempt to address this, he introduced the Turing Test, a method designed to evaluate whether a machine's responses could be indistinguishable from those of a human. Turing's work laid the foundation for AI epistemology, framing intelligence as an emergent property of computational processes rather than an exclusively human trait. The shift towards machine epistemology, where AI autonomously constructs knowledge, directly challenges traditional human-centred epistemological assumptions. Floridi (2014) describes this as the '*fourth revolution*,', which redefines epistemology by positioning machines as active participants in knowledge creation. Within LIS, this shift raises critical questions: Do AI-generated knowledge structures represent *real* knowledge, or are they merely functional constructs optimised for transient informational needs? The absence of explicit discussions of AI in DA suggests an opportunity to critically examine how AI-driven classification and knowledge representation align with, or diverge from, traditional human-centred methodologies.

In traditional LIS, knowledge organisation systems are often stable, human-created classifications that evolve slowly over time. AI, conversely, enables dynamic, data-driven knowledge structures that can adapt in real time to new information. AI-driven systems, such as those using LLMs, can continuously refine classifications based on emergent data patterns, rendering the knowledge structure highly flexible and responsive. This ability for AI to rapidly update and reorganise knowledge reflects a move away from static taxonomies towards a more fluid and evolving knowledge system. As a result, LIS practitioners and theorists must reconsider whether AI-driven structures can still fit within the classical view of domain knowledge or whether they signal a fundamentally different way of organising knowledge.

A major theme in DA is the challenge of interdisciplinarity, where knowledge across distinct domains is often incompatible because of their unique terminologies and epistemic frameworks. Kuhn (1962) addresses this as the issue of incommensurability. AI offers potential pathways for bridging these disciplinary divides by integrating disparate data sources and providing holistic models of knowledge. However, the integration facilitated by AI may not equate to true epistemic unification. Instead, it risks merely amalgamating data in ways that do not fully capture, or even obscure, the nuanced, context-rich frameworks within each discipline (see e.g., Edwards, 2010;

Leonelli, 2016; Weinberger, 2011). AI's role in facilitating interdisciplinary knowledge raises questions about the authenticity of such integration. Does AI's ability to connect data across domains represent genuine epistemic synthesis, or is it a superficial blend that sacrifices depth for breadth? The answer depends on whether AI can respect the distinct epistemological bases of each field or if it will create entirely new domains of knowledge that transcend traditional disciplinary boundaries. AI-driven data integration may thus ultimately reshape the boundaries between fields, and lead to the development of hybrid domains that challenge conventional LIS taxonomies.

The ethical dimensions of AI in DA are substantial, particularly in terms of knowledge gatekeeping, transparency and accountability. Traditionally, expert communities within LIS have acted as gatekeepers, curating and validating information to maintain accuracy and credibility. AI democratises knowledge production by automating classification and generation processes, raising questions about who controls the resulting information. Floridi (2013) emphasises the responsibility to maintain ethical standards in automated systems, as AI can produce content without the same oversight as human-driven processes.

André de Tienne's concept of *semioethics* (De Tienne, 2024) is also relevant here, stressing the need for ethical scrutiny in how knowledge is communicated and verified. In AI-driven knowledge systems, the absence of human editorial oversight can result in issues of accuracy, bias and accountability. Without human intervention, there is a risk that AI may propagate unverified or biased information, undermining the reliability of domain-specific knowledge. Thus, there is a growing need for frameworks that address the ethical implications of AI-driven knowledge construction, including who holds accountability for AI-generated content and how such knowledge can be transparently validated.

The incorporation of AI into DA calls for a re-evaluation of the theoretical foundations of LIS, particularly regarding realism, interdisciplinarity and knowledge ethics. As AI continues to reshape the information landscape, LIS scholars and practitioners face open questions: How can human epistemological frameworks be reconciled with machine-driven knowledge systems? Can AI-driven knowledge still be considered real, or does it represent a separate class of practical constructs? Furthermore, as AI challenges the boundaries between disciplines, should new, machine-defined domains be acknowledged in LIS taxonomies?

Future research in LIS must address these questions by developing theories that integrate AI's capabilities while recognising its limitations. This involves creating frameworks that can accommodate AI's adaptive knowledge structures, interdisciplinary potential and ethical considerations, ensuring that DA remains relevant and responsive to the transformative power of AI.

Conclusion

This study demonstrates that KO and AI intersect in their efforts to structure and comprehend information within specific domains. Drawing on Hjørland's definition of DA, we highlight the significance of the human aspect in knowledge organisation, as noted by Roberts et al. (2024). Hjørland's approach stresses the importance of considering the perspectives, practices and epistemologies of human actors within certain fields, ensuring that knowledge systems remain pertinent and accessible. Although our study sheds light on the connections between KO and AI, it also indicates a need for further research to fully explore the potential synergies between DA and AI technologies. Preliminary findings suggest that incorporating the human-centred principles of DA into AI development presents a promising area for future research. By leveraging the strengths of both disciplines, researchers can aid in developing AI systems that are not only technologically sophisticated but also socially responsible and human-focused. This interdisciplinary approach can result in AI applications that better understand and address the nuanced needs of specific knowledge domains, and improve both the efficacy of AI systems and

the quality of knowledge organisation. Aligning AI development with the human element reflects the increasing focus on ethical considerations and societal impacts in technology, fostering AI solutions that resonate more closely with human values and the contexts of specific domains.

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The knowledge organisation of sub-subgenres: the curious case of the collaborative works of Gilbert and Sullivan

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Abstract

Introduction. This paper explores the knowledge organisation of sub-subgenres and takes a micro-level approach to genre classification. The study uses a particular case study: the classification issues around the collaborative works of Gilbert and Sullivan.

Method. This paper uses literature analysis (musicological, theatrical and literary) and classification scheme analysis (informal domain classifications). It applies three classification theory ideas – characteristics of division, boundaries of classes and thesaural relationships – to the domain knowledge of Gilbert and Sullivan.

Analysis/results. Novel characteristics of division are found to be at play, for creator, theatre and producer. Furthermore, issues with the porous boundary of *Gilbert and Sullivan* as a sub-subgenre are modelled using a Venn diagram for characteristics of division. This model highlights the lack of consistent application of characteristics on one hand and differing ideas about the outer boundaries of this sub-subgenre on the other. A study of the hierarchical, equivalence and associative relationships furthers understanding of the classification issues, especially a complex merging of hierarchical and equivalence relationships in the term *Savoy opera*.

Conclusion. This study shows that knowledge organisation can be used to gain understanding of classifying Gilbert and Sullivan, and the value and novelty of studying sub-subgenre classification within knowledge organisation.

Introduction

In recent years, much attention has been paid within knowledge organisation to the classification of genres, especially within the arts. The IEKO encyclopaedia article by Rafferty (2021) and a series of articles by Hider (and various collaborators) on genre classification within different art forms (White and Hider, 2020; Hider and Spiller, 2020; Hider and Lee, 2023), are some examples of how recent knowledge organisation research has helped shape understanding about genre as a classificatory device within structures of cultural knowledge. However, these studies typically consider the genre and subgenre as their main focus. Yet, subgenres can themselves be categorised into sub-subgenres and sub-sub-subgenres (and so on). Examples might include plays (genre) being subdivided into Elizabethan plays (subgenre), and subdivided into Shakespearean plays (sub-subgenre) and even the categorisation of these plays into tragedies, comedies and histories (sub-sub-subgenre). Therefore, this paper makes a preliminary exploration into the lower levels of genre classification, looking at the classification of sub-subgenres and below. This research will help us to more fully understand how the knowledge contained within subgenres is organised and ask whether there are novel categorisation and ordering issues which emerge when contemplating these narrower and deeper levels within genre classifications.

In this introductory study, one particular case study of a sub-subgenre is used. The collaborative works by W. S. Gilbert (1836-1911) and Arthur Sullivan (1842-1900) are taken as a fascinating, rich and complex example of a sub-subgenre (or sub-sub-subgenre), through which to ask questions about micro-level genre classification. These works will be called by the collective title of *Gilbert and Sullivan* in this paper. While a perennial subject for many enthusiast writings (for example, Bradley, 1996; Hardwick, 1972), it could be argued that modern scholarly writings about Gilbert and Sullivan, especially those from musicological or literary disciplinary backgrounds, have only emerged into a coherent discourse in the last 10-15 years or so. Important examples include Williams' (2011) monograph about genre and parody, Taylor's musicological work on Sullivan (2009; 2018) including a chapter on the comic operas and the relationship between text and music, Kuykendall's (2013) analysis of Sullivan's recitatives, and perhaps the foundation of this scholarly discourse, Wren's (2001) analysis of Gilbert and Sullivan's works. Within all types of Gilbert and Sullivan literature, the classification of the genre of Gilbert and Sullivan's works has attracted much attention. Gilbert and Sullivan produced fourteen collaborative stage works (with thirteen extant). These are known by various generic labels, such as comic opera, light opera, operetta, opera and Savoy opera. These influential works have a varied generic pedigree stemming from different types of opera and English theatre traditions (Taylor, 2018), and they went on to have a significant influence on the amateur music-making scene (Bradley, 2005) as well as influencing the birth of other genres such as American music theatre (Knapp, 2011). Therefore, their combined importance and interesting generic ambiguity make these works a useful example for a case study in micro-genre classification.

Recent knowledge organisation work on artistic genres makes a useful starting point for a conceptual study of sub-subgenres within music. Rafferty's (2021) important encyclopaedia entry on genre from a knowledge organisation perspective acknowledges both the importance of subgenres and the lack of agreement on where the line is drawn between what constitutes a genre versus a subgenre. So, to contemplate sub-subgenres is to go further down an unstable hierarchical journey. Hider and Lee's (2023) analysis of characteristics of division across different types of music concludes that typically subgenres are differentiated from each other by two to three characteristics rather than just one. Furthermore, they (Hider and Lee, 2023) also discover that medium, form, rhythm and function are particularly prolific characteristics for separating out subgenres. While one potential example of a sub-subgenre (Gilbert and Sullivan) cannot be taken to be representative of all micro-level genre classifications, it would nevertheless be interesting to compare the findings about the sub-subgenre of Gilbert and Sullivan to these all-

music results about subgenres. Finally, Lee et al. (2020) analyse the treatment of opera subgenres in both music domain and bibliographic classifications. The findings (Lee et al., 2020) show that the music domain contains a very large quantity of opera subgenres and a lack of agreement in how this information is organised; conversely, not all bibliographic classification even have subgenres for operas, and those that do have relatively few of them (Lee et al., 2020). Lee et al.'s (2020) study presents a model of opera subgenres which looks at subgenre through the lens of three relationship types (hierarchical, associative and equivalence), which could be useful for looking at this Gilbert and Sullivan case study.

So, this paper asks the following research questions:

1. How can the classification of Gilbert and Sullivan's works be understood in knowledge organisation terms? How does thinking about these works through knowledge organisation help us to understand their classification issues?
2. What does contemplating the classification of Gilbert and Sullivan's works tell us about the classification of lower levels of genres such as sub-subgenres, and what ideas might be worthy of further investigation?

These questions will be answered using a variety of methods and sources. Discussions about the genre classification of Gilbert and Sullivan within scholarly works (from music and literature studies) will be used and analysed, though this will be selective and the focus will be on works which are pertinent to classification issues. In addition, the knowledge organisation of a few examples of scholarly and enthusiast sources will also be used as primary sources for classification analysis, such as the organisation within examples of Gilbert and Sullivan books and the broad structure of the arrangement of works in the *Gilbert and Sullivan archive* (2024). This is part of the methodological approach of analysing domain classifications and the organisation of domain knowledge, as espoused by Hjørland (for example, Hjørland 2017; Lee et al., 2019). The main methodology employed will see the application of different knowledge organisation concepts to the Gilbert and Sullivan sub-subgenre example. While models and figures of Gilbert and Sullivan sub-subgenre are presented, no attempt is made to model sub-subgenres in the abstract; it is unwise to generalise such a model from the one sub-subgenre example covered in this paper, though it is intended that this paper is the first step towards such a goal.

The paper starts by looking at how Gilbert and Sullivan's works fit within the genre organisation of the musical-theatrical domain. This leads to the second part of this paper, which is a knowledge organisation examination of the conceptualisation of Gilbert and Sullivan as its own sub-subgenre. Different classification aspects are considered, starting with the characteristics of division used to create such a sub-subgenre, especially the idea of creators, theatres and producers. This is followed by an exploration of the messy boundaries of Gilbert and Sullivan as a sub-subgenre, considering what is considered inside and outside such a group. Then, the sub-subgenre is examined in terms of its hierarchical, equivalence and associative relationships. This exploration of Gilbert and Sullivan as a case study of sub-subgenre classification offers knowledge organisation insights about a thorny part of musical-theatrical knowledge, and leads to some thought-provoking questions about the nature of sub-subgenres themselves.

Gilbert and Sullivan within musical-theatrical genre classification

Where to classify Gilbert and Sullivan's works and what to call them are important topics within musical-theatrical discourse. Generic categories commonly assigned to them in the musical/theatrical/literary discourse include *comic opera* (see, for example, Taylor, 2018), *English comic opera* (Williams, 2011), and *light opera* (particularly used by many amateur companies which choose to primarily perform Gilbert and Sullivan works, such as *Grosvenor Light Opera Company* (2024), and *Julian Light Opera Society* (2024) to name just a couple). Some authors directly address the genre classification labels. For example, Taylor (2018) explicitly tells

his readers that he is using '*comic opera*' to refer to the works of Gilbert and Sullivan and the reasons for it, then builds some of his argument on the generic labels ascribed by the original creators. Kuykendall (2013) describes some of the terms which did not get taken up, such as '*Comedy opera*', then goes on to suggest that '*Savoy opera*' is the popular label – this term will be discussed in the next section. This generic-labelling complexity can also be seen indirectly in the quantity of generic labels used in writings about the works. For example, the *Grove music online* entry on Gilbert and Sullivan (Bradley, 2015) – interesting in itself for being an entry for a collaborative partnership – indirectly belies the genre classification richness by containing no fewer than four different generic labels in an entry of only 540-odd words, including wider subgenres, genres and categories which just cover Gilbert and Sullivan (comic operas, Savoy operas, operas and Gilbert and Sullivan).

The next question to consider is the creators' generic view of their works. The original generic titles to the fourteen works vary, utilising Kuykendall's (2013, p. 551) list of titles from the opening night programmes: some works have the generic category title of '*opera*', others have '*comic opera*', and there is one outlier with the generic title of '*dramatic cantata*' (*Trial by jury*). Yet, there does not appear to be much obvious difference as to why some are assigned the label of '*opera*' while others are designated as '*comic opera*', despite all fourteen works fulfilling the generic attributes of comic opera (including dialogue, lighter topics, and so on (Comic opera, 2001)).

Ultimately, this section suggests that there is a rich tapestry of genre classification complexity within Gilbert and Sullivan's works, and that they do not fit comfortably in existing subgenres. Furthermore, there is musicological context for in fact treating the works of Gilbert and Sullivan as a category in its own right, with all the classification implications this might bring. For example, as well as settling on the term '*comic opera*', Taylor (2018, p. 95) also calls the works the '*unique music-theatrical genre*', suggesting a subgenre in their own right, while Kuykendall (2013, p. 549) calls them a '*new hybrid genre clearly influenced by Continental models both low and high, but distinctly English and intentionally operatic*'. Therefore, this paper explores the knowledge organisation possibilities of Gilbert and Sullivan's works being their own sub-subgenre, and what this might tell us about the classification of sub-subgenres more generally.

Gilbert and Sullivan as its own sub-subgenre

This section considers the knowledge organisation of a separate sub-subgenre for Gilbert and Sullivan's works. The sub-subgenre will be considered through the lens of three knowledge organisation ideas: the characteristics of division that are utilised when treating Gilbert and Sullivan as their own category; the boundaries of such a category from a perspective of grouping and othering; and the web of relationships between Gilbert and Sullivan and other genres and subgenres, looking at hierarchical, equivalence and associative relationships. Before commencing, it should be noted that bibliographic classification schemes do *not* appear to classify Gilbert and Sullivan's works as a separate category. For example, Lee (2017) showed that only eight out of seventeen example classification schemes for musical works have subgenres for operas, and Gilbert and Sullivan's works do not have their own category in any of these schemes, nor is there a separate class for these in the *Library of Congress classification*'s (Library of Congress, 2024) music literature schedules. So, this analysis of Gilbert and Sullivan's works as a sub-subgenre is carried out as a conceptual idea and one that has precedent in the domain, rather than being directly applicable to bibliographic classifications.

Characteristics of division

The first idea to contemplate is the characteristics of division that make a sub-subgenre for Gilbert and Sullivan's works. Characteristics of division (or their synonym, principles of division) are defined by Broughton (2004, p. 305) as the '*defining factor in an array or group of terms*'; in

other words, the type of information used to make a subgroup. It should be noted here that while characteristics of division are used in studies of faceting within knowledge organisation – the breaking down of complex subjects into simple ones and then classifying documents by combining simple subjects – this paper is not concerned with faceting. This is because faceting is most useful for ideas which contain multiple types of information, whereas the study of Gilbert and Sullivan's works is a study of how to organise just one type of information: musical-dramatic works. Characteristics of division are useful for this study as they can be applied to an infinite number of levels of information, with the same or different characteristics being used at each level – especially useful for this study of micro-levels of genres.

One important characteristic in the sub-subgenre of Gilbert and Sullivan is the creator, or in this case, creators: the librettist W. S. Gilbert and the composer Arthur Sullivan. So, to be a member of the subgenre of Gilbert and Sullivan, the work needs to be attributed to both creators. Interestingly, Hider and Lee (2023), in their study of characteristics of division used to delineate subgenres across music, do not find creators to be a characteristic of division for musical genres. This is unsurprising considering that genres and subgenres are not typically the products of one artist or collaborating pair of artists, suggesting that this may be a characteristic that is more likely to be found at sub-subgenre level. Lee's (2017) analysis of opera subgenres in bibliographic classifications does find one eponymous subgenre: the *Music dramas of Wagner*, seen in the first edition of the 1953 *Bliss classification*). It is also worth noting that Gilbert and Sullivan as creators are not enough to define this sub-subgenre: the works also need to be within the hierarchy of genres within musical-theatrical works, and ideally within comic opera. Sullivan and Gilbert collaborated on works other than these fourteen musical-theatrical ones, such as three Sullivan songs/parlour ballads which have words by Gilbert (Sir Arthur Sullivan's songs and parlour ballads, 2004), and these would not be considered to be in the sub-subgenre of Gilbert and Sullivan.

Then, there is also arguably a second (and even a third) characteristic. The sub-subgenre of Gilbert and Sullivan is associated with a particular performing space, which is the Savoy Theatre. The works from *Iolanthe* onwards were premiered at the Savoy Theatre, while the preceding works became associated with the theatre in retrospect. Some writers on Gilbert and Sullivan, such as the musicologist Kuykendall (2013, p. 553), argue that '*a work was categorized more easily by the theater in which it was produced than by any specific aspect of its substance*'. However, this '*extrinsic*' factor (Hider and Lee, 2023), is not found directly in the list of characteristics by Hider and Lee (2023), though it could be argued perhaps that it might be extendable from the characteristic of culture. Then, there is also a potential characteristic for the impresario, Richard D'Oyly Carte, who was responsible for the long-term Gilbert and Sullivan collaboration and who built the Savoy Theatre. A characteristic for producer or producer is also not found in Hider and Lee (2023), again suggesting that sub-subgenres might require extension of our sets of characteristics of division. Thinking about the *interaction* between these three characteristics – creators, performance space and producer – gets somewhat complicated, especially when the earlier works opened before the Savoy Theatre was built (*Thespis*, *Trial by jury*, *H.M.S. Pinafore*, *Pirates of Penzance*, and *Patience*), and in one case (*Thespis*), before Richard D'Oyly Carte was involved. This asks interesting questions about whether all characteristics need to always be fulfilled, and fulfilled strictly, for a work to still belong to a sub-subgenre.

So, this Gilbert and Sullivan example shows that looking at sub-subgenres can bring new characteristics into play, such as those around creator, producer and/or performance space. Yet this example also demonstrates fuzziness about the boundaries of these characteristics.

Boundaries of the class

This leads neatly on to the issue of the boundaries of the potential sub-subgenre of Gilbert and Sullivan. The boundaries of what counts within this proposed sub-subgenre is a well-known issue

in studies of Gilbert and Sullivan. To start, there are two main types of labels given by writers to the works of Gilbert and Sullivan as a sub-subgenre in their own right: Gilbert and Sullivan or Savoy operas. For example, Kuykendall (2013) gives five possible boundaries of the subgenre '*Savoy opera*', and there are even more possible permutations which are not mentioned. This paper attempts to analyse and understand these issues with the boundaries of the class from a knowledge organisation perspective. For the purposes of the early part of this section, the *contents* of the class will be examined, with questions about naming returned to later in the section.

Firstly, there are some interesting questions about whether the strict applications of the characteristics of division discussed above unequivocally create a class which contains the works typically intended by the sub-subgenre of *Gilbert and Sullivan*. There are fourteen comic operas that are considered Gilbert and Sullivan canon – see, for example, the *Gilbert and Sullivan archive* (2024), and the structure of Williams' (2011) work which has a chapter on genre and parody for each of the fourteen works. The first of these, *Thespis*, is problematic from a classification perspective for a number of reasons. The music has been lost (Williams, 2013, p. 22), so there is a question mark to its inclusion, especially if the category is being used to question whether a person or group has *actually* performed all of Gilbert and Sullivan's works. Additionally, *Thespis* was written before Richard D'Oyly Carte's involvement, meaning it would not be included if the characteristic of division of producer was used to define the sub-subgenre. (Intriguingly, the English National Opera guide to the Savoy Operas (2024) says there are '*around 13*' Savoy operas by Gilbert and Sullivan, with the '*around*' perhaps indicative of the classificatory fuzziness around *Thespis*.) While Kuykendall (2013) argues that theatre is an easier way to categorise the works of Gilbert and Sullivan than the contents of the works – something we could understand in terms of the binary division between intrinsic and extrinsic characteristics of division as posited by Hider and Lee (2023) – theatre also presents classificatory complications as a characteristic. The Savoy Theatre only opened in 1881, after many of Gilbert and Sullivan works had first been performed; therefore, the theatre as place of production can only be used for some of the works, while for the rest, the characteristic becomes more a post-facto backwards association. Another question concerns size of work: *Trial by jury* is not a full-length opera, and instead was a curtain raiser or companion piece, yet almost always appears within the Gilbert and Sullivan sub-subgenre (for example, Williams, 2011; Gilbert and Sullivan archive, 2024; Wren, 2001). This asks questions about parental subgenres: *Trial by jury*'s original genre designation was '*dramatic cantata*' (Kuykendall, 2013), so its position in a sub-subgenre that sits hierarchically under comic opera could be questioned. Therefore, even the classification of the fourteen *canonical* works is questionable from a knowledge organisation perspective. There is a tension between the reception of Gilbert and Sullivan as a sub-subgenre containing fourteen works and the technicalities of how this class is actually defined in classification terms, especially through the problematic characteristics of division around producer and theatre, and the questions around the parental subgenre of *Trial by jury*.

Secondly, and perhaps most pertinently, there are interesting knowledge organisation questions about how far the category of Gilbert and Sullivan extends. The boundaries appear to be disputed in the music domain. For example, in Taylor's (2018) musicological re-evaluation of Sullivan's music, there is a chapter on Gilbert and Sullivan. Here, early non-Gilbert works by Sullivan such as *Cox and box* and *The zoo* are discussed alongside the Gilbert collaborations. There is no Gilbert/no-Gilbert delineation. From a classification perspective, we could define this as two conditions need to be met to be in the category of Gilbert and Sullivan: the parental genre of comic opera *and* the characteristic of creator = Sullivan. This makes sense within the musicological, Sullivan-centred context in which Taylor's work was written. A different example sees a different classification: in the important documentary resource of the *Gilbert and Sullivan archive* (2024), the overall structure of the digital archive sees a fundamental division between

'*The Gilbert and Sullivan operas*', and '*Other operas and musicals*'. The latter has subcategories of '*Companion pieces*' (shorter works used to fill programme space) and '*Other Savoy operas*' (works which were staged at the Savoy after the main collaboration period was over from 1891 to 1903) (Gilbert and Sullivan archive, 2024). Some works appear in multiple categories, such as *Trial by jury* (Companion pieces *and* one of the fourteen works) and *The Grand Duke* (Other Savoy operas *and* one of the fourteen works), which illustrates potential logical holes in this system's characteristics of division and highlights the complexities of trying to divide these works. As a different example, Fitz-gerald's (1925) early work about the Savoy operas includes pre-collaboration works by Sullivan or Gilbert, the fourteen collaborative works, works from the 1890s by Sullivan but not Gilbert, and works from the 1890s and early 1900s for the Savoy Theatre by neither Gilbert nor Sullivan. We note here too the term '*Savoy opera*' in the title of this book. This conceptualisation sees a sub-subgenre for Savoy opera, characterised by *or* characteristics, all falling within a broad genre of staged works. This could be written as Gilbert OR Sullivan OR Savoy Theatre/D'Oyly Carte connection.

So, we can use a Venn diagram, with the overlapping circles representing the four characteristics of division, to create a model of the characteristics of division in the sub-subgenre of Gilbert and Sullivan – see Figure 1. This depicts the logical relationships between the four characteristics and illustrates the logical shortcomings of the domain's conception of Gilbert and Sullivan as a sub-subgenre. Specific areas of the Venn diagram are indicated by red circles and examples from these will be mentioned below. The fourteen works typically known as *Gilbert and Sullivan* are in the centre where the four circles meet – Gilbert, Sullivan, Savoy Theatre and D'Oyly Carte. Area 1 represents the concentricity of the four circles, and an example work is *The gondoliers* (by Gilbert and Sullivan, produced by D'Oyly Carte at the Savoy Theatre). However, the Gilbert and Sullivan sub-subgenre also includes areas where only two or three of the circles meet: area 2 with Gilbert, Sullivan and D'Oyly Carte but without the Savoy Theatre (for example, *H.M.S. Pinafore*, produced by D'Oyly Carte but before the Savoy opened), and the small area 3 which has Gilbert and Sullivan, with no D'Oyly Carte or Savoy Theatre (for example, *Thespis*, which was not produced by D'Oyly Carte and opened before the Savoy was opened). Figure 1 also illustrates what broader conceptions of Gilbert and Sullivan as a sub-subgenre look like from a knowledge organisation perspective, as seen in the domain literature. These are particularly pertinent when the term The Savoy Operas is used. Area 4 shows the musical-theatrical works by Sullivan (but not Gilbert) and produced by D'Oyly Carte at the Savoy, such as *The rose of Persia*; while area 5 conceives of a sub-subgenre that includes all musical-theatrical works at the Savoy which are not by Sullivan or Gilbert, such as *The vicar of Bray*. Area 6 is for works by Sullivan with no association with Gilbert or the Savoy; this is a particular classificatory home for Sullivan's '*Grand opera*' of *Ivanhoe*, which was produced by D'Oyly Carte but not for the Savoy and not with Gilbert. This example is noteworthy as *Ivanhoe* would not be included in any musicological or popular conception of Gilbert and Sullivan / Savoy opera, yet does share many of their characteristics of division. This highlights the importance of precision in defining the boundaries of classes within sub-subgenres. Area 7 is for musical-dramatic works by Gilbert and not Sullivan, which in practice mostly includes works written before the Gilbert and Sullivan collaboration. The musical entertainment *Ages ago* is an example of this.

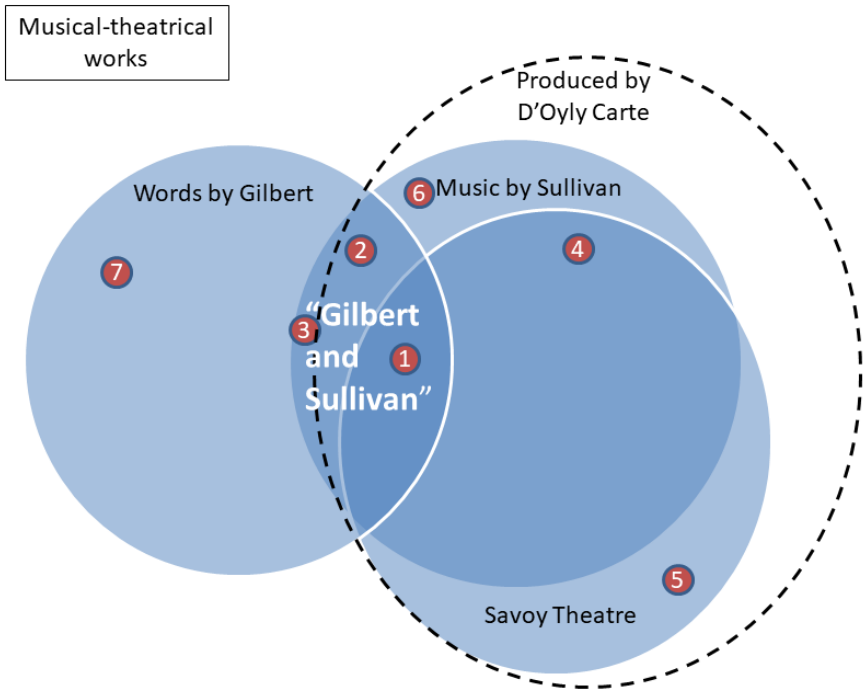

Figure 1. The sub-subgenre of Gilbert and Sullivan as characteristics of division.

Putting this all together, from this model we can conceive of *Gilbert and Sullivan* being areas 1, 2 and 3; while these works are often talked about as the concentricity of all four circles/characteristics (area 1 only – Gilbert, Sullivan, Savoy Theatre, D'Oyly Carte), their actual knowledge organisation is more typically and more technically defined by just two characteristics – Gilbert and Sullivan. This is an interesting conceptual point about the classification of this sub-subgenre, and potentially applicable to other sub-subgenres where there is a more malleable categorisation in practice than the strict theoretical application of multiple characteristics of division. Furthermore, this model also depicts the broader category of Gilbert and Sullivan, which includes works related to and influenced by, the collaborators but not necessarily by them both, and moves beyond just areas 1-3. This broader category is typically called *Savoy operas*, but confusingly the term *Savoy opera* is sometimes used as a synonym for Gilbert and Sullivan. (This mulching together of a hierarchical category and a synonym is explored below.) The broader categorisation might add in addition area 4 (works by Sullivan but not by Gilbert), plus perhaps even 5 (any work at the Savoy Theatre by any composer) and even occasionally also 7 (musical-theatrical works by Gilbert, but not Sullivan). Thus, this model demonstrates the complexities of Gilbert and Sullivan classification and shows structurally how Kuykendall (2013) can list five different meanings of the category title '*Savoy opera*'. It also highlights potentially interesting points about sub-subgenre classification, such as the malleability of application of characteristics of division and how sub-subgenres can be defined by three or even four characteristics.

Relationships

Sub-subgenre can also be thought of in terms of thesaural relationship: hierarchical, equivalence and associative, as seen in thesauri and other knowledge organisation systems (Aitchison et al., 1997). These relationships as applied to Gilbert and Sullivan are depicted in Figure 2. The hierarchical, generic relationships are in the most part straightforward. However, there is a

question whether there is legitimately a category for English comic opera, and this has an impact on whether Gilbert and Sullivan is a sub-subgenre or a sub-sub-subgenre of opera. Furthermore, the discussion in the above section germinates the idea of a bigger category of Savoy opera, from which Gilbert and Sullivan's works would then form a sub-sub-subgenre. (To add to the complications, it could be argued that Savoy opera and English comic opera are actually the same category in practice, but this is a more musicological discussion and outside the scope of this paper.) To this end, both English comic opera and Savoy opera are shown with dotted lines in Figure 2 as potential hierarchical levels, and to simplify the discussion, Gilbert and Sullivan will remain being called a sub-subgenre (rather than a sub-sub-subgenre or sub-sub-sub-subgenre). This question about the number of hierarchical levels between opera and Gilbert and Sullivan suggests some knowledge organisation instability around sub-subgenre levels. It also implies that micro-levels of genres may be more affected by queried subdivisions than genres and subgenres, as they are lower down the hierarchies and the effects of any instability may be magnified.

There are also two equivalence relationships, as depicted in Figure 2. The simple equivalence relationship sees Gilbert and Sullivan with a synonym of G & S, as described by Kuykendall (2013) and Taylor (2011). The more complicated synonym involves the term Savoy opera, and this equivalence relationship between Gilbert and Sullivan and Savoy opera is found in musical sources. For example, Kuykendall (2013, p. 554) calls Savoy opera '*merely an elegant synonym for the pieces of "G&S"*'. Yet, as discussed in the previous section, Savoy opera is also used to denote a wider group of works. We are therefore left with a classification conundrum where Savoy opera is both a synonym for Gilbert and Sullivan but also potentially a parental term too, a kind of combination between equivalence and hierarchical – depicted in Figure 2 by a curved line and a question mark. The English National Opera (2024) guide offers a particularly fascinating take on this: Savoy opera started as a wider group of works than just Gilbert and Sullivan, but as non-Gilbert and Sullivan works dropped out of the repertory, Gilbert and Sullivan and Savoy opera ended up becoming synonyms. So, this portrays the idea that Gilbert and Sullivan and Savoy opera are still hierarchically related in theory, but the contemporary repertoire view is that they are *in practice* synonyms. The levels have been squashed so sub-sub-subgenre (Gilbert and Sullivan, *with parent of* Savoy opera) has been flattened down to be just a sub-subgenre (Gilbert and Sullivan, *known as* Savoy opera). (The reality is more complicated than English National Opera (2024) suggests, as there are Savoy opera boundary works not by both Gilbert and Sullivan which are still reasonably regularly performed, such as *Cox and box*, *The zoo*, and so on.) This also emphasises how ecosystems of genres changes over time, and the importance of temporal views of genre classification. It also proposes that lower levels of genre hierarchies might be more sensitive to temporal changes.

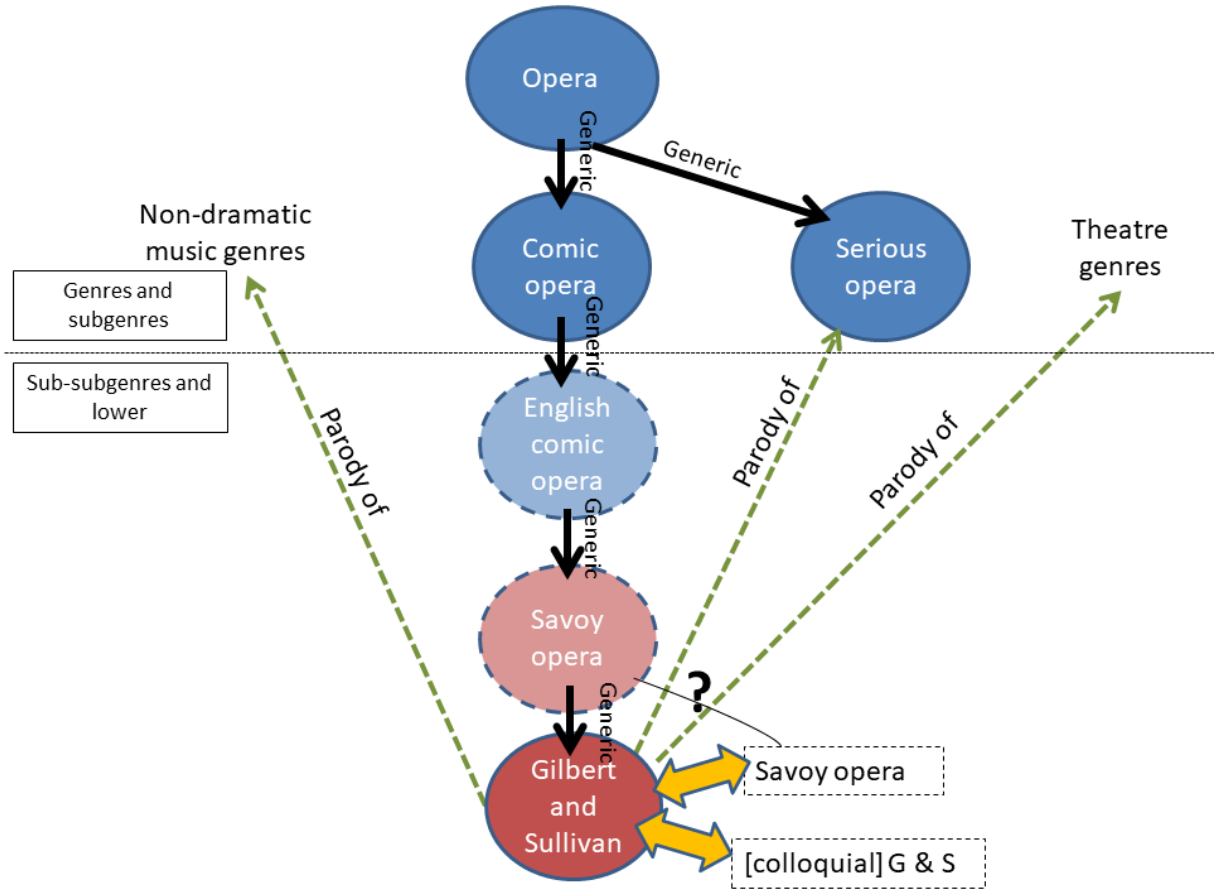

Figure 2. The relationships within the sub-subgenre of Gilbert and Sullivan

Finally, associative relationships, those relationships which describe connections which are neither hierarchical nor synonymous, are a useful way of plotting the relationships between Gilbert and Sullivan and other types of music and theatre. Here the key associative relationship is parody, which is a critical part of Gilbert and Sullivan as a sub-subgenre (Williams, 2011): these include the parody of subgenres of opera (for example, the parodying of fairy operas in *Iolanthe*), other types of music (for example, glees in *H.M.S. Pinafore*) and other theatrical works (for example, melodrama in *Ruddigore*). Parody-as-associative-relationship is noteworthy as it is not one of the classic types of associative relationships as seen in thesauri literature and the thesaurus standard (Aitchison, et al. 1997; International Organization for Standardization, 2011); furthermore, in this Gilbert and Sullivan example as seen in Figure 2, some of the parodic relationships are connecting *within* the opera hierarchy rather than to other hierarchies. This is potentially problematic for associative relationships which are ideally making connections across different hierarchies rather than within a hierarchy.

Concluding thoughts

The first research question asked how knowledge organisation might help us to understand the classification of Gilbert and Sullivan's works, with knowledge organisation providing a novel perspective on a known musical-theatrical conundrum. The findings, especially the model in Figure 1, illuminate the complexity of classifying this sub-subgenre. Highlights include the need for malleability in the application of characteristics of division, and how the *perceived* classification by, say, theatre, does not necessarily match strictly applied characteristics of division in practice. We could view this as sub-subgenres being *backwards defined*; in other words, a characteristic that is later used to define the sub-subgenre (say the theatre) is not

present in the earliest iterations of that sub-subgenre. Furthermore, looking at the number of characteristics of division and different types of space helps to illuminate why the domain discourses have so many different ways of defining Savoy operas / Gilbert and Sullivan. For example, the interwoven but not entirely overlapping relationship between producer and theatre causes particular classification questions. The temporal frame also becomes an important consideration: the hierarchical has become the equivalent with the passing of time in the case of Savoy opera.

The second research question asks what can be learnt about sub-subgenres and classification from this case study. To start, the paper showed some of the complexities which emerge from studying sub-subgenre classification, and how some of these areas only appear to arise when looking at this micro-level of genre hierarchy. This paper also shows how novel characteristics of division such as creators, producers and theatres can emerge when we start drilling down to the level of sub-subgenre, which had not been seen in previous studies of subgenres (such as Hider and Lee, 2023). While these characteristics might be particular to the Gilbert and Sullivan example, they do suggest that particular characteristics of division might only emerge as we get to these lower levels. Furthermore, this study shows that the fuzziness around defining and applying characteristics of division, and instability around hierarchies of opera over time appears to increase when dealing with these lower levels of genre hierarchies such as sub-subgenre and sub-sub-subgenre – presumably because the impact multiplies with the more levels you encounter. These all suggest that further study of sub-subgenres could be useful, as well as thinking about the classification of sub-subgenres in the temporal frame.

As this is only a preliminary study about one sub-subgenre case study, there is much potential for future work. The next steps would be to consider more examples of interesting sub-subgenres. This could start by using a similar methodology to do rich analyses of other examples from musical-theatrical works, and then move to other musical examples, followed by sub-subgenre analysis of examples from art forms such as (non-musical) theatre and poetry. From this point, a model of sub-subgenres could be developed. Ultimately, this positioning of Gilbert and Sullivan as a sub-subgenre provides novel insights in our understanding of the genre classifications of Gilbert and Sullivan and explanations for the complexities that these works present. It also demonstrates the importance of contemplating sub-subgenres to our understanding of the classification of genres more generally.

About the author

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Using digital ethnography to research embodied information practices on social media

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Abstract

Introduction. This paper discusses the use of digital ethnography to research the embodied information practices of ultrarunners. The paper considers the challenges of digital ethnography and explores how embodied and immersive methods could bring the body into digital ethnography.

Method. Digital ethnographic methods have been used as part of ongoing research exploring how ultrarunners use the affordances of social media to share embodied information. Participant observation and interviews have been the main methods of data collection.

Discussion. Embodied information can present challenges for the researcher as it is information which is difficult to access beyond the moment of practice. Reflection on use of digital ethnography has highlighted the importance of methods which bring the body into research.

Conclusion(s). Turning to sensory, embodied and immersive methods can support deeper understanding of embodied information practices. The paper highlights the value of ongoing reflection on methodological issues to address the challenges of researching embodied information.

Introduction

This paper discusses the use of digital ethnography to research embodied information practices as represented on social media. The paper forms part of doctoral research which aims to understand how ultrarunners use the affordances of social media to share embodied information (Williams et al., 2024). Ultrarunning is a form of endurance running, involving psychological and physiological challenges. Although running is a physical practice, engagement with digital cultures has become an increasingly important part of running for many people (Couture, 2021; Gorichanaz, 2018; Kurtoğlu-Hooton, 2021). Ultrarunners use social media platforms to represent their experiences through vlogging and photo sharing (Williams et al., 2024).

Embodied information presents challenges for researchers; bodies produce ways of knowing that can be difficult to put into words and hard to access beyond the moment of practice (Bonner and Lloyd, 2011; Lloyd, 2010). Information behaviour researchers have turned to ethnography and autoethnography as methodologies which allow exploration of embodied information (Cox et al., 2017). Whilst ethnography is becoming increasingly adopted as a methodology in information science, there is currently limited discussion of the challenges or limitations of the approach (Carlsson et al., 2013). Griffin (2017) argues that ethnography is often used ambiguously or without detailed discussion of the methodological position. This paper aims to explore the following questions concerning methodological approaches for embodied information:

1. What are the challenges of using digital ethnographic methods for researching embodied information practices?
2. How can embodied and sensory methods be incorporated into digital ethnographic methodologies?

Turning to the literature as part of a reflective process has resulted in rich insights about the methodological challenges experienced whilst researching the ultrarunning community on Instagram. I reflect on the limitations of digital ethnography for engaging with embodied information and how embodied or sensory methods could enable the researcher to engage with embodied information. This paper responds to Griffin's call for a more detailed discussion of methodological issues in information science, contributing new insight into the methodological challenges of digital ethnography in the context of embodied information.

Ethnography and digital ethnography

Ethnography is an iterative, inductive and reflexive methodology which uses a range of methods to develop understanding of the behaviours, beliefs and practices of cultural groups (O'Reilly, 2008. 2012; Creswell, 2018). Describing and interpreting culturally significant practices is central to the philosophy of ethnographic research (Wolcott, 1990). It is important to acknowledge ethnography is a research philosophy rather than a single method, and can involve using a range of methods such as participant observation and interviewing (Anderson-Levitt, 2012). Conceptualisations of ethnography for researching digital platforms have evolved, resulting in an overlapping and messy array of terminology; virtual ethnography, Internet ethnography, social media ethnography, netnography and digital ethnography. I selected Pink et al's. (2016) digital ethnography as the methodology for this research. Digital ethnography is a repurposing of conventional ethnographic concepts for a digital environment whilst acknowledging that the phenomenon under investigation is not bound exclusively to the digital (Pink et al., 2016). Digital ethnography can be a messy method fraught with discomfort (Abidin and De Seta, 2020). Ethical issues dominate discussions about the challenges of researching social media (Gliniecka, 2023; Gerrard, 2021). Visual content presents challenges concerning consent, anonymity and copyright (De Seta, 2020; Warfield et al., 2019; Winter and Lavis, 2020).

Ethnography and embodied information

Ethnography has been increasingly used as a methodology for examining embodied information practices across a range of different contexts: for example, archaeology (Olsson, 2016), car restoration (Lloyd and Olsson, 2019), religious practices (Guzik, 2018), martial arts (Olsson and Hansson, 2019), traditional crafts (Agyemang and Wessels, 2022) and long-distance hiking (Hyatt, 2016; Innocenti, 2024; Munro et al., 2022). Studies of long-distance hiking have used the traditional ethnographic approach of in-person participation. Munro et al. (2022) conducted interviews with hikers at various points along a long-distance trail. Innocenti (2024) discusses conducting ethnographic interviews, conducted on the trail with walkers, as well as keeping a research diary using text, photos and audio recordings.

Participation by the researcher in the practice under investigation is a common theme throughout many of these papers, which contributes to rich debates around levels of participation in ethnographic research. McCurdy and Uldam (2014) highlight how insider-outsider and overt-covert positions shift throughout research. Researchers are often already participants in the practice; for example, Olsson and Hansson (2019) are martial artists whilst Innocenti (2024) is a hiker. Autoethnography has been used to give more attention to the embodied experiences of the researcher (Gorichanaz, 2015). Researchers also integrate themselves into the fieldsite, moving from outsider to insider by learning a new skill (Agyemang and Wessels, 2022). Methodological issues include researcher positionality and insider-outsider status. In their study on embodied information practices of martial artists, Olsson and Hansson (2019) consider the implications of an insider status in ethnographic work. Both authors are practitioners in martial arts and reflexively interrogate how this shapes the study's findings. There is limited discussion or use of ethnographic methodologies to research embodied information in a digital context in the information science literature.

Applying digital ethnography to ultrarunning on Instagram

This section of the paper outlines how digital ethnography has been used in ongoing doctoral research. The research uses ethnographic methods, underpinned by Pink et al.'s (2016) digital ethnography but also draws upon ideas from immersive research (Matthews, 2021) and embodied research (Chong Kwan, 2022; Matthews, 2015; Thanem and Knights, 2019). Immersive research is '*a methodology that emphasises participation, involvement and immersion*' (Matthews, 2021, p. 41). Embodied research encourages use of the body as a tool for investigation through embodied participation (Thanem and Knights, 2019).

Focusing on Instagram as the fieldsite, the research has involved two main phases of data collection: immersive participant observation on Instagram and semi-structured interviews. Observational data was collected using observational notes, a reflective research diary and the thematic analysis of 117 Instagram posts, gathered through daily use of Instagram. Kozinets' (2020) recommendations to consider relevance, diversity and richness were criteria for selecting posts for analysis. Data was analysed using an iterative-inductive approach, recognising that data collection, analysis and writing are intertwined activities in ethnographic research (O'Reilly, 2012). The observation phase focused on mapping out information practices in terms of who was sharing information, what information was shared and how information was shared. The observation phase was followed by nineteen semi-structured interviews with ultrarunners, coaches and content creators. The aim of using the interview method is to build further understanding of experiences of creating, sharing and using embodied information. Findings from the immersive participant observation informed the development of the interview questions. The observation data also informed the sampling of interview participants: for example, coaches were included in the sample of interview participants after observation highlighted this group as playing a role in creating and sharing information about running on Instagram.

The immersive aspect of this research was about being a participant in the information practices of runners on social media platforms. I was regularly scrolling, searching and viewing content whilst also using Instagram to document and reflect on my practices of running using photographs and reflective journaling. Although observations did not occur in the moment of practice with runners, embodied information remained accessible in various forms through the videos and photographs encountered on the platform. Ultrarunners share videos captured *on the run*, granting access to a wealth of sensory information: heavy breathing, running shoes hitting the ground and sounds of wind and rain. This data is sensorial despite being accessed in a digital fieldsite. Even observing visual information is a sensory experience. The sensory aspect of viewing and listening to embodied information as an observer begins to bring an aspect of embodied research to the work. After reflecting upon observation as a method, it was decided that greater use of embodied approaches could support deeper understanding. Following the example of Glatt (2023) who became a YouTuber to understand how it feels to be a content creator, this might be achieved by becoming a running content creator myself. Engagement with the practices observed in my research such as filming on the run could close the gap between observation and embodied experience to generate insights about the embodied experiences of information creation.

The reflective diary used to record experiences and reflections was shared on Instagram, resulting in a more participatory role in the fieldsite. Taking a participatory role through transparent reflections can be a useful way to explore researcher subjectivity (Olive, 2013). Being open with reflections became important partway through data collection when I sustained a serious running injury which meant a shift in my identity as a runner. Abidin's (2020) recommendation for critical reflection on performances of visibility a researcher positionality shift was followed to account for the impact of injury. Injury disrupted both my identity as a runner and challenged my ability to bring my body into the research through embodied methods. Although I wanted to incorporate embodied sensory methods alongside digital ethnography, becoming an injured runner altered my level of participation in running and my reflections became more about my experiences as an injured runner.

The challenges of using digital ethnographic methods for embodied information practices

According to Cibangu (2012), digital ethnography can also mean losing access to sensory and experiential aspects compared to traditional ethnography. Many of the studies of embodied information discussed earlier in this paper involved active participation in practices by researchers; for example, collecting data on the trails (Munro, 2022) or becoming an apprentice to a weaver (Agyemang and Wessels, 2022). However, this research had a digital focus, which could result in losing access to embodied aspects. It is important to reflect on how the digital fieldsite changes access and engagement with sensory and experiential aspects of the phenomena. If bodies produce ways of knowing that can be hard to access beyond the moment of practice, can embodied information be explored fully without engaging the body? Bringing the body into the research in ways other than through direct contact with participants provides an opportunity to address this issue. For example, Pink's (2015) sensory ethnography was drawn upon to consider the multi-sensoriality of Instagram through paying attention to the sounds, sights and feelings generated whilst using the platform.

Taking an immersive embodied approach can counter the difficulties of directly accessing embodied knowledge in research. Matthews (2021) argues that understanding of phenomena can be built through engagement with and giving attention to bodily experiences. Kurtoğlu-Hooton (2021) uses running whilst researching to bring the body into digital research, closing the gap between observation of the body through mediated representations and gaining insight into bodily experiences. I am a runner as well as a researcher, thus my body holds potential as a research tool to engage with sensory information encountered on Instagram. Echoing the findings of Kurtoğlu-

Hooton (2021), engaging in the practices of running alongside the research has created space for reflection on forms of knowledge that cannot easily be put into words. As the research continues, I will consider how information gained watching from other runners on Instagram becomes embodied through my running practices, when recalled and remembered on the run. Incorporating greater use of sensory methods to the research might enable greater access to the fleshy and feeling perspectives that digital methods sometimes render inaccessible.

Conclusion

This paper has considered the call for methodological approaches which allow flexible and adaptive approaches to research in the study of embodied information (Cox et al., 2017). Through detailed discussion and reflection on the challenges of digital ethnography, this paper offers a response to calls for deeper discussion about the methodology or methods used in information research (Carlsson et al., 2013; Griffin, 2017). Ethnographic methods including participant observation and interviewing are used to research embodied information in a digital context; however, engagement with embodied and immersive methods might support a fuller understanding of embodied information practices. This includes paying attention to the sensory aspects of digital practices such as the sensorial nature of multimedia content on Instagram. In the context of researching running, this can include incorporating active participation in the practices of running. Turning to embodied and sensory methods alongside digital methods research might enable greater access to forms of embodied information which are often difficult to capture or put into words beyond the moment of practice. This paper highlights the importance of ongoing reflection with methodological literature to address the challenges of ethnographic research. Finding ways to incorporate sensory and embodied methods into digital ethnography is a valuable strategy for overcoming the challenges of accessing embodied information in a digital fieldsite, addressing the methodological tensions of digital methods for investigating a fleshy, feeling and sensory phenomena.

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Algorithmic Gossiping: sharing and non-sharing that evolve algorithmic imaginaries to folk theories

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Abstract

Introduction. This paper presents a work-in-progress diary study exploring how algorithmic gossiping contributes to the transformation of individual, momentary algorithmic imaginaries into shared and consolidated folk theories.

Method. This study utilises Douyin as the research site, employing an integrated approach that combines the critical incident technique with diary methods to capture significant moments, encompassing the formation, sharing and reception of participants' algorithmic imaginaries.

Analysis. A conventional content analysis method was utilised to analyse the 82 diary entries.

Results. Our preliminary findings suggest that algorithmic gossiping plays a pivotal role in the construction of users' algorithmic knowledge as it confirms and articulates their algorithmic imaginaries while breaking existing bias.

Conclusion. The initial findings on algorithmic gossiping highlight its role in transforming algorithmic imaginaries into folk theories and its potential to unify the current array of concepts in the field of algorithmic-related information behaviour at individual and meso levels.

Introduction

This paper is a work-in-progress diary study where we present preliminary findings from our ongoing examination of how algorithmic gossiping facilitates the transformation of individual, whim-of-the-moment algorithmic imaginaries into more shared, consolidated folk theories, thus proposing algorithmic gossiping as the pivotal behaviour in user algorithmic knowledge construction.

Background

Understanding the mechanisms behind algorithms is vital for survival in an information-rich world, as previous literature (e.g. Gao et al., 2023; Zhao, 2023; Hu and Wang, 2024; Bishop, 2019; Saragih and Morrison, 2022; Lobel, 2021) has found such understandings carry tangible consequences for personal wellbeing, social dynamics and professional success. Early research in algorithm-related information behaviour started from the notion of algorithmic awareness, emphasising whether users recognised the presence of algorithms (Eslami et al., 2015). This awareness was subsequently conceptualised as the ability to recognise and engage with online content, involving filtering out what is considered irrelevant while prioritising content deemed interesting to the users (Eg et al., 2023). The following years witnessed how algorithmic awareness became more prevalent among users in the years to come (e.g. Shin et al., 2022; Swart, 2021) compared to the findings of Eslami and her colleagues (2015). As awareness of algorithms increased, so too did academic interest in the implications of this awareness, particularly regarding how users interpret and respond to the presence of algorithms. The concepts of folk theories (Eslami et al., 2016) and algorithmic imaginaries (Bucher, 2017) emerged as the names of lay hypotheses users generated about algorithmic processes.

While some scholars (e.g., Swart, 2021; Eg et al., 2023) argue that these two concepts are essentially the same, differing only in terminology, there are important distinctions between them. Folk theory represents a more systematic interpretation of algorithms, where users understand them as the underlying mechanisms driving specific functions within information systems. Notably, algorithmic folk theories are a dynamic knowledge sometimes shared by a small group: after Eslami and her colleagues (2016) provided two alternative views of how News Feed might work, the participants revisited their four original folk theories and proposed six new ones. In that study, the number of viable folk theories diminished over time, consolidating into two dominant explanations as participants attempted to find methods to achieve their objectives or goals within the system. In contrast, algorithmic imaginaries, defined by Bucher (2017, p. 32) as '*the way in which people imagine, perceive and experience algorithms and what these imaginations make possible*,' often appear in more spontaneous, emotional forms, like '*whoa moments*', a sudden realisation that algorithms are tracking users' profiles, or '*cruel connections*', the emotional impact users suffer when recommendation algorithms bring forth a photo of a deceased loved one (Bucher, 2017).

Both algorithmic folk theories and algorithmic imaginaries have been the focus of extensive investigation since their conceptualisation. Researchers have expanded these frameworks to encompass new contexts and scenarios (e.g., Schulz, 2023; Liao and Tyson, 2021) while exploring their potential to help users mitigate or cope with the side effects of algorithm-driven information systems (e.g., Zhang and Chen, 2023; Jones, 2023). However, except for DeVito et al. (2018), who pointed out that algorithmic folk theories were the updated version of foraged information guided by self-represented goals, few studies have delved into the formation of algorithmic knowledge - whether described as folk theories or imaginaries. This gap raises two critical questions: if users' algorithmic knowledge manifests as both spontaneous, intuitive imaginaries and systematic, structured folk theories, could they represent different stages in the process of algorithmic knowledge development? In addition, what drives the transformation between those different stages?

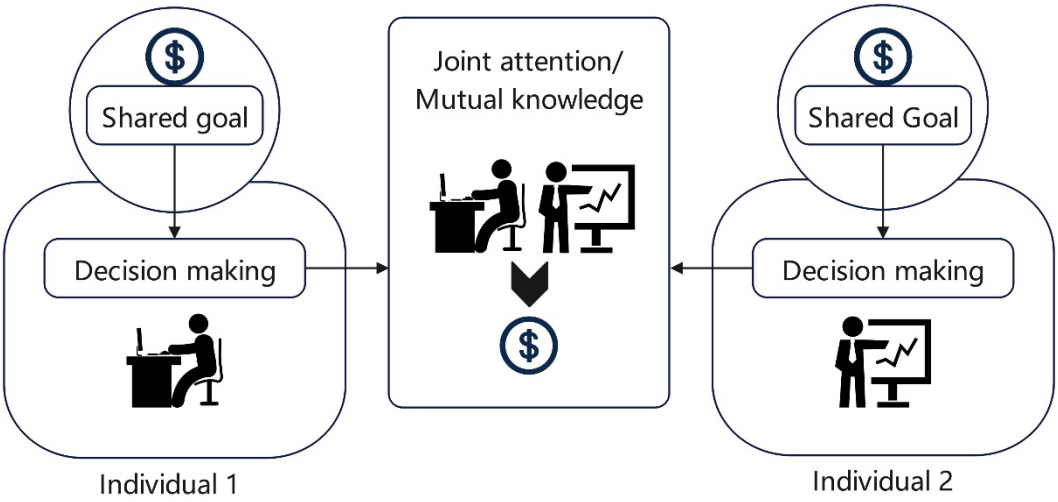

Figure 1. How individual conceptions form joint attention/mutual knowledge.

In our investigation, joint attention theory (Tomasello et al., 2005) sheds light on those questions. Tomasello and colleagues argue that when individuals work toward a shared goal, the act of information sharing facilitates the development of mutual knowledge by integrating diverse individual perspectives (see Figure 1). This suggests that individual algorithmic perspectives can converge and evolve into shared folk theories through information exchanges between actors. In addition, such knowledge sharing and creation have been identified in previous work in the field. Bishop (2019) introduced the concept of algorithmic gossip, describing it as collectively and socially constructed theories and strategies related to recommender algorithms, which are shared and applied to achieve financial stability and maintain visibility within algorithmically driven social media platforms, as exemplified in her study of beauty vloggers' efforts to strategically manage their algorithmic presence.

Extending on previous work, we adapted the notion of algorithmic gossiping, defined as the daily sharing of personal experience, tactics and projections towards algorithms among user groups. This work in progress aims to address two key questions with preliminary findings:

1. What algorithmic imaginaries do users choose to share or withhold during algorithmic gossiping?

2. How does algorithmic gossiping contribute to the transformation of algorithmic imaginaries into more systematic folk theories?

Method

This study selected Douyin, the Chinese version of TikTok and currently the largest short-video social media platform in China, as the research site. Drawing on Flanagan's (1954) principles, we integrated the critical incident technique (CIT) with diary methods to document key moments related to participants' algorithmic imaginaries, including their emergence, sharing and reception. While the application of such a combined method to the study of algorithmic imaginaries and folk theories is relatively novel, it has demonstrated efficacy in capturing dynamic and less discernible information behaviours, such as information encounters (Jiang et al., 2019).

Using a combination of convenience and snowball sampling methods, we recruited sixteen participants from Central China Normal University in Wuhan for the initial phase of the diary research conducted in November 2024. The participants were subsequently divided into three sub-groups to facilitate planned focus group interviews scheduled for December 2024. Table 1 provides an overview of the participants' demographic characteristics.

Group name	Number of participants	Number of males	Number of females	Age range	Average age	Occupations
Group 1	5	1	4	18-32	25.4	Students
Group 2	5	2	3	20-41	31.2	Full-time workers
Group 3	6	2	4	23-28	25.3	Freelance workers

Table 1: Characteristics of study participants.

Participants engaged in a seven-day diary study beginning on 25 November 2024, during which they completed two assigned tasks. From days 1 to 4, they selected a topic from a predefined list (see appendix for details) that was absent from their current Douyin homepage recommendations and actively sought to populate their homepage with videos related to that topic. From days 5 to 7, participants attempted to filter out content associated with the previously chosen topic. Throughout the study, participants recorded their experiences using diary entries submitted via a questionnaire designed based on insights from a small-scale pilot study involving six participants and a total of 82 valid diary entries were collected. The daily questionnaire consisted of two sections: self-assessment of task completion (Questions 1 and 2) and documentation of received and shared algorithmic imaginaries (Questions 3 and 4). On days 4 and 7, participants responded to two additional questions (Questions 5 and 6) designed to explore if they had developed a more structured algorithmic folk theory. The details of the questionnaire are also provided in the appendix.

A conventional content analysis approach (Hsieh and Shannon, 2005) was applied to the 82 diary entries to provide preliminary insights into the research questions. This was complemented by an inductive coding process, where codes were generated directly from the data rather than being predetermined, ensuring that the analysis was grounded in participants' experiences.

Participants were informed that their participation was entirely voluntary, that no compensation would be provided, and that they could withdraw from the study at any time without penalty. Pre-study briefings were conducted online using Tencent Meeting, during which participants were provided with detailed information about the research aims and procedures. All participants signed an informed consent form before the study commenced. To ensure confidentiality, diary entries and future interview recordings will be accessible only to research team members, with strict adherence to data anonymisation protocols.

Results

Non-sharing and sharing during gossiping (RQ1)

In those 82 diary entries, participants of the study mentioned 92 times (see Table 2) when algorithmic imaginaries emerged (55 times), or they acquired algorithmic imaginaries from other sources (47 times). We record three types of algorithmic imaginaries, namely, anecdotal occurrence manoeuvre strategy and structured theories in diary entries (see Table 2 for details). Non-sharing (N=54) is the most frequent reaction when participants acquire algorithmic imaginaries from others or form one of their own.

Type of algorithmic imaginary	Description	Frequency	Sharing or forwarding frequency	Source
Anecdotal occurrence	individual or small-scale experience that lacks empirical rigour.	44	19	Self
		3	0	Others
Manoeuvre strategy	A single deliberate effort to influence or adapt to algorithms to achieve specific outcomes, such as avoiding unwanted content or improving recommendations.	20	17	Self
		18	7	Others
Structured theory	Theories that combine various factors, such as engagement, content type and posting time, explain how content is ranked and recommended on a platform.	2	2	Self
		5	3	Others
Total		92	48	

Table 2: Types of algorithmic imaginaries and their shared frequency

Perceived effectiveness seems to be the most prevailing reason why participants decide to share or withhold algorithmic imaginaries, as they tend to share more structured information than simple speculations. This may result from their hope to maintain a reliable image in their social group:

> *I browsed through my Douyin app today and saw my e-shop purchase history. I assume that may be the reason why I cannot entirely remove those yoga videos from my homepage. I didn't share it with anyone because it may not be true. My mom likes to share everything, reliable or not. I do not quite like that.* (Group 1, Participant #3, Female, Day 6)

Participants demonstrated a tendency to share a higher proportion of their personally constructed algorithmic imaginaries compared to those acquired from external sources. This reluctance to share externally sourced imaginaries was primarily attributed to perceived conflicts between these imaginaries and participants' own experiences or preferred theories. Such behaviour suggests the presence of a self-strengthening bias in the development of users' folk theories, where individuals prioritise and reinforce their existing beliefs over conflicting information.

> *I didn't try or forward that strategy shared by a vlogger that I can use Douyin settings to manage the recommendation contents. My friend told me some time ago that won't work.* (Group 3, Participant #1, Male, Day 3)

Gossiping to articulate and confirm imaginaries while breaking biases (RQ2)

Of the sixteen participants, only six were able to give structured descriptions of how they think the recommendation/filtering algorithms work on day 4 or 7. Not surprisingly, five of the six participants were frequent sharers of algorithmic imaginaries. In their reasons for the folk theory, three of them mentioned how the sharing of algorithmic imaginaries helps to form their perceived folk theories.

Articulating their ideas is mentioned as the benefit of algorithmic gossiping towards folk theory formation. Participants mentioned how sharing their ideas required them to reflect on what they really believe and what they have already tried. Participants also become more confident about their theories after sharing and getting positive feedback. According to one participant:

> *I always knew the impact of my friends' likes on my recommendation page, but until my friend today brought up the topic of possible strategies to manage Douyin recommendations at lunch, it was like totally overlooked by me. I told that to my friend and now I am much more affirmative on that idea.* (Group 2, Participant #2, Female, Day 4)

Intriguingly, even when the shared algorithmic imaginaries were questioned or challenged by a close source, our participants still described such discussions or even debates very positively as they '*mended their wrongs*', which correlated with the idea of DeVito and colleagues (2018) that folk theories are not necessarily ironclad and can be updated with new, and potentially even contradictory, information.

Conclusion

This short paper only presents the initial findings of our ongoing investigation on algorithmic gossiping. However, these findings give a good demonstration of how algorithmic gossiping would drive, or at least contribute to the transformation from algorithmic imaginaries to folk theories, and the potential of a new theoretical framework to unify current concepts at both individual and meso levels. Following Bishop's (2019) recommendation to take gossip seriously, we argue that further looking into algorithmic gossiping could provide information researchers with unique opportunities both for theoretical implications and innovations in intervention study in the field of algorithmic-related information behaviour.

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Appendix. Provided theme list and the main questionnaire of the diary study

Provided theme list

Video games	News comments	English learning
Chinese history	Food and cooking	Animals or pets
Outdoor sports	Automobile	Reality shows

Note: This theme list is refined from the themes of the hottest video ranking on Douyin on 20 November 2024

Main questionnaire of the diary study

Section A **Task Completion status**
1. Based on your self-assessment, where do you think you are currently within the 0-100% range of task completion progress?
2. Please list the actions, strategies or methods you attempted today to complete the task and evaluate the effectiveness of these strategies.
Section B **Algorithmic imaginaries acquisition and sharing**
3. Please list the algorithmic imaginaries shared with you by others today and their sources. If this information is related to the activities listed in Question 2, please specify.
4. What algorithmic imaginaries did you share with others? What were your reasons for sharing this information?
Section C **Theory development (Only on Day 4 and Day 7)**
5. What factors do you think influence filtering/recommendation algorithms? Please rank them in descending order of importance and explain the reason.
6. If your perspective on any factors influencing filtering/recommendation algorithms has changed, please specify the factors and explain the reasons for the change.

Note: The original questionnaire was in Chinese, and this version is adapted from the original questionnaire. Questions on the demographic features of participants, example answers to main questions, introduction of research and terminology explanations were removed when adapting to this version.