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Information practices are environmental

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Abstract

Introduction. Existing research into information practices has largely neglected their fundamental environmental dimension. Despite earlier research into information environments, ecosystems, and environmental information, a sustained investigation into the reciprocal relationship between information practices and the physical, more-than-human environment – termed ‘environmentality’ – has been surprisingly sparse. This paper aims to address this gap, arguing for a broadened conceptualisation of information practices.

Method. This conceptual paper reviews earlier literature focusing on the influence of the environment on information practices, and conversely, how information practices shape the environment. Two empirical vignettes are used to illustrate key themes emerging from this review.

Results. The key argument of this paper is to expand the conceptualisation of information practices beyond traditional cognitive, sociomaterial, and sociocultural approaches. Specifically, the concept of *environmentality* highlights a mutual, unfolding co-construction between information practices and the environment. This includes an acknowledgement of the embodiedness, materialities, environmental underpinnings and impact inherent in these practices, as well as opening possibilities for further investigation into the reciprocal relationships between diverse more-than-human actors, including robots and animals, engaged in these practices.

Conclusion. This paper concludes that a more comprehensive understanding of information practices necessitates acknowledging that information practices *are* environmental. By recognising information practices as fundamentally embedded within a more-than-human habitat, and engaging with their reciprocal influence, it is possible to move beyond fragmented conceptualisations and better account for their intricate complexity. Furthermore, this perspective opens avenues for critical inquiry into the embeddedness, accountability, and agency of these practices within a wider ecological framework.

Introduction

As the original name of the ISIC conference ‘Information Seeking in Context’ suggests, one of the key questions of information behaviour research has been related to its whereabouts and what exactly constitutes the locus and context for diverse information activities. Different branches of information behaviour research have positioned it as focally cognitive and individual, others as social, cultural, material, or practice-focused undertaking. Different spatial and ecological metaphors including landscape (Lloyd, 2010), world (Chatman, 1992), grounds (Fisher et al., 2004) and ecosystem (Cortada, 2016; Introne et al., 2024) have been popular (Savolainen, 2021) even if other types of conceptualisations for what essentially describes the context of information practices have been proposed (Dervin, 1997; Huvila, 2019b; Tabak, 2014; Talja et al., 1999). Perhaps somewhat unexpectedly, one of the apparent perspectives to situate information behaviour as an environmental – as per *natural* environment – endeavour has received surprisingly sporadic attention in the literature (Norris & Suomela, 2017). Surely there is a considerable corpus of research focusing on information environments (Taylor, 1991) and ecosystems (Norris & Suomela, 2017) that captures some aspects of the natural environment and in a more specific sense to the biological underpinnings of information practices (e.g., Bates, 2005; Spink, 2010) and their relations to environment, but, as a whole, the environmentality of how humans and non-humans deal with information has not been discussed extensively. The significance of this research gap and the theoretical and practical opportunities stemming from a more comprehensive understanding of information practices as environmental is obvious if we try to redefine information practices as a concept completely disconnected from the natural environment. As you probably see, such a concept does not make much sense.

The aim of this paper is to interrogate into the environmentality of information behaviour by tracing out in what terms information practices are environmental in addition to how they are also, to various extent, productively characterisable as cognitive, sociomaterial, sociocultural, or for example, spatial. This exploration selectively reviews earlier literature focusing on outlining how environment influences information practices and vice versa, and how they are contextual to environment. Two empirical vignettes are used to exemplify the themes emerging from the review. As a terminological note, this paper refers to information behaviour when discussing the research field that investigates diverse human and non-human engagements with information (see e.g., Given et al., 2023; Huvila & Gorichanaz, 2025), and information practices when referring to such engagements. Environment is understood in this text as ‘physical surroundings or conditions in which a person or other organism lives, develops, etc., or in which a thing exists’ (Oxford English Dictionary, 2025) with a focus on broader material (in neo-material sense, see e.g., Dolphijn and van der Tuin, 2012), natural, or more-than-human (Varutti, 2025), rather than an unspecific or merely human backdrop within which practices are enacted.

Information and environment

Even if the engagements of information behaviour research with its own environmentality might have been limited, spatial and ecological language has been popular in describing information practices, their localities and contextualities (Savolainen, 2021). Understandings of space and place are also central to the information experience of those engaged in information practices (Cox & Fulton, 2022). In parallel, the interest in environment-related information practices has been growing steadily in information behaviour research (e.g., Chowdhury, 2014; Gilbert et al., 2021; Haider, 2016).

Many of the references to environment in information behaviour research use the word in the sense of referring to the surroundings within which actors act and information practices take place. Typically, environmental concepts describe what in broad terms can also be described as context and/or situation of information practices (Given et al., 2023, p. 75). Incidentally, the use of these related notions has also been criticised for lack of consistency (e.g., Courtright, 2007; de

Fremery & Buckland, 2022). Taylor's notion of information use environments (Taylor, 1991) and, for example, the notion of environmental scanning (Choo & Auster, 1993), both imply that information practices unfold in an 'environment' that is their setting and at the same time a key source of information and a factor that influences how information is enacted. Later studies have underlined, for example, the sensory aspects (Ocepek, 2018) and materiality (Veinot & Pierce, 2019) of information environments. The references to ecological or ecosystemic nature of information practices and infrastructures (Huvila, 2009; Nardi & O'Day, 1999; Steinerova, 2012; Williamson, 1998) emphasise to varying degrees the co-evolution and interplay of actors and (their) environment.

Much of environmental and ecological discourse in information behaviour research has tended to focus on social human environment even when acknowledging the presence of physical or material environment. There has been little exchange between biology and environmental science and information practices research that would shed light on the biological underpinnings of information activities (Norris & Suomela, 2017). Some theorists like Bates (2005), Spink (2010), Budd (2024) and Pirolli (2007) make this connection but generally it has remained undertheorised. The environment-related theoretical discourse is predominantly metaphorical applying, for example, to the use of Gibson's popular notions of affordances and constraints (Gibson, 1977) that have gained leverage in information research for explaining the use and non-use of information related artefacts and infrastructures (e.g., Huvila, 2009, 2019a; A. J. Nelson & Irwin, 2014; S. B. Nelson et al., 2017; Pilerot & Limberg, 2011; Zhao et al., 2021). This is also apparent in many of the references to Bateson's definition of 'elementary unit' or 'bit of information' as 'a difference which makes a difference' (Bateson, 1972, p. 315, 453) that information behaviour research seldom expands on its roots in cybernetics and ecological anthropology beyond stating that information is a stimulus that is supposed to make sense to a human actor (as formulated e.g. in Given et al., 2023). More recently, multi-species and more-than-human perspectives to information and document practices have started to broaden the scope of who acts with information and how, challenging the idea of (non-human) environment as a passive backdrop of (human) information practices (Kosciejew, 2020; Solhjoo, 2025).

A parallel line of research has engaged with environment-related information and information practices. Investigations into diverse engagements with environment-related information from spatial, geographical, and climate data to information on sustainable everyday practices, research on specific environment-related information practices, and studies of the environmental impact of all informational engagements all evince of how information practices are in diverse ways environmental. Information about environment is crucial for many activities. Geographical information plays a central role in many of the contemporary information services that are increasingly location-based (Huvila et al., 2025). Many researchers and professionals, including environmental scientists (Murillo, 2019), urban planners (Suorsa et al., 2024), disaster management specialists (Lekic-Savatic et al., 2025; Lopatovska & Smiley, 2014), and land developers (Huvila, 2017) work continuously with spatial information similarly to environmental activists (Savolainen, 2007) and hobbyists like bird watchers (e.g., Chaitov, 2023; Mansourian, 2021) and hikers (e.g., Innocenti et al., 2022). People seek and work with information on environment that impacts their life choices (e.g., Graminius & Haider, 2018) even if, as Haider (2011) shows, being informed and knowing of environmental issues does not necessarily have an obvious link with people's everyday life practices. The environmental impact of especially digital information practices is increasingly underlined as a major societal challenge even if information science has been criticised for being slow to engage with sustainability in its research agenda (Nolin, 2024). The information field in general and information behaviour research in particular has plentiful opportunities to engage in understanding present practices and envisioning future practices of informing and getting informed about sustainability-related conundrums (Graminius, 2022; Nolin, 2024; Spink, 1999) and

developing sustainable information systems, technologies (Agha & Akhtar, 1992) and practices (Nathan, 2012).

The literature in neighbouring disciplines provides additional examples of how information and environment converge, however, at the same time, evincing what seems a much greater commitment to explicating the mechanisms of their entanglements. Science and technology studies literature contains plentiful examples of how physical and natural environment inform a parallel with comparable work in information science (e.g., Olsson, 2016). Keller (1983) describes how Nobel Prize winner Barbara McClintock developed intimate knowledge on biological specimens that helped her to develop new genetic theories. Her studies of genetics also point to how much information is generated indirectly, not by manipulating entities themselves but their environment (Keller, 1996). Research on (information) practices in field sciences (e.g., Kohler, 2019; Kuklick & Kohler, 1996; O'Reilly, 2016) evince the same. Information is sociomaterial, but it is also environmental in how the environment 'pushes back', much like how Pickering (1995) describes the influence of material agency on scientific knowledge production.

Theorising environmentality

A key takeaway from the earlier literature is that there are apparent tendencies to view environment either in broad and unspecific, or in varyingly narrow terms both in theoretical accounts and empirical investigations. From a processual theoretical perspective, ecological theories' tendency to think in terms of firm boundaries is a fundamental problem (e.g., Abbott, 2016) with an elemental complication being the assumption of their *a priori* fixity. Boundaries are necessary for making sense of the world (Zerubavel, 1991), but when essentialised, they easily turn into a problem. Similarly, broad and unspecific references to environment can be criticised for failing to be helpful in making sense of its influence and role in informational undertakings. It is necessary to be attentive to both of these apparent risks and keep the proposed ecological-environmental theorising in its customary half-way position between case-based particularism and formal causalism (e.g., Abbott, 2016). Therefore, I am inclined to direct attention to the environmentality in information practices as their key infrastructural underpinning, however, without focusing a particular set of aspects of environment (e.g., the impact of information practices on climate or how weather affects information practices) as determinants but rather on the different ways the environment acts out when the practices are enacted (e.g., that environment influences practices and what is considered as information and vice versa) in different situations.

Such an approach to the environmentality of information practices comes close to how Pritchard (2011) uses the term *envirotechnical* to refer to 'the historically and culturally specific configurations of intertwined *ecological* and *technological* systems, which may be composed of artifacts, practices, people, institutions, and ecologies' (p. 19). She emphasises that the notion refers to environment beyond 'natural' non-human nature and to techniques beyond artefact-centred understanding of technologies incorporating technical knowledge, practices, and objects. She continues further by proposing that technologies are natural i.e. 'technological artifacts and systems are thoroughly implicated in/by/with ecologies' (p. 22) and nature is technological in how 'humans can, have, and do appropriate nonhuman nature' (p. 22). In this respect, a turn to environmentality should not be considered as a step away from humans but rather as a way to acknowledge that humans – though not only humans – wield what Hansen and Schulze (2025) describe using Bennett's term thing-power, the 'strange ability of ordinary, man-made items to exceed their status as objects and to manifest traces of independence or aliveness' (Bennett, 2010, p. xvi) through their agency in and to the environment.

I agree with Pritchard's (2011) basic proposition of rejecting the nature/technology dichotomy and her challenging of 'the argument that technology is what nature is not' (p. 22). In contrast to Pritchard's human-centric view, however, I argue that humans are not the only creatures to appropriate nature. Beavers are an obvious example but there are many other, more subtle ones.

In a fundamental sense, I see positing that information practices are environmental as a more-than-human argument that can help to engage with their environmental aspects in a manner that traverses the dichotomies of how they are often either related to or underpinned by their environmentality rather than being the both at the same time. While the present paper focuses on the reciprocal environmentality of human information practices because I am inclined to consider that there is enough ground to cover for a short paper, more importantly, the exploration into environmentality also opens an inquiry into what extent more-than-human entities engage in activities that are fruitful to conceptualise as information practices (cf. Ferraris, 2014; Solhjoo, 2025). Like Soper (1996) emphasised the importance of untangling oppositions relating to contemporary theories of 'nature' for being able to distinguish human nature and human impact on nature, a similar move is needed to approach information and information practices both as environmental and relating to environment. Following Pritchard's (2011) framing of techniques as being cultural in more-than-human sense, also information and information practices should not be treated as what nature is not, but rather, if not artefacts, as entities that 'are thoroughly implicated in/by/with ecologies' (p. 22) where environment becomes an actant by its own right.

A parallel benefit of inquiring into the environmentality of information practices is the opportunity to draw from environmental theorising to explicate their changing (eco)systemic entanglements rather than contenting oneself to describe their present relations to particular environment-related contexts, situations, things, species, or forms of matter. Similarly to how Bennett (2010) describes matter, the most pertinent aspect of environment is perhaps not that it merely is there but rather, that it is vibrant – it is alive and animate in a very literal sense. From this outset, my theoretical standpoint to environmentality of information practices in this paper can be summarised as that of environment being 'thoroughly implicated in/by/with' (Pritchard, 2011, p. 22) the ecology of human and more-than-human information practices and their infrastructures (cf. Huvila, 2009, 2018).

Vignettes

Instead of turning to actual empirical cases, I am using the following two vignettes to outline the different ways that information practices are environmental. The first one concerns archaeological information practices that are epitomised by multi-modality (Huvila, 2018; Olsson, 2016) and contemporary everyday life digital information practices whose environmental impacts and dependencies have only recently begun to be seriously acknowledged (e.g., Nathan, 2012; Nolin, 2024).

Archaeological information practices

Archaeologists seeking information by feeling, listening, and even tasting physical objects and the stratum has turned to something of an exemplification of how information practices can be embodied and associated with physical objects (Olsson, 2016). Archaeology is also, however, to a significant extent, environmental and driven by factors beyond the classical trope of an archaeologist carefully unearthing an artefact. Archaeological work and its tools are enmeshed in environment. This applies to natural and synthetic materials used to produce notebooks, measurement devices and trowels, their availability and durability, but also to how perhaps the most critical problem in digitalising archaeological fieldwork in remote areas has been the lack of electricity and connectivity, and the price and availability of sturdy enough devices suited to fieldwork (Huvila, 2019a).

As per evidence, beyond individual objects, archaeology is interested in their broader distribution in the landscape, and larger structures and features in the stratum, including remains of buildings and roads. Contemporary archaeological inquiry relies heavily on analysis of geophysical, chemical, biological and environmental data and knowledge of animal and plant remains (Pollard et al., 2023). Knowing the environment is critical for an archaeologist to also understand how to piece together

the evidence, to understand when a certain feature is human-made and when it is a result of natural processes, or to know when coarser digging methods are acceptable, and when it is necessary to proceed very cautiously.

Historical and contemporary geological and biological processes are also influencing the preservation of physical evidence from the past and whether an archaeologist notices individual, often tiny pieces of potential evidence in field (Perreault, 2020). When it is raining, too dark, or when direct sunlight dries the stratum, flattening its colours, it is easy to miss details. When soil is too hard or too moist it is difficult to dig (Huvila, 2019a). The archaeological physical record is fundamentally a result of how the different facets of environment work in concert, with, together, and against each other.

Digital information practices

Even if a prominent trope of the digital way of life is a virtual reality disconnected from the physical real life, recent global and local crises are making it increasingly evident how the digital cannot escape its environmentality. Every internet search, social media post, and especially the use of artificial intelligence, has a significant environmental impact (Nolin, 2024). Digital information management can save paper and videoconferencing can reduce the environmental impact of travelling but both have an environmental impact that is not negligible. If non-digital tools and commodities are manufactured of physical materials, the amount and complexity of resources required to produce digital devices and the complex infrastructure of digital information practices is massive. Data centres and location-based media are dependent on the functioning of a complex geographically distributed infrastructure of earth mineral and energy sources and base stations that is clearly not as robust as we may think. Electricity supply and telecommunication cables are vulnerable to both human and environmental interference, including storms, floods and drought. Even if satellites make connectivity seemingly ubiquitous, they depend on the environment in orbits that are increasingly congested, at a time when it is increasingly difficult to disconnect and pursue a life without using any digital technologies.

While helping to overcome the constraints of the physical environment, the expansion of digital information practices has started revealing its downsides, as well as highlighting the advantages of non-digital interactions. Remote work can be an opportunity but also an impediment to, for example, serendipity, information exchange, individual and collective trust and well-being (Paavola et al., 2025). Digital information practices do not make the physical environment disappear, either. Mobile workers do not necessarily need to commute to a specific office but they still need a physical place to work (Jarrahi & Thomson, 2017). Even if new digital screens are much better than older ones, they are still hard to use in direct sunlight.

In the end, digital information practices are not only about distancing from the environment (Cox & Fulton, 2022). Diverse location-based services have made many information practices increasingly environmental in how it is possible to seek information relative to the specific place and, for example, local weather. Environmental practices have also become informational, for example, in how mobile applications help to crowdsource information on the state of the environment and help to recognise plants and birds, pointing to how the contemporary digital informational way of life is as environmental as ever.

Discussion

The two vignettes direct our attention to a handful of modalities of how information practices are environmental and in Pritchard's sense, envirotechnical in how they condition and are conditioned by environment and a plethora of environment-related practices, objects, and knowledge. In addition to making the broad connection between information practices and environment, the vignettes also help to discern specific modalities for how environmentality is enacted in information practices.

First, *information practices are conditioned by the environment within which they are enacted*. This environmental impact can be conceptualised in terms of general and specific footprints of individual artefacts, natural objects, or particular assemblages of environmental processes and matter. However, as the two vignettes evince, information practices are not conditioned by one of them alone but rather by the very specific environment as a whole within which they unfold. Understanding the information practice of a field archaeologist requires a thorough understanding of the particularities of the environment of a specific excavation site and its critical aspects to interact with information. Similarly, a meticulous account of digital information practices could be suggested to require a much more careful rendition of their digital and non-digital environment.

Second, *information practices condition the environment both directly and indirectly*. While information science seems to have a tendency to conceptualise information as a medium or means to an end, the vignettes show how information practices have very specific implicit and explicit impacts on the environment. Designating an excavated feature in the archaeological stratum as archaeological has multiple consequences to how it is treated in the future as a material feature and a source of information. Similarly, digital information practices designate objects, turn environments navigable or non-navigable in addition to how the development of digital technologies have changed geography. We now have nearly ubiquitous means of interacting, sharing information, and collaborating remotely, though in some cases, physical presence is still required or preferred. Interplay between people and environment has also changed. The technologies themselves mean that certain places in the environment have turned particularly valuable due to rare earth mineral deposits required for producing digital equipment and sites that are particularly suitable for digital infrastructures like telecommunication cables or data centres.

Following Pritchard (2011), the reciprocal conditioning of and by environment can be conceptualised in terms of techniques enacted by human and non-human entities being part of the environment that incorporate knowledge, practices and objects brought into play in diverse situations. Such techniques might be best understood, as Pritchard suggests, in the sense of the word *technique* in French, that in her view is less focused on technological objects than the English one. Another concept that can help to understand the use of technique is the notion of cultural technique (Ger. *kulturtechnik*) discussed in German media theory (Siebert, 2015). Similarly to Winthrop-Young (2014) who emphasises that in the contemporary understanding, culture does not necessarily need to focus on humans or 'high culture' only; in environmental or envirotechnical sense cultural techniques are naturecultural (as for Haraway, 2003) i.e. inclusive of the environment in its entirety.

Third, *information practices are environmental both directly and indirectly*. Direct forms of environmentality in, for example, how archaeologists get informed by hands-on interactions with the archaeological stratum, are often easier to discern than indirect ones even if information science has a pre-history of focusing on particular information artefacts and being a less specific or less formal means of informing and getting informed. Indirect forms, like the impact of geography on mobile coverage, how certain types of urban spaces invite people to talk and spend time with each other, and how origins of some archaeological investigation methods in archaeologically rich areas mean that they are ill-suited for research on areas where traces of past occupation are more subtle and different.

Fourth, *environmentality of information practices is often invisible*. Indirect infrastructural forms of environmentality can be especially difficult to discern. They are taken for granted without reflecting upon them, but even direct forms of environmentality might remain obscured by the fact they are too self-evident. It is common knowledge that notebooks and archaeological documentation forms are printed on paper that are produced from wood, or, that the most of the plastic in circulation and used in manufacturing diverse digital devices has its origins in fossil oil. Darkness or bad weather obscure what we can see and report, but even largely unremarkable

weather conditions like thin overcast, too bright sunlight, or haze affect what we can see. If taken literally, the proverb that it is difficult to see forest for the trees reminds us how environment can influence how we direct attention to certain things while ignoring others.

Fifth, *imaginaries of the environmentalities of information practices can differ from how the environmentalities are enacted in practice*. The portrayals and discourse on the environmentalities of information practices can be selective, but as Pritchard (2011) reminds us, entities like nations that are – inspired by Anderson (1991) – frequently argued to be imagined, such things nonetheless take place in the environment with environmental underpinnings and consequences. This applies obviously to information practices as well. In theory, archaeological fieldwork is a systematic and meticulous undertaking of documenting the entire stratum under investigation – which it is – even if the inquiry is at the same time limited by many practical and environmental constraints from hard or too moist soil to bad weather and remote location of the site. Particular information practices like videoconferencing are also varyingly ascribed as diametrically opposed environmental impacts and they are portrayed as either green or environmentally questionable. With digital information practices, one of the key arguments for information digitisation has been the possibility to reduce environmental impact of travelling and paper handling. All but recently, this discourse has omitted the environmental footprint of manufacturing, running, and disposing digital devices and their critical infrastructures.

Sixth and finally, *environment is informational and information itself involved in information practices is environmental in diverse and to the practices in specific ways*. The vignettes provide plentiful examples of the how diverse things appropriated as information both in archaeological fieldwork and everyday digital practices are relative to the environment in multiple ways. As Araújo (2024) puts it, ‘information is imbricated in a context; it is in the order of a contingency... it produces effects, it is a way of acting in the world’ (p. 18). In an environmental sense, acting with information is not only a human condition (Arendt, 2018; Huvila, 2008a) but a condition of the environment itself. Even if manipulated by humans, archaeological finds are often typical to the environment where they are found. Local production of artefacts and transportation of goods farther off both depend on environment. While digitalisation has overcome physical and geographical boundaries, even digital information can be in diverse ways environmental, either being sourced from the local or distant environment, conditioned by it, or by having an impact on environment, for example, to what roads and travelling options we choose, and what choices we make as consumers of diverse goods and services.

In addition to how a closer look at the environmentality of information practices provides means to articulate their reciprocal impact, in a conceptual sense, a closer consideration of what environmentality implies in the context of information behaviour research can help to open some of the persisting conceptual black boxes in the field. It is common to note in passing that information practices are, for example, social, cultural, material, embodied, affective, more-than-human, or cognitive, and having an environmental impact, often without necessarily specifying the corresponding concepts and, perhaps even more often, their mutual differences and linkages. To be fair, corresponding conceptual unclarity and tendencies to bundle together such elementary categories as social and cultural has been observed and criticised throughout social sciences (e.g., Lahire, 2023; Latour, 2005). A parallel, equally problematic approach typical to many information behaviour models is to propose an assumably complete list of factors that together explain, for example, the social or environmental impacts and underpinnings of information practices. Environmentality of information practices implies that environment is no more merely a context in a generalising container-like sense or a factor reducible to a handful of facets. Context, whenever using the word makes sense anymore, to refer to diverse particulars underpinning information practices, and situation – as a particular set of circumstances with specific kinds of internal-external dynamics arising in a particular moment of time – are not surrounding or

containing information practices but rather patterns, meshworks or centred sets (Huvila, 2019b) of everything that not only connects (as for Bateson, 1978) but participates in a practice. While I am not opposing the use of the terms environment or context to describe what should be obvious after 30 years of ISIC and related research, that information practices are not happening in a vacuum, I believe that it is the time to seriously shift focus on explicating and analysing the constituents, including environmental ones, of such centred sets, however, rejecting the idea that the context we describe would be nothing more than a result of an analytical choice to focus on factors that appear as particularly interesting and pertinent to reaching specific analytical or practical ends in a given situation.

The environmentality of information practices means also that rather than being merely ancillary to other practices with direct environmental impact, the information practices themselves have diverse impacts. While it still can be useful to make analytical distinctions between primary and secondary practices framing information work as a form of sub-work (Huvila, 2008b cf. computing work for Gasser 1986) to other activities, such analytical hierarchies or prioritisations of particular perspectives or activities should not be assumed to imply that they would be subordinate undertakings when it comes to their complexity or environmental embeddings.

A key risk in inquiring into the environmentality of information practices is to meander towards some form of environmental determinism and claiming that the environment should be marked out as a new particularity of how information practices should be understood. Rather than de-emphasising other dimensions of and perspectives to information practices, my purpose for inquiring into the environmentality of information practices is to contribute to embracing their complexity. They are more-than-human, and, perhaps even more succinctly, more-than-anything-particular – at the same time cognitive, social, cultural, material, multi-species, environmental and so forth. Paying particular analytical attention to their environmental aspects helps to pinpoint certain particularities about their more-than-human nature that might otherwise remain undisclosed if the focus of inquiry would attempt to cover all-more-than-human at once. I am inclined to posit that inquiring into the environmentality helps to disclose a consequential aspect of information practices that easily remains invisible as a part of their context when they are, in passing, acknowledged to be contextual. Pritchard (2011) emphasises the risks of such generalisations in her critique of how non-reflective use of the notion of hybridity risks to flatten or even conceal significant differences among hybrids (p. 246). Similarly to how all information practices are sociocultural, sociomaterial and sociotechnical, more-than-human, and, as discussed in this paper, environmental, each practice is all of them in very particular ways. A key question is thus how a specific practice is environmental and how different, even very similar practices differ from each other in their environmentality.

Conclusions

My key argument in this paper is that information practices *are* environmental and our understanding of them broadens if they are approached as environmental in an envirotechnical sense. Rather than a container or scene like a backdrop of how information takes place, environmentality of information practices mean that they are unfolding as a part of, rather than within, their more-than-human habitat. A parallel benefit of approaching information practices through their environmentality, it can help to assemble a broad range of what is typically seen as their contextualities in relation to each other, including their embodiedness, materiality, environmental impact, and more-than-human character to a whole that facilitates sensitising vibrant change and the mutual, very tangible co-construction of information practices and physical environment. Acknowledging the environmentality of information practices implies that (physical) environment is not a container of but a participant in information practices, and context is a set of factors that is analytically and functionally central to them in a situation, a moment in time-space, when they are studied or enacted rather than static or given containers or scenes for

informational undertakings. It also opens up the question of whose practices the information practices are and to what extent it is fruitful to conceptualise the information-related interactions enacted by, for instance, (some species of) animals, robots, and artificial intelligence as information practices. However, even if environmentality is a substantial aspect of information practices rather than a mere analytical perspective, I am not suggesting that it should replace other perspectives. Rather, as with other aspects of their contextualities, acknowledging and inquiring into the environmentality of information practices is complementary to approaching them as social, cultural, cognitive, and more-than-human undertakings – of which none is comprehensive enough to address their intricate complexity.

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