FIGURING DIGITAL CASCADES: ISSUE FRAMING IN DIGITAL MEDIA ECOSYSTEMS

Nathalie Casemajor* and Sylvain Rocheleau**

ABSTRACT

On November 17, 2015, the newly elected Canadian government led by Justin Trudeau made an announcement that became a turning point in the heated debate around the plan to build the Memorial to the Victims of Communism in Ottawa. The government's decision to scale the project down was massively republished and generated a heavy stream of 2,055 publications and interactions. The virality of such phenomena is sometimes described in the literature as an "information cascade" characterized by a complex and expanding series of media content that is republished, shared, and commented upon in digital public spheres, reaching a growing number of people. Our research aim is twofold. From a theoretical point of view, we combine Entman's cascade model with the perspective of platform studies. From an empirical point of view, we put this model to the test through a case study of the cascading data flows that emerged during this public debate. We found three key factors that constituted and shaped this information cascade: 1) the economic structure of the Canadian media market, and especially the concentration of media ownership, which is notably high in the Canadian media ecosystem; 2) data-exchange mechanisms and algorithmic filtering that drive the process of news aggregation, quickly spreading media content without being a significant source of user engagement; 3) grassroots engagement in diasporic media, which activates micro public spheres around nested interests and political standpoints regarding the public issue.

Keywords: Media ecosystems; information cascade; issue framing; digital public sphere; Canadian media

* Institut national de la recherche scientifique, Canada.
** Université de Sherbrooke, Canada.

1 INTRODUCTION

On November 17, 2015, freshly elected MP Mélanie Joly issued a press release as the new minister of Canadian Heritage. This announcement was a turning point in the heated debate that had been mounting for years around the Memorial to the Victims of Communism, a controversial project planned to be built in the federal capital by the previous Conservative government. The press release announced a reform of the project and was massively republished and commented upon. It engendered a considerable stream of 2,055 publications and interactions over the next five days, spanning news media, aggregators, community media, blogs, and social media.

The virality of such phenomena is sometimes described in the literature as an *information cascade* (Cheng 2014) that appears online and flows quickly and massively through the Web. Digital cascades are characterized by a complex and expanding series of replications of a single news item, which is republished, shared, and commented upon in digital public spheres, reaching a growing number of people. In this article, we are interested in the dissemination of news online as a point of entry to studying the relationship between democratic processes and the diffusion of information in digital public spheres.

We propose to examine the cascade as a figure (as both a metaphor and an analytical tool) for analysis of the cross-platform trajectory of public debates on the Web. What factors shaped the information cascade triggered by the government's announcement regarding the Memorial to the Victims of Communism? How can a cascade analysis be used to grasp the process of issue framing in the context of digital information ecosystems? And, more broadly, what are the opportunities and the limitations of the cascade figure as a heuristic tool? Focusing on the study of data flows, we rely here on the double perspective of media framing and platform studies.

Using a media-monitoring service, we plotted the general shape of the cascade and its various branches spanning different platforms and public spheres. We then selected the three most significant branches of the cascade – mainstream media (newspaper networks), news aggregators, and diasporic media – and conducted in-depth analysis of their dissemination dynamics. Our study follows three threads of analysis: 1) investigation of the network of actors engaged in the public issue under debate (governmental agencies, journalists, grassroots movements, and citizens); 2) a study of the Web platform ecology that shapes, acts on, and is acted on by the cascade (how digital protocols and algorithms connect websites and streamline content); 3) insight on Canadian online public spheres as political landscape and media ecosystem. Taken together, these threads map out the different issue framings activated in the spread of the cascade, the economic structure that shapes media ecosystems, and the presence of data plugs and filter algorithms that play a role in the cascade's formation.

2   FIGURING CASCADES IN ONLINE DATA FLOWS

2.1   A Double Perspective: The Framing Approach and Platform Studies

Digital spaces have been established as privileged sites for the dissemination of media information and public debate. These digital public spheres are increasingly characterized by globalization, polarization, fragmentation, and commercialization (Papacharissi 2002; Brants and van Praag 2017). Today, the propagation of information online raises numerous issues, such as fake news and disinformation, the formation of public opinion, and citizen mobilization.

In the field of media studies, several frameworks have been developed to analyze the spread of information online. In this article, we focus on approaches that tackle the trajectories of information propagation in order to study the spatio-temporal dynamics of information in digital public spheres. We argue that studying information trajectories makes it possible to grasp digital public spheres as a socio-material assemblage not only by tracing a configuration of social relations, as already shown by mass media studies (Katz et al. 1963; Jenkins, Ford and Green 2018) and by the literature on the diffusion of innovation (Rogers 1962; Ma et al. 2014) for analog media, but also by revealing the economic structure of national and transnational media ownership and the material arrangements of the Web.

Therefore, we draw on two main approaches that put forth the analysis of information trajectories in the context of digital public spheres: the "cascading" distribution of media texts (Entman 2003; 2004) and the perspective of media platform studies (Smyrnaios and Rebillard 2019). Although they originate in different theoretical backgrounds and use different methods, these theoretical frameworks offer complementary points of view on our subject: in the former, a model was developed to analyze paths in cascades of information; the latter spearheaded comprehension of the material life of data as it travels through different digital spaces. By articulating these two approaches in our case analysis, we are able to examine the various factors that shape digital content trajectories.

In communication studies, the framing paradigm investigates how media content is produced through the selection of certain aspects of a perceived reality, and how the media dissemination of these frames influences the understanding of an issue (Pan and Kosicki 1993). Entman engaged with this paradigm to explain news framing as a series of collective trajectories that he characterized using the metaphor of the cascade. In his model of a "cascading activation network" of frames (2003, 2004), he describes a flow process occurring within a network of actors in which frames are produced and then propagated. This model postulates a hierarchy of levels that successively activate the transfer of media content, creating top-down circulation trajectories. It portrays a pecking order of different social spaces, each characterized by its own media practices and dynamics; at the top is the governmental administration, then, in descending order, non-administration elites (members of parliament, lobbyists), institutionalized mainstream media, non-

institutionalized news production sites, and members of the public. The model predicates that "although feedback loops exist[s] and each level play[s] some role in diffusing interpretive schemas, in this relatively simple hierarchy, ideas flowed mostly from top to bottom" (Entman and Usher 2018, p. 300). Although Entman's initial model was criticized as reductive in the sense that it is linear, centred on the United States, and does not consider the digital transformation of the media ecosystem (Çeçen 2015), it is still useful for grasping some core structures in the Canadian political and economic media ecosystems, such as horizontal integration, and investigating their impact on the paths for information production and dissemination.

The framing approach gives insight into the sociocognitive and economic logics that govern the production and reception of media texts, but it falls short when we seek to explore other crucial processes at play in the formation of digital cascades. Indeed, the distribution and propagation of media content online is also shaped by the techno-material logics of information networks – that is, the possibilities and constraints of system connectivity and system regulation. In this paper, we enhance the framing approach with an exploration of how power in communication systems also lies in "the emergent non-linear socio-technical systems that channel, block and connect the flows" (Lash 2010, pp. 145–46).

Entman's initial cascade model also failed to take fully into account part of the material-technical dimension of digital networks. To incorporate this dimension into our analysis, we turn to the perspective of platform studies, which has largely contributed to foregrounding the socio-materiality of technical networks in the field of media analysis (Casemajor 2015). This framework investigates how the Web as a socio-material assemblage is shaped not only by physical and software architectures but also by social practices and political and economic interests (Bogost and Montfort 2009). More specifically, platform studies (Gillepsie 2010; Helmond 2015) emphasize how the programmable nature of Web platforms shapes the trajectories of online information by allowing or constraining the circulation of data flows. The literature in this field highlights the role of APIs (application programming interfaces) as "specifications and protocols that determine relations between software and software" (Cramer and Fuller 2008, p. 149). It also underlines the role of social buttons, plugins, and filtering algorithms (Gerlitz and Helmond 2013; Comunello et al. 2016), which operate as data-exchange mechanisms shaping the interconnection between websites and the pattern of information circulation. In the case of social media, these architectural features and technological affordances help to forge what Baym and boyd (2012) identified as a new type of "mediated publicness," in which multi-layered audiences, networked publics (boyd, 2010), or hashtag publics (Bruns et al. 2016) engage in information dissemination. According to van Dijck and Poel (2013), the principles of social media logic – identified as programmability, popularity, connectivity, and datafication – become "increasingly entangled with mass media logic" (2013, p. 2), but the complex connections among different types of platforms are hard to map. They argue that this endeavour

requires a combination of historical-cultural, socio-technical, and techno-commercial perspectives (van Dijck and Poell 2015).

In a recent addition to his cascading model, Entman considered the transformation of the media ecosystem in the context of digital public spheres: with his co-author, Usher, he suggested that an analysis of "new digital 'pump-valves' in the flow of political information and frames" be included (2018, p. 299). The new parameters include social media platforms, aggregators (and other curated portals), algorithmic filters (that select and display content based on set parameters), and bots (automated programs that publish content online). These constitutive features of digital platforms disrupt the news ecosystem that he described in his first version of the cascade model, unsettle the boundaries between institutionalized and non-institutionalized media, and complexify the paths followed by information. However, this revision of the model remains a largely theoretical contribution. There is still a strong need for empirical work to illuminate how digital pump valves shape cascading data flows in practice, even though such work may prove methodologically challenging. Although existing scholarly research on information ecosystems (Sonnac 2013; Svetlana 2019), news virality (Al-Rawi 2019; Heimbach et al. 2015), and platform influence (Pavlovic 2017; Gruzd, 2017) has produced insights into the transformation of media ecosystems, it remains necessary to investigate how the cascade framework can be applied empirically in digital settings.

Our contribution in this article is twofold: from a theoretical point of view, we combine Entman's cascade model with the perspective of platform studies (Plantin et al. 2018); from an empirical point of view, we put this model to the test through a case study of cascading data flows that emerged during the public debate around the Memorial to the Victims of Communism. We argue that following the patterns of online cascading data flows sheds light not only on the socio-cognitive framing of media texts but also on the economic structure of media property and the techno-material features of the Web.

2.2   The Memorial to the Victims of Communism: Case Presentation

The empirical contribution of this article deals with digital political communication and the circulation of news media content online. It is based on an inquiry into the public debate surrounding the Memorial to the Victims of Communism (Ottawa, Canada). The monument was originally planned to be inaugurated in 2015, but construction was delayed due to a heated debate (Casemajor, 2019). The project for the memorial was initiated by the Conservative government of Stephen Harper in 2008, to respond to a request by a community group named Tribute to Liberty. The group is composed of representatives of immigrant communities from various ex-Soviet countries in Eastern Europe (mainly Ukraine, Poland, and Latvia) and from former communist countries in Asia (mainly Vietnam). At the time of our research, Tribute to Liberty was active on the Web through a regularly updated website and a presence on Facebook and Twitter.

The framing of the memorial was contested from the outset. A local newspaper, the *Ottawa Citizen*, extensively covered the issue for several years, conducting in-depths investigations. The National Capital Commission first convened an expert committee that recommended that the theme of the memorial be reframed around the memory of refugees escaping from all totalitarian regimes. This recommendation was opposed by Tribute to Liberty and dismissed by the Conservative government, both of which insisted on targeting solely communism, painting it as an "evil" ideology in all of its forms. The project also sparked local opposition in Ottawa by a coalition of urban planners, architects, and heritage experts, as well as by the Ottawa City Council. Moreover, in 2015, a group of opponents formed a collective named Move the Memorial and launched an online petition to ask for the location of the monument to be changed. The collective did not frame the problem as an ideological issue; rather, it opted for an urbanistic and architectural rationale, focusing on and criticizing the plan to place it in front of the Supreme Court of Canada. Move the Memorial was more loosely structured than Tribute to Liberty: although it did not have a website, it managed a Facebook page, as well as a less active Twitter account.

The issue thus became a local political stake during the 2015 federal election. On October 19, 2015, the Liberal Party, led by Justin Trudeau, won the election, defeating the Conservatives. Whereas the previous Conservative government was strongly supportive of the pro-monument group, the newly elected Liberal government's position was closer to the standpoint of Move the Memorial. Upon taking office, the new minister of Canadian Heritage, Mélanie Joly, set out to revise the memorial project and announced a change in the location of the memorial, a reduction in its budget and size, and rejection of the design chosen by Conservative government. This announcement was widely covered in the media and triggered many public reactions (likes, shares, and so on) and comments on social media platforms. The theme of the memorial was also partially reframed by the new Liberal government: the subtitle "Canada, a Land of Refuge" was added to its name in an effort to broaden the scope of the project, reflecting Trudeau's electoral promise to welcome to Canada Syrian refugees escaping from civil war. At time of writing, the inauguration of the memorial was planned for 2020.

2.3 Methodological Approach

Our data-collection process relied mainly on a news-monitoring method to track and collect Web media productions linked to this debate. Initially focused on the federal election period (May 2015 to December 2015), the corpus was later narrowed down to five specific dates in December 2015 that corresponded to the circulation of one press release that we identified as the root of the main cascading event in our sample. The corpus was gathered automatically through the media-

monitoring service Mention (an RSS feed aggregator)[1] using a series of keywords in English and French.[2] This tool allowed us to collect publications on the main news media outlets' websites (daily press, radio, television, online magazines), on the websites of several public and private organizations, on blogs and forums, and on some social media platforms. The initial data corpus was made up of publications in English and French (press articles, news briefs, press releases, blog posts, tweets, Facebook posts), over a period spanning the ramping up of the election campaign, the election itself, and the transition period that followed the change in government.

For each of the identified publications, the data collected through Mention contain the URL, publication time and date, title, description, username (in the case of social media), and, in the case of retweets, the initial URL that was shared. This information was exported to a spreadsheet and submitted to an initial manual pre-processing (clean-up, error correction). To refine the dataset, we undertook a second collection stage, adding publications that had escaped the Mention collection system. We organized the final dataset into six analysis categories (publications, events, individuals, organizations, themes, and excerpts) and processed it manually through double coding. In order to establish correlations and carry out more advanced analysis, we imported the data into a relational database (MySQL).

Queries by dates, titles, and keywords in the database enabled us to identify the main cascade in the dataset, which appeared as the recurrence of the same news (the government's press release issued on November 17) being shared across different platforms. This series of publications was then isolated as a subsample on which we conducted a third manual data collection to further refine the sample and how it spread over various platforms, gathering a final sample of 2,055 publications and interactions. Mention was not able to systematically collect publications on Facebook due to technical limitations;[3] however, we were able to restore some of the Facebook interactions in the sample by conducting manual searches on the Facebook pages of identified media and organizations. Although Mention captured most of the publications on the main news media outlets' websites, organizations' websites, and blogs and forums (about one third of the sample), all of the interactions on social media (likes, shares, comments) and activity in the comments sections of news media websites were manually collected.

Yet the dataset is still not exhaustive: only the publications using our set of keywords were detected by Mention, and we were able to collect Facebook activity only on the pages of the media outlets and organizations already identified in the sample. The volatility of online content was also an issue, as it prevented in-depth

---

[1] https://mention.com

[2] The keywords used were: monument aux victimes du communisme, monument to the victims of communism, *Tribute to Liberty*, tributetoliberty.ca, Memorial to the victims of communism.

[3] At the time, the Mention service to which we subscribed was not programmed to collect RSS feeds on Facebook pages (even if it had been, only mentions on public pages would have been collected).

analysis of certain publications, particularly on news aggregator websites that tend to frequently close or modify their pages. The Wayback Machine (Internet Archive) allowed us to access some of these unavailable Web pages.

Combining the query results in the relational database with manual observations on the platforms, we analyzed the sample by identifying, for each instance, media type (see Figure 1 in next section), time of publication (see Figures 1 and 2), publication context (type of website or media outlet, author), relationship to other publications in the sample (position in a cascading pattern), and framing (issues discussed; positive, negative, or neutral tonality – see codebook in appendix). Finally, visualizations were generated to reveal the patterns of cascades (see Figures 3, 4 and 5 in the analysis section). Following Entman and Usher's (2018) model, in the visualizations, we organized the publications into hierarchical levels: press releases, press agencies, institutional websites, news media articles, aggregators, blogs, and social media posts and interactions (likes, shares, comments).

3   ANALYSIS

3.1   Overview of the Cascade

Figure 1 shows that this announcement generated a high volume of online publications and interactions (2,055 over five days). The structure of this informational cascade is composed of various branches all originating from the same source: the government's press conference and press release. These branches are formed by multiple sequences of publications (republication of the government's press release, press releases issued by community organizations in reaction to the announcement, news articles, blog posts) and user interactions (comments, shares, and likes).
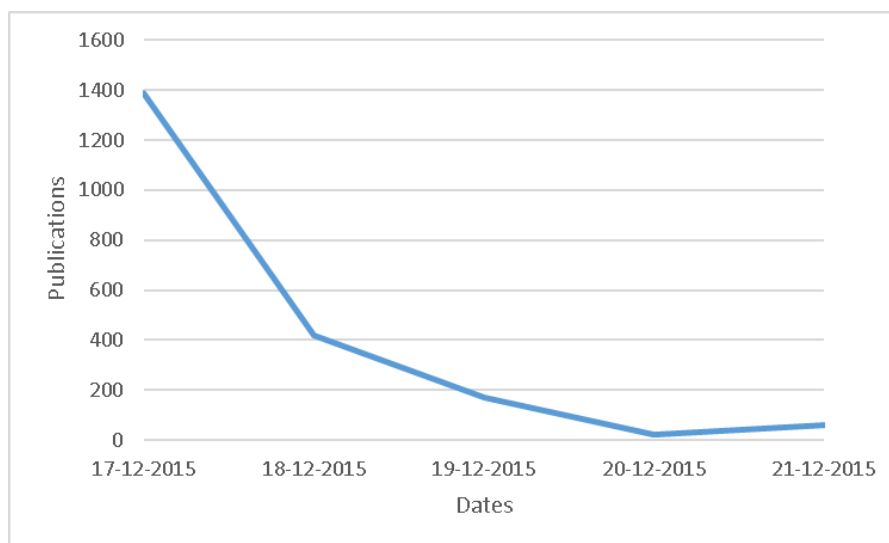

Figure 1. Volume of publications and interactions in the cascade over five days following Min. Joly's announcement (December 17–21, 2015).

Figure 2 shows the distribution of publications and interactions across different types of media and platforms over five days (December 17–21). Within the broad category of mainstream news media, newspapers generated most of the publications (5.9%) with a surge on the fifth day due to an editorial that was widely reproduced in a network of local media. News aggregators generated a smaller share (2.8%) of republications of the government's press release, and some also republished news articles. As to user comments, Facebook posts, likes, and shares form the vast majority of interactions around these publications (51.4%), with comments posted directly on the news media websites (newspapers, TV) holding a smaller but still significant share (20.8%). Lagging behind are discussions on forums (Reddit: 8.5%), posts and interactions on Twitter (7.2%),[4] and reactions to blog posts (1.5%).
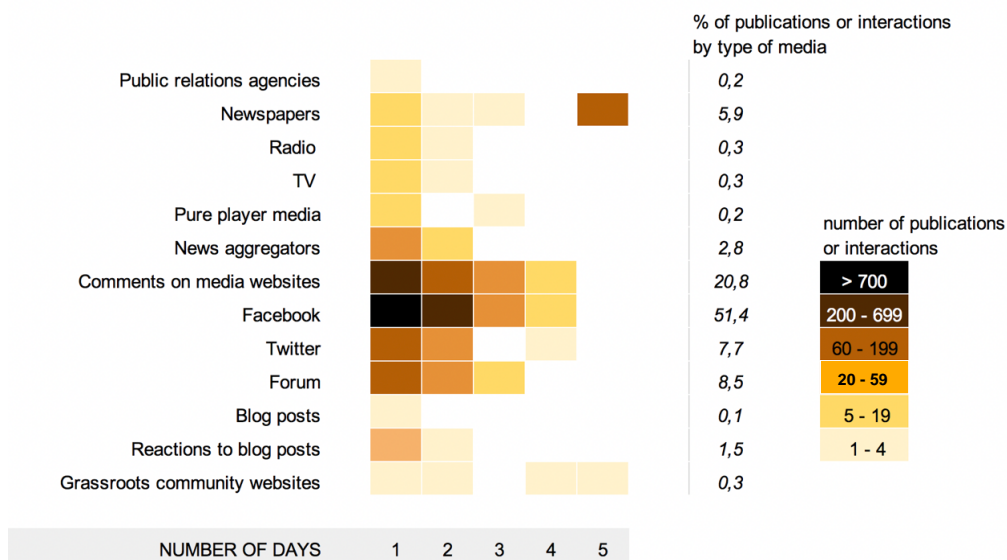

Figure 2: Heatmap distribution of publications and interactions across different types of media over five days (December 17–21, 2015).

We built an inventory of the different branches of the cascade, grouping them into sets by similarities: A) a *mainstream media set* consisting of newspaper articles and TV and radio reports generated by the announcement; most branches in the cascade belong to this set, and several of them are shaped by media concentration; B) an *aggregation set*, composed almost exclusively of publications by press agencies and news aggregators, showing the effects of algorithm-based replication of content, low user engagement, and low degree of relevance for readers; and C) a *grassroots and community media set*, characterized by significant user engagement among the supporters of the memorial. Then we selected for further analysis three branches

---

4   A different choice of keywords, such as a combination of "communism" and "#cdnpol" or "#polcan" (for Canadian politics, in English and French) might have returned a higher volume of relevant tweets.

that revealed the most compelling dynamics or the most unusual patterns in each of these sets.

The three branches that we selected differ in several ways: first, in terms of volume of publications and user interactions; second, in terms of their reach down the various media layers; third, in terms of their respective framings of the issue; and fourth, in terms of the types of public spheres they flow through. Below, we provide a detailed analysis of each of these branches based on visualizations that diagram the chronological flows of publications and interactions in each of them, focusing on the most significant dynamics.

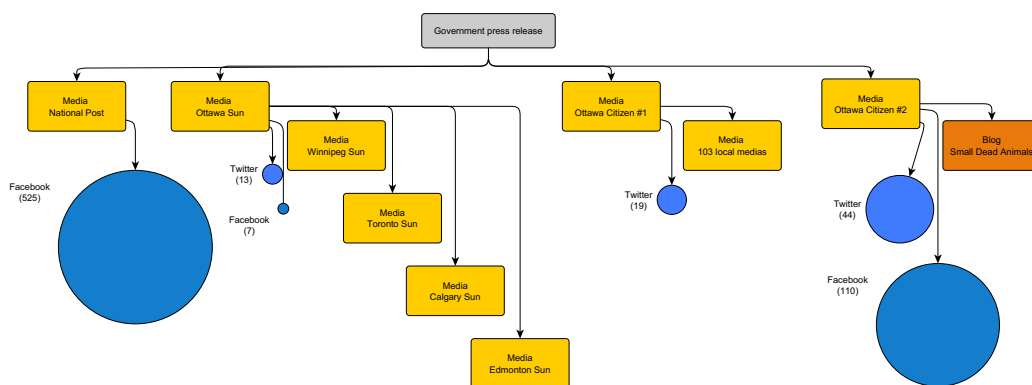## 3.2   Private Newspaper Network and Horizontal Integration

Figure 3. Diagram of a branch of the cascade showing the spread of information in the Postmedia network.

This branch of the mainstream media set in Figure 3 shows the propagation of the government's announcement across a large network of newspapers belonging to a major Canadian media conglomerate named Postmedia Network; each rectangle represents a publication or group of publications and the circles represent user engagement on social media. In this figure, the announcement is propagated in four original articles: one published in a national newspaper (*National Post*), and three published in local newspapers (one in the *Ottawa Sun* and two in the *Ottawa Citizen*). Two of these articles were republished in the network's numerous local newspapers across the country. Particularly striking is the republication of an editorial originally published in the *Ottawa Citizen* in 103 local (including small-town) newspapers. By way of comparison, the *Ottawa Sun* article was republished in four local Sun newspapers based in major Canadian urban centres.

The structure of this branch is heavily shaped by a dynamic of horizontal integration, which characterizes the position of Postmedia Network in the Canadian media ecosystem. Horizontal integration can be described as the acquisition of a company operating at the same level of the value chain in the media business (for instance, a newspaper buying another media outlet such as a radio station). It differs from vertical integration, in which companies expand into upstream or downstream activities (for instance, a newspaper buying a paper mill)

(Martín-Herrán, Sigué and Zaccour 2014). It is a competitive strategy that aims at creating economies of scale, increasing market power over distributors and suppliers, improving product differentiation, and helping media companies expand their market. The downside is that when this strategy succeeds, it is often at the expense of consumers, because it tends to reduce competition, sometimes leading to oligopoly and certainly leading to media concentration (Smyrnaios 2016; Dal Yong Jin 2008).

Headquartered in Toronto, Ontario, Postmedia Network is a fairly new player, established in 2010 through acquisition of the bankrupted CanWest media empire. In 2015, Postmedia purchased from Quebecor Media the English-language operations of Sun Media, Canada's second-largest newspaper chain at the time, with 178 newspapers. That deal made Postmedia the largest newspaper publisher in the country, with close to three times the circulation of Torstar, the second-largest publisher. In a few cities, such as Calgary, Edmonton, and Ottawa, at the time of the study Postmedia owned both the most popular and the second-most popular dailies (Edge 2016). Our findings show that such concentration of media ownership deeply impacts the structure of informational cascades. Figure 3 shows how two articles locally produced in Ottawa newsrooms, concerned mainly with the memorial issue, reached nationwide distribution thanks to republication in Postmedia's extensive network of local media. This branch of the cascade reveals how horizontal integration of media ownership is a compelling factor in the formation of information cascades.

Two other dynamics also contribute to structuring this branch, although to a lesser extent. The first is the engagement of the newspaper's readers on social media, especially Facebook. This occurred both on the national and local levels in Ottawa: an article published on the *National Post*'s Facebook page gathered a considerable number of interactions (525 likes, shares, and comments around the article), whereas the *Ottawa Citizen* gathered a smaller, though still significant, amount of engagement around its first article (110 interactions). The same article published in the *Ottawa Citizen* also attracted a noteworthy number on interactions on Twitter (44) compared to the *Ottawa Sun* (13), as well as a blog post that was commented upon 30 times. The level of engagement around these publications by the *Ottawa Citizen* can be explained by the paper's key role in coverage of the controversy around the monument. One of its journalists was especially committed at the local level to publishing in-depth investigations into the issue. The entire editorial team even committed itself, in an editorial, to praising the government's announcement ("Kudos to the Liberals for moving victims of communism memorial"). Contrary to the strong local resonance of the issue in Ottawa, and on the national level through the *National Post*, there was little to no readership engagement around the republications of the editorial in other local newspapers, showing that the issue had no resonance in other local media across the country.

In terms of framing of the issue, the articles published in all three newspapers were neutral and factual, citing both pro- and anti-memorial opinions, with the

exception of the *Ottawa Citizen* editorial, which was clearly positioned in favour of relocating and downsizing the project. The strong capacity of Postmedia to horizontally republish articles in over 100 local media outlets enabled company management to widely disseminate a particular framing of the issue on a nationwide scale. Another important observation is that the framing of the issue in social media was significantly different from the framing in newspapers. Even when the articles were neutral, the comments that they generated on Facebook and Twitter were predominantly negative regarding the memorial project and raised issues related to public spending and ideology rarely expressed in the newspapers. The predominant opinion on Facebook was that the memorial project should be cancelled in its entirety, because it was seen as useless public spending, irrelevant, or too ideological. The tone of the discussions became clearly acrimonious when it came to opposing Liberal and Conservative views on the project, often leading to heated comparisons of communism, capitalism, and Nazism.

Lastly, despite the strong dominance of anti-memorial framings on Facebook, a wider diversity of opinion could still be observed on this platform, with several users defending the memorial project and criticizing the Liberal government's decision. The situation was quite different in the comments posted on the blog *Small Dead Animals*, which were totally homogeneous in their critique of the Liberal position regarding the monument. Comments on this blog, which defines itself as far-right and adverse to mainstream media, consisted of harsh (and even offensive) critiques of Liberal leaders and communism, several of which reframed the issue around far-right themes such as Islamophobia.

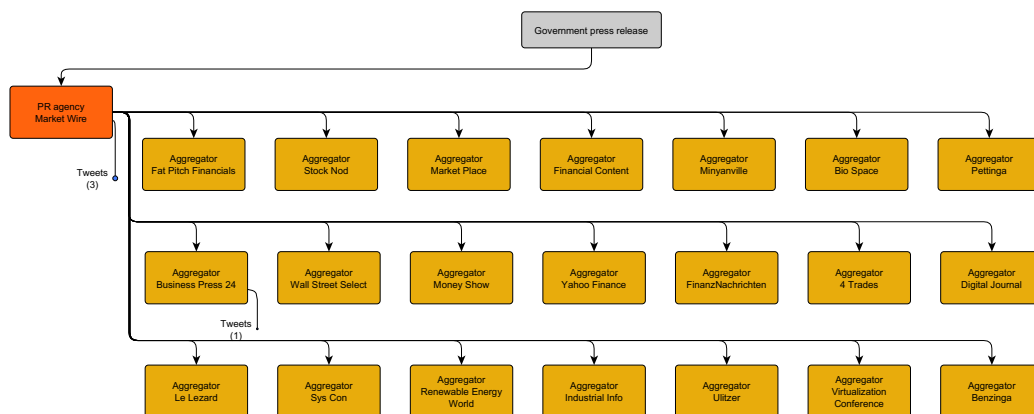### 3.3 Aggregators and Algorithm-based Replication

Figure 4. Diagram of a branch of the cascade showing the spread of information in news aggregators.

The branch of the cascade illustrated in Figure 4 is composed of a peculiar trajectory of republications of the press release by 21 news aggregators. This cluster originated in a republication of the press release by Marketwired, a Canadian press-release

distribution service. In this branch, the aggregators republished the press release in its entirety and without comments, a configuration that differed significantly from the other branches of the cascade, in which the press release was analyzed or commented upon by journalists, editorialists, pressure groups, or citizens. According to Tan et al. (2016), it is very rare that an original press release is republished in its entirety in informational cascades, and it "almost never" happens in the case of press releases dealing with politics, which makes the trajectory illustrated above even more unusual. In this branch, the Marketwired website acted as an intermediary hub between the government website and the aggregators. It also acted as a catalyst – a nodal point that multiplies and accelerates the distribution of information on the Web.

What is surprising about this branch is not so much the extensive republication of a press release by several aggregators, but the field of specialization of most of them – finance – which has nothing to do with the content of the press release, dealing with collective memory, monuments, and cultural policy. How can this trajectory, which seems irrelevant both to the public issue and to the aggregators themselves, be explained? Aggregators have become established as key players in the digital content ecosystem over the past two decades (Chyi et al. 2016). They collect information from multiple sources and centralize the display information on their own portal websites. Content producers (news media in particular) criticize their methods of information gathering for being parasitic, especially when they set up clickbait to "pile up pageviews in order to feed a digital advertising-based business model" (Molyneux and Coddington 2019). Yet there are various sets of aggregating practices: some reshape content to add analysis and meaning, whereas others are mere content syndicators that reproduce information produced elsewhere without providing new insight (Coddington 2020). In our dataset, about half the aggregators produce original content on top of syndicating news from other sources. But none provided comments or analysis about this particular press release. They merely reproduced its content with an attribution to Marketwired.

This sequence of republications can be explained by a partnership that Marketwired had at the time with the Nasdaq electronic stock market corporation. Thanks to this partnership, Marketwired services were promoted by Nasdaq to various trading companies. Financial news aggregators heavily republish content related to stock exchanges, including the Nasdaq stock exchange, on which a huge quantity of worldwide major trades take place. According to Lee and Chyi, "news aggregation, the practice of redistributing news content from different established news outlets on a single website, is often based on machine-based algorithms, human judgments, or a mix of both" (2015: 3). Automated aggregation technology relies on Web feeds – data formats that make it possible to collect content from frequently updated sources.

These news feeds operate like data plugs, flowing content from a news source to an aggregator and screening it through a set of filters and keywords. Such feeds

are generally based on the Atom Syndication Format, the RSS (Really Simple Syndication) data standard, or the JSON (JavaScript Object Notation) data standard. For example, several financial aggregators in our dataset are fed by a platform named CloudQuote, which provides APIs supplying "instant access to millions of datapoints in JSON format"[5] from various financial sources. In the case of the branch illustrated in Figure 4, we can postulate that the news-feed algorithms that supply content to the aggregators were programmed to automatically categorize the data points from Marketwired as financial information. The machine-based algorithms act as a type of digital pump valve: by selecting content without the intervention of human judgment, they generate automated republications that shape the flow of information cascades.

A last striking feature of this branch is that it generated almost no engagement on social media. Only four tweets were issued: one was from Marketwired, two mentioned Marketwired, and one was issued by a financial news aggregator promoting its own content. There was no sign of interaction or discussion on the financial news aggregators' platforms or on social media around the republication of the press release by these aggregators. This suggests that in information cascades, the republication of content by news aggregators should not necessarily be interpreted as a sign of attention to and growing popularity of an issue.

To sum up, this branch combines three characteristics that unveil some of the algorithmic and economic underpinnings of digital platforms. First, the digital pump that it exposes is powered by automated scripts that republish content onto news aggregator websites without checking its relevance or adding any extra insight. Second, these data feeds are influenced by corporate deals: indeed, we could find no connection between the press release about the monument and financial information, other than the commercial partnership between the Marketwired PR website and the Nasdaq corporation. Third, being induced mainly by a glitch in the distribution of data flows, this branch of republication generated very little engagement on social media.

---

[5] https://www.cloudquote.io/ (accessed on March 3, 2020).

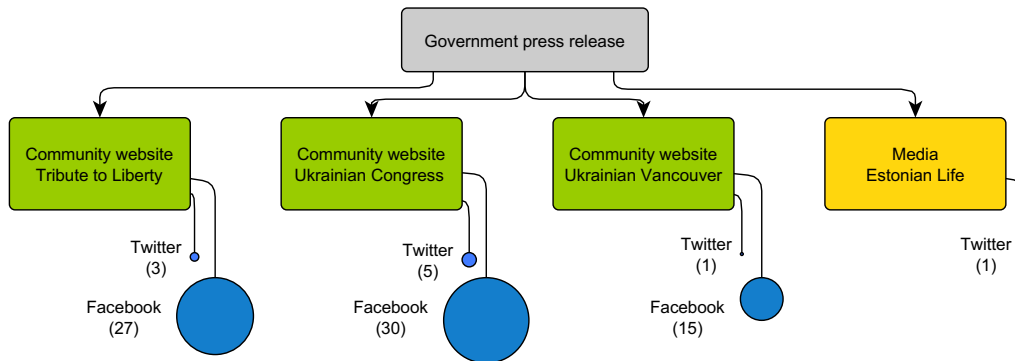### 3.4 Grassroots Organizations and Diasporic Media

Figure 5. Diagram of a branch of the cascade showing the spread of information in pro–monument grassroots organizations and diasporic media.

Figure 5 presents a branch of the cascade composed of a series of four republications of the press release by grassroots organizations and community media outlets positioned in favour of the memorial. They generated a total of 86 posts and interactions on social media (Twitter and Facebook). The websites in this cluster all belong to Canadian immigrant communities whose members dealt with communist regimes in their country of origin, mostly in Eastern Europe: two of them are grassroots organizations representing the Ukrainian diaspora in Canada (Ukrainian Canadian Congress, Ukrainian Vancouver), one is the organization that initiated the monument project (Tribute to Liberty, with members in various immigrant communities), and one is a daily news website about Estonia and the Estonian communities of Canada (Estonian Life – *Eesti Elu*).

This cluster of websites can be described as a diasporic mediascape (Appadurai, 1996) composed of "particularistic media" – community-oriented media that "complement the role of institutions in charge of the custody and transmission of filiation and memory" for a given group (Dayan 2002, p. 105). In the case of the Memorial to the Victims of Communism, the issue engages both with the national memory of individual diasporic groups (Ukrainians, Estonians) and with a shared experience of living under communist regimes for Eastern European diasporic groups.

The publications in this branch generated 77 reactions on social media, mostly on Facebook. Although the pro-monument groups' websites reached fairly small audiences, the level of engagement from their readers who belong to communities directly concerned with the monument was high compared with publications by major news outlets, with a much larger readership but one that may be less involved with the issue. The Ukrainian diasporic media are especially active in this branch of the cascade and, more broadly, in the citizen mobilization supporting the memorial, the president of Tribute to Liberty being himself of Ukrainian descent.

In terms of framing of the issue, we can observe a discrepancy between the institutional framing of the pro-monument organizations, which was either neutral or positive regarding the government announcement, and the negative framing of some of their supporters on social media. Most of the pro-monument organizations adopted a neutral position regarding the press release: they republished it in its entirety without comment. Tribute to Liberty's president declared to the media that he was satisfied with the new plan for the memorial. But on Tribute to Liberty's Facebook page, about half of the comments posted by followers criticized the Liberal government and its decision to move the memorial to a less prominent site. On the contrary, one of the pro-monument organizations (the Ukrainian Canadian Congress) reframed the government's announcement positively: it issued its own press release, welcoming the government's decision to move forward with the construction of the monument and obscuring its negative consequences (a downgrade in budget and location). It also reframed the resonance of the monument with Canadian values: whereas the government's press release emphasized the liberal themes of openness, welcoming refugees fleeing from oppressive regimes, and the consideration of expert opinion (historians, architects), the Ukrainian Canadian Congress dwelt on the crimes of communism, portrayed as an evil ideology.

In short, this branch of the cascade is characterized by significant engagement by community organizations' readership on social media. It also shows how the framing of the press release changed as it was shared down the different media levels. There were two main reasons for the change in framing. The first was the level of formality of the media: a discrepancy can be observed between the controlled discourse of organizations on their websites and the loose voices of supporters in informal settings such as social media. The second was political positioning, which also affected the framing of the news, as shown in the liberal position of the government and the conservative position of pro-memorial organizations and supporters.

4 FINDINGS AND DISCUSSION

4.1 Key Factors in the Cascade Dynamic

Analysis of the different branches of the cascade reveals three key factors at play in the dynamics of content dissemination: mainstream media ownership, data-exchange and -filtering mechanisms, and grassroots engagement. Our findings show that the most influential dynamic at play in the dissemination of the press release was the structure of mainstream media ownership. This dynamic could be observed particularly in the branch involving Postmedia Network. The newspapers in this horizontally integrated media company produced four articles that cascaded through more than a hundred media outlets, many of them leading newspapers in

their respective local markets, making this branch a good illustration of the impact of media concentration on content diversity. The extent of media concentration in Canada is well documented in the literature (Gasher 2005; Lavigne 2005; George 2015; Amstrong 2016). Recent government deregulation has accentuated this phenomenon even further, making the Canadian media ecosystem one of the most highly concentrated in the world (Winseck 2017). Although our research does not focus on media concentration or media content diversity, our results show that the cascade model is efficient at revealing how a country's media ecosystem is shaped and for evaluating news content diversity within this context.

Data-exchange and -filtering mechanisms are another crucial factor in cascade shaping. Although content replication among the newspapers of a single media conglomerate existed before the Web, it has been accelerated through the use of computers and Internet technologies. On the other hand, algorithmic aggregation, syndication, and filtering are phenomena that could not have emerged without the existence of these technologies. The Marketwired branch shows how content can be rapidly replicated using RSS feeds or data-syndication APIs. Despite the speed advantage of these data-exchange mechanisms, our analysis suggests the limits of their algorithmic filters in terms of content relevancy for their readership. First, the subject of the press release had little to do with the main focus of these finance aggregators; second, as a result of this poor algorithmic filtering, very few people engaged with this content. Nevertheless, the growing efficiency of content-filtering algorithms and the speed at which they can operate is likely to maintain their pivotal role in the shaping of information cascades in coming years.

In contrast to this algorithm-based branch, the grassroots dynamic observed in the cascade is characterized by publications issued by a few organizations closely connected to the issue, which generated a significant number of reactions from their readership on social media.

Despite their different features, these branches, when combined, give us insight into how the information ecosystem has evolved in Canada: it is still driven by mainstream media in terms of audience, content production, and dissemination, but algorithmic-based replication and grassroots media backed by active communities are shaping a new information ecosystem. We believe that these evolutions of the media ecosystem increase the relevance of the cascade as a figure that increases our understanding of how debates evolve in the digital public sphere.

4.2   Cascades Spanning across Plural Media Spheres

Consensus emerging in the public sphere helps to shape public opinion (Habermas 1991). In Habermas's view, consensus is, theoretically, the result of rational discussions about the common interest, during which citizens exchange information and views, sometimes through the media. The Habermasian ideal has been criticized on numerous occasions because this definition of the public sphere refers to the establishment of standards linked to an ideological conception of

society, democracy, and communication (Tremblay 2007). Indeed, disinformation, propaganda, and power struggles are also part of the public sphere. Fraser proposes, instead, a plurality of public spheres that "function as spaces of withdrawal and regroupment" and "as bases and training grounds for agitational activities directed toward wider publics" (2003, p. 68). In this plurality, the media sphere undoubtedly remains the most coveted, as it has a great influence on definition of the issues discussed in public debates – that is, it contributes the most to agenda-setting.

One key finding of our analysis is that cascades can span different digital public spheres (national, local, diasporic) and involve different groups with various interests in setting the agenda. These groups include the Canadian federal government, mainstream media, grassroots organizations, and, to a certain extent, ordinary citizens participating in the debate. Although we identified a branch composed of financial aggregators, we decided not to include them as a group that participated in setting the agenda or shaping the debate. Indeed, the issue of the memorial is completely off target for their readership, and the contribution of aggregators in terms of content is null.

Although the Canadian federal government cannot directly influence media agenda-setting, its public relations effort – a press conference and a press release – is clearly the source of this cascade. So even if the government did not set directly the agenda, it certainly controlled the message on which the other groups had to take a position. Some editorialists congratulated the federal government's decision ("Kudos to the Liberals for Moving Victims of Communism Memorial"), whereas some grassroots groups showed their disappointment and some citizens reaffirmed either their opposition to or support for the project itself.

By taking the lead as the source of the debate, the federal government not only initiated the cascade but also sparked the reactions that emerged in different digital public spheres. This is particularly true in the case of the diasporic media branch, but also in the case of certain online discussions. What materialized is an embryo of a "micro public sphere" (Dahlgren 1994; Dayan 2002), organized around small groups of diasporic media or social media whose readership and framing of the issue differed from "'generalist' media whose messages are conceived for that majority" (Dayan 2002, p. 5). We also observed that although "messages conceived for the majority" – the government press release and mainstream media articles – are often balanced and sometimes neutral, they serve as the base material for far less neutral expressions in micro public spheres.

Of course, the size of a public sphere and its influence on particular issues are best seen as being on a continuum. What appears as "micro" one day can gain momentum later on as certain issues become more popular in the public eye and groups become more organized and efficient at capturing public attention and influencing agenda-setting (Neveu 2011).

4.3   Issue Framings in Digital Cascades

Over the years, the public debate around the Memorial to the Victims of Communism involved a series of successive framings and reframings of the issue by governments, media outlets, and citizen groups. The digital cascade that we studied captured a significant moment in the resolution of this issue. Upon its election, the Liberal government partially reframed the purpose and location of the monument around the idea of Canada's official openness to refugees. The press release that crystallized this interpretation circulated widely in Canadian public spheres. Depending on the type of media and the communities in which it resonated, however, it sparked very mixed reactions. The Liberal government's framing was reproduced verbatim, recontextualized, legitimized, reframed by selecting only a limited aspect of its content, or contested for altering the initial project too much or for not altering it enough.

These reactions can be positioned on a scale from the lowest level of reframing to the highest change of interpretation. Public relations agencies and aggregators lie at the bottom of this scale: they merely reproduced the content of the government announcement.

Mainstream news media outlets are positioned slightly higher than PR agencies on the scale: following established professional journalistic norms, most articles reported the news without taking a position; yet, by giving a dominant voice to the government's announcement, to Liberal party representatives, and to groups opposed to the memorial, they contributed to legitimizing the government's framing. A representative of the main pro-memorial group, Tribute to Liberty, was interviewed in several articles. However, as our results show, he endorsed the Liberal plan in a strategic move to downplay the negative impacts of the announcement on the project. The case of the *Ottawa Citizen* editorial is peculiar, since editorials are freer of the constraints of "frame parity" expected in journalistic practice, in which "two (or more) interpretations receiv[e] something like equal play" (Entman 2003, p. 418). Yet, the editorial strongly supported the Liberal government's decision and unequivocally reinforced its framing. On the journalistic level, Don Butler, investigative journalist for the *Ottawa Citizen*, also played a significant role over the course of the public debate, acting as an intermediary among experts (historians, architects, heritage specialists, urbanists), anti-memorial activists, and the successive – Conservative then Liberal – governments. The editorial was widely disseminated in Postmedia Network but its resonance was limited, judging by the almost complete absence of comments or shares that it generated in social media across Canada.

Pro-memorial organizations stand one degree higher on the scale, as several of them altered the initial framing: by strategically selecting only the positive aspects of the government's announcement, they reframed what was a setback as an achievement. This reframing also hindered the extension of the scope of the memorial to welcoming refugees, because it bore little cultural resonance with the

collective memory of immigrant communities from former communist countries. It may even have acted as a repellent, since, at the time, Eastern European countries such as Hungary and Poland were harshly pushing against taking in new refugees from Syria.

Social media use is positioned at the highest level of the scale in terms of reframing: it was on blogs and on Facebook that we found the most divergent framings, contesting official interpretations, and the most radical points of view. Blog commenters strongly opposed the government's decision, reframing the issue by making connections in crude terms with elements of far-right discourse, such as anti-communism and Islamophobia (a rejection of Justin Trudeau's plea to welcome Syrian refugees to Canada). On Facebook, pro-memorial supporters criticized the government decision in very direct terms, most of them refusing to endorse their leaders' strategic position: rather than focusing on the positive aspects of the announcement, the Facebook comments denounced the Liberals, clearly framing the announcement as a setback. On the mainstream news media's Facebook pages, user comments overwhelmingly supported the government's decision. Yet they framed the issue in a significantly different way than did the news articles: most of the comments redefined it as a matter of worthless public spending, whereas the project costs were only a minor framing in news media stories. Many comments also criticized the ideological bent of the memorial theme (anti-communism), a framing generally ignored by the news media and anti-memorial groups. The latter strategically focused their attacks on a less heated angle, urban planning considerations, which allowed them to stay away from the complex political entanglements of the project that were at the heart of the issue. A majority of comments on the mainstream media Facebook pages favoured a more radical alternative solution to the issue: cancelling the project altogether.

Overall, the main finding of our study with regard to framing in the context of digital cascades is that the more the news drifts away from legitimate scenes of expression (press releases, mainstream news media), the more the official framings are contested. It was in the informal settings of social media (blogs and Facebook in particular) that we found the highest levels of dissent from the dominant framing set by the government, legitimized by the mainstream news media, and partially endorsed by the pro-memorial leaders. Comments on social media contested both the problem definition set by the government and news media and the remedy proposed by the minister of Canadian Heritage.

This finding corroborates Entman's observation that media framings are stratified into hierarchic levels characterized by different social spaces, media practices, and degree of political power. But it also contrasts with his conclusion that divergent framings usually come from elites and news media, shaping public opinion. In the context of our study, these alternative framings came, rather, from the general public's expression of counter-narratives on social media. Entman also suggests that "as we go down the levels, the flow of information becomes less and less thorough, and increasingly limited to the selected highlights, processed through

schemas, and then passed on in ever-cruder form" (2004, p. 12). Studying digital cascades more specifically, Tan et al. showed that as information propagates from press releases to news articles and to shares and comments on social media, "it tends to diverge from the source: while some ideas emphasized in the source fade, others emerge or gain in importance" (2016, p. 1).

What we found in our study is not so much a process of distillation and narrowing of a complex framing into simpler forms, but a complexification of the issue in audience framings. The diversity of problem definitions was higher in social media than in the mainstream news media. In particular, the complex yet central topic of ideology was brought back into the arena of discussion by social media users, whereas it was largely avoided by the government, political elites, urban experts, and news media, which tried to avoid taking a position with regard to the tricky moral judgment concerning communism and anti-communism. Furthermore, our results diverge from Tan et al.'s (2016) conclusion that textual expression of positive sentiment declines at every step down the propagation layer, with positive feedback being lowest at the level of Facebook comments. We found, rather, that positive and negative reception of the press release depended not on the social media layer itself, but on the political, social, and cultural composition of the micro public sphere in which the news propagated: the reception was negative on a far-right blog, and positive among the readers of mainstream news media.

4.4   The Digital Cascade as an Empirical Object

Reviewing our epistemological approach, we proposed to consider the cascade as a figure in the sense that it is a heuristic metaphor (an analytical representation) that combines a numerical description of a phenomenon and its visual representation in the form of a diagram. Based on the calculation of the number of times the same action is repeated (for example, sharing a tweet or republishing a news article online), a cascade-shaped diagram reconstructs the order of a sequence of actions: when and where the publication started and how it spreads in time and space. Cascading figures are built mainly around two parameters: first, the temporal dynamic of the process is depicted by chronological lines of transmission (the origin of the publication is often situated on the top of diagram and its replications are placed in descending order); second, the spatial dynamic shows the topology of the network through which information spreads (for example, different social circles in a single social media outlet or different websites in the case of a cross-platform study).

The big data and behavioural perspectives on digital cascades enable us to inductively map out the trajectories of data flows (Goel et al. 2015), but these perspectives are focused on virality prediction and neglect the broader political and economic context of the media ecosystem and the effects of the platformization of news distribution that shape the flows of news content online. Because we engage with thick data (Latzko-Toth et al. 2017) rather than big data, our approach allows

us to proceed with an inductive mapping of data flows while tracing how these flows are shaped by a configuration of actors' relations, by the influence of media ownership, and by the media-technological affordances of Web platforms. This approach contributes to a type of research design that Marres and Moats characterized as being "as symmetrical as possible in its treatment of media-technological, social, and issue dynamics" (2015, pp. 6–7). The authors suggest that researchers "investigate which effects belong to media technologies, which to the issues, and which to both" (Marres and Moats 2015, p. 6). Yet this distinction between entangled logics may often prove difficult in studies that are focused on one issue or one cascade. A comparative study of different issues, spanning across various media platforms, would be best suited to identifying the specifics of issue effects and media effects.

Finally, the capacity of social media framings to influence the course and resolution of an issue also remains an open question. Compared to the long-term trajectory of an issue over several months or years, the short timespan of our cascade did not allow us to estimate the influence of social media counter-frames on the overall trajectory of the issue. More generally, the choice to focus on an individual digital cascade can be a methodological limitation if the goal of the investigation is to understand the broader framing dynamics of a public issue. Due to Facebook's privacy parameters, we could only include public social media accounts managed by the key groups active in the debate, and not private posts on Facebook discussing the issue, whether or not they contained a direct reference to articles, blog posts, or webpages referenced in our corpus. For this reason, the cascade perspective cannot be envisioned as a holistic cross-platform methodology. It stands, rather, as a complement to other approaches that focus specifically on social media discussions.

Indeed, approaches more focused on social media logics have been able to identify other important features of news virality in relation to platform-specific dynamics. For example, Al-Rawi (2019) studied news- sharing habits on YouTube and Twitter in order to address the cognitive and emotional elements that constitute viral news. His analysis of the 50 most-popular news stories shows significant differences between these two platforms, explained mainly by the variation in sociodemographic characteristics and preferences of audiences on YouTube and Twitter. Considering the entanglement of news websites and mass media logic (van Dijck and Poel 2013), another important issue that remains to be further addressed is the feedback loop dynamic of cross-platform information cascades. In this perspective, Lin (2016) observed a mutual influence between Facebook activity and overall mass media agenda-setting during the 2012 election in Taiwan. He argues that "when a posting on a candidate's page gains sufficient attention, mass media has to cover it" (2016, p. 11); however, the framing of this news is then filtered through journalistic values.

5   CONCLUSION

In this article, we proposed to characterize the cascade as a figure for exploration of the spread of information online. Our approach showed how cascade analysis provides a way to consider both the socio-cognitive framing of media texts and the techno-material features of digital platforms. We found three key factors that shaped the trajectory of the cascade under scrutiny: 1) the economic structure of media property, and especially media property concentration, which is notably high in the Canadian media ecosystem; 2) data-exchange mechanisms and algorithmic filtering that drive the process of news aggregation, quickly spreading content without being a significant source of user engagement; 3) grassroots engagement in diasporic media, which activates micro public spheres around nested interests and political standpoints regarding the public issue. More research needs to be done on the impact of data-exchange mechanisms and algorithmic filtering on the creation of feedback loops between social media and legitimate scenes of expression. Finally, the figure of the cascade is a heuristic tool that illuminates snapshots of significant moments in the unfolding of a public issue online, but the data captured through this approach need to be recontextualized in the long-term trajectory of a public debate.

REFERENCES

Al-Rawi, A. (2019). Viral news on social media. *Digital Journalism*, 7(1), 63–79. https://doi.org/10.1080/21670811.2017.1387062

Baym, N. K., & boyd, d. (2012). Socially mediated publicness: An introduction. *Journal of Broadcasting & Electronic Media*, 56(3), 320–329. DOI: 10.1080/08838151.2012.705200

Bogost, I., & Montfort, N. (2009). Platform studies: Frequently questioned answers. *Digital Arts and Culture 2009*. Available at: https://escholarship.org/uc/item/01r0k9br

boyd, d. (2010). Social Network Sites as Networked Publics: Affordances, Dynamics, and Implications. In Papacharissi, Z. (ed.) *A Networked Self: Identity, Community, and Culture on Social Network Sites*. New York: Routledge, 39–58.

Brants, K., & van Praag, P. (2017). Beyond media logic. *Journalism Studies*, 18(4), 395–408. DOI: 10.1080/1461670X.2015.1065200

Bruns, A., Moon, B., Paul, A., & Münch, F. (2016). Towards a typology of hashtag publics: A large-scale comparative study of user engagement across trending topics. *Communication Research and Practice* 2(1), 20–46. DOI: 10.1080/22041451.2016.1155328

Casemajor, N. (2019). Brutalist Monuments and Mirror Monuments. In Entrepreneurs du commun (ed.), *Monuments aux victimes de la liberté*. Gatineau, QC: Galerie UQO/AXENÉO7, 23–27.

Casemajor, N. (2015). Digital materialisms: Frameworks for digital media studies. *Westminster Papers in Communication and Culture*, 10(1), 4–17.

Çeçen, A. F. (2015). Revisiting Cascading Activation Model. In *Proceedings of the 13th International Symposium Communication in the Millennium*, 357–371.

Cheng, J., Adamic, L., Dow, P. A., Kleinberg, J. M., & Leskovec, J. (2014). Can cascades be predicted? In *Proceedings of the 23rd International Conference on World Wide Web*. New York: Association for Computing Machinery, 925–936.

Chyi, H. I., Lewis, S. C., & Zheng, N. (2016). Parasite or partner? Coverage of Google News in an era of news aggregation. *Journalism & Mass Communication Quarterly*, 93(4), 789–815. DOI: 10.1177/1077699016629370

Coddington, M. (2020). Gathering evidence of evidence: News aggregation as an epistemological practice. *Journalism*, 21(3), 365–380. DOI: 10.1177/1464884918817608

Comunello, F., Mulargia, S., & Parisi, L. (2016). The 'proper' way to spread ideas through social media: Exploring the affordances and constraints of different social media platforms as perceived by Italian activists. *The Sociological Review*, 64(3), 515–532. DOI: 10.1111/1467-954X.12378

Cramer, F., & Fuller M. (2008). Interface. In Fuller, M. (ed.) *Software Studies: A Lexicon*. Cambridge, MA: MIT Press, 149–152.

Dahlgren, P. (1994). La sphère publique à l'âge des nouveaux médias. *Hermès*, 13–14, 243–262. DOI: 10.4267/2042/15528

Dayan, D. (2002). Particularistic Media and Diasporic Communications. In Curran, J. & Liebes, T. (eds.) *Media, Ritual and Identity*. London and New York: Routledge, 113–123.

Edge, M. (2016). *The News We Deserve: The Transformation of Canada's Media Landscape*. Vancouver: New Star Books.

Entman, R. M. (2003). Cascading activation: Contesting the White House's frame after 9/11. *Political Communication*, 20(4): 415–432. DOI:10.1080/10584600390244176

Entman, R. M. (2004) *Projections of Power: Framing News, Public Opinion, and US Foreign Policy*. Chicago: University of Chicago Press.

Entman, R. M. & Usher, N. (2018). Framing in a fractured democracy: Impacts of digital technology on ideology, power and cascading network activation. *Journal of Communication*, 68(2), 298–308. DOI: 10.1093/ct/jqx019

Fraser, N. (1990). Rethinking the public sphere. A contribution to the critique of actually existing democracy. *Social Text*, 25/26, 56–80. DOI: 10.2307/466240

George, É. (2015). *Concentration des médias, changements technologiques et pluralisme de l'information*. Quebec City: Presses de l'Université Laval.

Gerlitz, C., & Helmond, A. (2013). The like economy: Social buttons and the data-intensive web. *New Media & Society*, 15(8): 1348–1365. DOI: 10.1177/1461444812472322

Goel, S., Anderson, A., Hofman, J., & Watts, D. J. (2015). The structural virality of online diffusion. *Management Science*, 62(1), 180–196. DOI: 10.1287/mnsc.2015.2158

Gruzd, A., Jacobson, J., Mai, P., & Dubois, E. (2018). *The state of social media in Canada 2017*. Toronto: Ryerson University Social Media Lab. DOI: 10.5683/SP/AL8Z6R

Habermas, J. (1991*). The Structural Transformation of the Public Sphere: An Inquiry Into a Category of Bourgeois Society*. Cambridge, MA: MIT Press.

Heimbach, I., Schiller, B., Strufe, T., & Hinz, O. (2015, August). Content virality on online social networks: Empirical evidence from Twitter, Facebook, and Google+ on German news websites. In *Proceedings of the 26th ACM Conference on Hypertext & Social Media*. New York: Association for Computing Machinery, 39–47.

Helmond, A. (2015). *The Web as Platform: Data Flows in Social Media*. PhD Thesis. University of Amsterdam.

Jenkins, H., Ford, S., & Green, J. (2018). *Spreadable Media: Creating Value and Meaning in a Networked Culture*. New York: NYU Press.

Lash, S. (2010). *Intensive Culture: Social Theory, Religion & Contemporary Capitalism*. Los Angeles: Sage.

Latzko-Toth, G., Bonneau, C., & Millette M. (2017). Small Data, Thick Data: Thickening Strategies for Trace-based Social Media Research. In Sloan, L. & Quan-Haase, A. (eds.) *The Sage Handbook of Social Media Research Methods*. Los Angeles: Sage, 199–214.

Lavigne, A. (2005). Concentration des médias et rapports entre les journalistes, leurs dirigeants et leurs sources apparentées: Exploration d'impacts potentiels. *Les Cahiers du journalisme*, 14, 1–20.

Lee, A. M., & Chyi, H. I. (2015). The rise of online news aggregators: Consumption and competition. *International Journal on Media Management*, 17(1), 3–24. DOI: 10.1080/14241277.2014.997383

Lin, L C.-H. (2016). Convergence in election campaigns: The frame contest between Facebook and mass media. *Convergence*, 22(2), 199–214. DOI: 10.1177/1354856514545706

Ma, L., Sian Lee, C., & Hoe-Lian Goh, D. (2014). Understanding news sharing in social media. *Online Information Review*, 38(5), 598–615. DOI:10.1108/OIR-10-2013-0239

Marres, N., & Moats, D. (2015). Mapping controversies with social media: The case for symmetry. *Social Media + Society*, 1(2), 1–17. DOI:10.1177/2056305115604176

Molyneux, L., & Coddington, M. (2019). Aggregation, clickbait and their effect on perceptions of journalistic credibility and quality. *Journalism Practice*, 1–18. DOI:10.1080/17512786.2019.1628658

Neveu, E. (2011). *Sociologie des mouvements sociaux*. Paris: La Découverte.

Pan, Z., & Kosicki, G. M. (1993). Framing analysis: An approach to news discourse. *Political communication*, 10(1), 55–75.

Pavlovic Rivas, M. (2017). Médias et données: une influence sur la diffusion et la qualité de l'information? *Gestion*, 42(1), 80–81. DOI:10.3917/riges.421.0080

Plantin, J. C., Lagoze, C., Edwards, P. N., & Sandvig, C. (2018). Infrastructure studies meet platform studies in the age of Google and Facebook. *New Media & Society*, 20(1), 293–310.

Sandvig, C. (2013). The Internet as Infrastructure. In Dutton, W. H. (ed.), *The Oxford Handbook of Internet Studies*. Oxford: Oxford University Press, 86–106.

Skinner, D., Compton, J. R., & Gasher, M. (2005). *Converging Media, Diverging Politics: A Political Economy of News Media in the United States and Canada*. Lanham, MD: Lexington Books.

Smyrnaios, N. (2016). L'effet GAFAM: stratégies et logiques de l'oligopole de l'internet. *Communication & langages*, 2, 61–83.

Smyrnaios, N., & Rebillard, F. (2019). How infomediation platforms took over the news: A longitudinal perspective. *The Political Economy of Communication*, 7(1). Available at: http://www.polecom.org/index.php/polecom/article/view/103

Sonnac, N. (2013). L'écosystème des médias: Les enjeux socioéconomiques d'une interaction entre deux marchés. *Communication*, 32(2). DOI:10.4000/communication.5030

Star, S. L., & Bowker, G. C. (2006). How to infrastructure. In Lievrouw, L. A., & Livingstone, S. (eds.) *Handbook of New Media: Social Shaping and Social Consequences of ICTs*. Los Angeles: Sage, 230–245.

Svetlana, L. U. (2019). Media ecosystem in the projection of technological innovations. *RUDN Journal of Studies in Literature and Journalism*, 24(3), 477–485. DOI:10.22363/2312-9220-2019-24-3-477-485

Tan, C., Friggeri, A. & Adamic, L. (2016). Lost in Propagation? Unfolding News Cycles from the Source. In *Tenth International AAAI Conference on Web and Social Media*. Palo Alto: AAAI Press, 378–387.

Tremblay, G. (2007). Espace public et mutations des industries de la culture et de la communication. In Bouquillion, P., & Combès, Y. (eds.) *Les industries de la communication et de la culture en mutation*. Paris: L'Harmattan, 207–225.

Van Dijck, J., & Poell, T. (2013). Understanding social media logic. *Media and Communication*, 1(1), 2–14.

Van Dijck, J., & Poell, T. (2015). Social media and the transformation of public space. *Social Media + Society*, 1(2). DOI: 10.1177/2056305115622482

Winseck, D. (2017). *The Growth of the Network Media Economy in Canada, 1984–2016. The State of the Digital Media and Internet Industries in Canada*. Canadian Media Concentration Research Project (CMCRP)

APPENDIX

Table 1: Codebook used for content analysis of the publications in the corpus

Publication URL
URL of other mentioned publication If the publication mentions or links to the press release, an article, a tweet, or another publication reference in the corpus (cf. sign of a cascading pattern).
Title Or first words in the case of a social media publication.
Date of publication
Type of publication Press release; press agency publication; page on an institutional website (e.g., grassroots community website); news media article (newspaper, TV, radio, pure player website); comment on news media website; aggregator publication; blog post or reaction (comment) to the post; forum post or reaction (comment) to the post; Facebook post, like, share, or comment; tweet, like, share, or comment on Twitter.
Context of publication Description of the website in terms of mission, functionalities, political orientation (if applicable), ownership.
Author Name, affiliation with an organization (if relevant), other relevant information relative to the issue.
Framing > Issues discussed: monument design; monument funding; monument governance; diasporic issues; monument name and scope; urban planning (location of the monument); other > Tonality: positive (cheerful tone, vocabulary of praise – e.g., "kudos," congratulations, expression of satisfaction, optimism); negative (critical tone, disapproval vocabulary, expression of disappointment, accusations, insults); neutral (factual account of the events, balance in citing both positive and negative points of view or absence of comments, neither praise nor critical tone or vocabulary).
Excerpts Most significative passages in relation to the framings.