

ARCHIVING CLIMATE CHANGE: HOW QUEBECOIS NEWS MEDIA REPORT
CHANGEMENTS CLIMATIQUES

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Research Paper submitted to the University of Ottawa
in partial Fulfillment of the requirements for the
Master of Arts Anthropology

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Acknowledgements

I first want to express my deepest gratitude to my supervisor, Meg Stalcup, for all her guidance throughout my degree and my work on this project. The completion of this project would not have been possible without her unwavering support, patience, and feedback. I have learned more than I can quantify from you these past few years.

I am also extremely grateful for the feedback and contributions of my committee member, Thushara Hewage, who helped me find direction when I started writing. Your contributions and teachings helped shape this project, and I am incredibly thankful for everything you have taught me.

I also cannot begin to express my thanks to Caitlin Erickson who read and edited portions of this paper, in addition to keeping me company in the middle of the night and helping me brainstorm when I got stuck.

Many thanks to the support of my research group, the Lacan Cartel: Gustavo Denani, Alex Karabatsos, Tara Tikuisis, and Khalil Habrih. Thank you for your feedback on the different iterations of this project over the years, for giving me a place to discuss my ideas, for your encouragement along the way, and for reminding me to take breaks and eat snacks.

I would also like to extend my thanks to Jacquie Ballantine, Jess Rocheleau, and Antoine Quenneville for reading drafts of this paper and providing feedback, as well as for their steadfast support and friendship throughout the duration of my degree.

Abstract

This paper explores how Quebecois news media writes about climate change or *changements climatiques*. For my research, I created an archive of journalistic articles using the online web tool Media Cloud. I then analysed these articles and their comment sections, if present, to determine how they were framing climate change. The framing I found was overwhelmingly political, and also had a large focus on local stories. Articles about climate change also tended to occur in greater numbers corresponding with the dates of climate change conferences and elections. Comment sections tended to be most numerous on articles about international politics and articles containing more polarizing political content. Together, I argue that this is a result of journalists' desire to connect with a local audience, the drive of online web algorithms influencing how people interact with content, and the lack of resources available to news media companies to moderate comment sections.

Keywords: climate change, news media, archive, Quebec, journalism, anthropology of media

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Archiving Climate Change: How Quebecois News Media Report *Changements Climatiques*

Introduction

Climate change first became real to me when I took a high school class in environmental science. I ended up in the class by accident, due to a hasty move across the continent, mismatched high school graduation requirements, and limited class space. To my surprise, it soon became one of my favourite classes. It was one of the first times where what I was learning was specifically related to current events and looked at ways to explain and think of solutions to ongoing problems. This new perspective, combined with the enthusiasm and passion of my teacher, fueled my curiosity for environmental science.

Water quality and snow melt experiments, essays on technology and ecology, and an art project made entirely out of recycled objects were some of my first explorations into what climate change was. When I graduated high school, I found myself going further, minoring in environmental studies, which brought new perspectives through different classes: biology, geography, politics. With the new program came new friends, and whenever someone would share a headline of a politician declaring that climate change was fake or that humans had no impact on the environment in our group chat, we would each pile on and proclaim how ignorant and naïve they sounded. This became increasingly common with Donald Trump's election as president of the United States and the torrent of headlines surrounding his disastrous climate change decisions.

I found myself wondering what kind of discourses about climate change I could find in Quebec, where I moved in 2016. The Canadian province had always had an image in my mind of being more progressive and socially minded about environmental matters than the United States, and even other parts of Canada. How would Quebecois news media report on climate change? A

province that is so proud of its hydropower; that implemented a carbon tax before the rest of Canada; that seems to be constantly in an argument with Alberta about the effects of oil production. These musings set me forth on my path to discover how climate change Quebec's online news media was portraying climate change, which I present in the research paper that follows.

I start with the history of Canadian journalism and how it became a distinct entity. From there, I explore how the shift to digital news media impacted reporting and article content, then how climate change and the environment are reported on in Canada as a whole. Having laid out this background, I move on to describe my methods and the design of the research project. These are followed by the findings, which are subsequently discussed and analysed to develop a more nuanced understanding of what they mean for how climate change is reported on in Quebec.

Theory and Background

Canadian Journalism and the Archive

The history of Canadian journalism is tied to the founding of CBC Radio-Canada. Established in the late 1920s as a royal commission in response to “a keen desire for cultivation of national unity and national identity, especially in relation to the threat of Americanization” (McLeod & Camlot, 2019, p. 41). Before the 1920s, radio had been broadcast in Canada for official news and used privately. CBC Radio-Canada, however, was founded with the intention to be central to Canadian democracy and nation-building as well as a method to cultivate the tastes of Canadians. Both the government and the public consider CBC Radio-Canada's broadcasts to be high culture and worth preserving. They are also credited with paving the way for Canadian print culture by encouraging Canadian writers to create texts for a Canadian

audience (McLeod & Camlot, 2019). The name CBC Radio-Canada now refers to a multimedia entity, with CBC in charge of anglophone content production, and Radio-Canada in charge of francophone content production (*What Is the Difference between CBC, Radio-Canada and CBC/Radio-Canada?*, n.d.). Together CBC Radio-Canada has played and continues to play a leading role in the evolution of Canadian cultural production.

In keeping with this legacy, CBC Radio-Canada preserves an archive of what it has determined are “major Canadian historical events, dates, and literary and political figures, which it then presents to the general public as a popular online resource” (McLeod & Camlot, 2019, p. 37). Ironically, the process used to create this archive of news media was lost, as no emphasis was placed on documenting such decisions and how they would influence the archive. Nonetheless, when an archive is collected, it is done so “in relation to the audience for whom the archive seemingly performs” (McLeod & Camlot, 2019, p. 35). This means that there are interpretive possibilities in both the shape the archive takes and in its contents.

An archive, as the dictionary tells us, is a collection of information that often contains records around a central theme (Merriam-Webster, n.d.). In another register, this can be taken up as a collection of speech acts, and we must look at the different levels of those speech acts both independently and within their context (Austin, 1975). We explore not only what the texts in an archive intend to mean, but what action they perform by existing. This insight into meaning, that its manifestation as text performs an action in the world, can shed light on the way an archive can be the foundation of something as large and nebulous as a national Canadian identity or climate change (Tully, 1988).

CBC Radio-Canada’s climate change journalism archive does not only tell us about the information within the articles themselves. What is present and what is absent (assessed by way

of other archives) also tells us about those who created the material and the archive itself. We get at this by examining what a text is doing in relation to other texts and ideologies. This examination is combined with the ideas presented within the text itself, to shed light on what can be learned about “social innovation and legitimation” through the study of the “words we use to construct and appraise the social world” (Tully, 1988, p. 119). Furthermore, the CBC archive reveals relations of power through what it contains, in each item’s content, and the fact of a successful negotiation for its inclusion. They are simultaneously a record of the news events recorded within the articles, and a “register of the struggles for and about cultural identity and significance” (McLeod & Camlot, 2019, p. 48).

We can also understand an article as an answer to a question. In the presence of a question—perhaps overtly, in a mission statement or original programmatic call, or implicitly, as identified through interpretive recovery—each item and the archived ensemble gain another layer of meaning. The CBC Radio-Canada archive’s historical context thus sheds light on its existence from another perspective: by creating a better understanding of how a topic gained popularity and its framing, which is also to say, how it was an answer to a meaningful question. Understanding historical context extends to the materiality of an archive as well. As I explore in the next section, an archive of online news media will tell a different story than print news media, not least because the methods for collecting the articles differ (Stoler, 2009).

In sum, archives offer insight into how people have defined this thing called climate change and related events over a specific period of time, how they have interpreted what happened, and what it means to them (Stoler, 2009). My intention is to bring these insights to bear on the contemporary, to do an anthropology of the actual (near future and recent past) (Rabinow, 2003, p. 55), by reading articles contained in the archive of Canadian journalism on

climate change over a specific, recent period of time and tied to a place: Quebec from 2015-2020. This case can shed light on “what we know and how we know it” (Stoler, 2009, p. 45).

The Shift to Digital Journalism

While CBC Radio-Canada’s history spans the rise of digital media, my inquiry centers on its recent digital archive of climate change journalism. There are aspects of digitalization and the rise of the platform internet that are pertinent to this archive as well as my study of it (Plantin et al. 2018). The way that news media portrays the construction of a topic helps people understand the world, and they “have traditionally played an important role in the uptake of scientific research by the public” (Bray, 2018, p. 156). If, as argued above, CBC-Radio Canada’s archives were responsible for shaping and influencing, as well as revealing, “manifestations and interpretations of national identity” (McLeod & Camlot, 2019, p. 47; D. Scott, 2004), a similar process can occur with major scientific topics.

Bray (2018) usefully divides the development of a science story in the era of digital journalism into three phases, each dominated by a different type of article. The first phase is the first 48 hours after the event happens. In this phase, articles are most likely to be news reports with a foregrounding approach. They are characterized by how they give an overview of the events or research and by how they are often reliant on being first in the field to break the news. The second phase takes place from 48 hours after the event up to the beginning of the second month after the event. During the second phase, articles that use the information from events or research as background to support arguments and claims are more common. Finally, the third phase takes place from the end of the second phase and lasts until a year after the original event.

This phase is characterized by articles that are more opinionated and tangentially related to the original event, such as editorials (Bray, 2018).

Bray develops this analysis by tracing reporting on a research article over the course of a year. What is more, she places it in the context of a decreasing number of dedicated science editors and journalists, causing fact checking to become more difficult. Once journalists' coverage gets to the phase of discussing actions required to solve a problem, political experts are consulted more than scientific experts. Even when scientific experts are consulted, this can be misleading: “[their] claims are often presented as more certain” and applied to different contexts than they were originally intended to explain (Bray, 2018, p. 160).

Competition from news blogging has also made a substantial impact on the way that news media report (Cody 2015). It is now easier to be a popular news source with a small budget, as individuals or small groups can start blogs, websites, or social media accounts where they cover current events and give their thoughts on what is happening to an audience. As a result, institutionally vetted news sources and academic expertise can be displaced by a flood of other sources of varying quality. This type of mass media is often published on the assumption that people are circulating an article and acting on it without even reading the article. It relies on a performance of displays of passionate participation and enables those circulating the information to maintain power through a process of mediation (Cody 2015).

I use “mediation” here in the sense defined by Cody (2015), as a two-way process in which the represented subject depends on the representative for the constitution of its identity. Decisions about mediation give form to that which is mediated. A decision that caters to the location of the audience or reflects the identity and ideology of the journalist is not external to, but rather, co-constitutes what an article is and does. Accordingly, an event is changed and made

anew by its mediation into a text of any sort, including a digital text. The affordances of the digital are integral to the mediation of events that happens in digital journalism. As I elaborate below, formatting and fastening, meaning both “tied to” and “accelerated” (Koopman 2019), along with the behaviour of social media and search engine algorithms, all contribute to passionate participation with online information.

Since internet platforms such as Google or Facebook use advertisements as revenue, to generate more revenue and increase profits, the algorithms on these platforms prioritize content that speedily draws the most views. One of the most effective ways of drawing views and encouraging engagement is to provoke feelings of anger and strong negative emotions (Bartholomew, 2018). As a result, these algorithms have come to be overwhelmingly driven by promoting content that stimulates outrage and polarization, while also stressing the importance of an individual’s reputation on the platform. This emphasis means users on the platforms are more likely to see and share content that creates outrage and divisiveness. Other users then rush to contribute their take on the story and spread it to as many of their followers as they can. They are driven to keep engaging by the possibility of boosting their own popularity and taking advantage of ratings, which in some cases increases the amount of money a user makes (Bray, 2018; Cody & Paz, 2021), and continues to make more money for the host platform via advertising.

News about climate change is thus often written to resonate strongly with readers, another outcome of which is that an event that is impersonal and distant can be made to seem like something with emotional value to a particular individual (Mazzarella, 2017). A strong collective emotional resonance that emerges from interacting with a piece of media creates affect (Bialecki, 2019). Journalists work to produce this kind of affect in their audiences through their

use of images and texts as a way to increase engagement with their audiences. To avoid being ignored in the flood of information, journalists add more opinionated language to the articles and sensationalize events to boost their work on social media to help the reader identify with it, in turn generating more views. This type of mediation can intensify affect, shaping an event using an emotional and sentimental style, and thereby giving it new meaning for its audience (Bialecki, 2019). When journalists use affect this way, they generate shared sentiment and unite people through online mass media.

As Bray explains, more blog-like articles, such as editorials, open themselves up to more commentary from their audiences and have an increased likelihood of generating gossip and speculation (2018). The greater number of sources putting out information also gives readers more room to agree or disagree with the information they consume. This can contribute to a positive feedback loop, where more polarizing content shows up more frequently, as it is driven by algorithms and begins to drive them in turn (Bray, 2018; Cody & Paz, 2021; Mazzarella, 2019).

Furthermore, as Cody and Paz found (2021), as a topic becomes more polarized, those reading and interacting with articles are more likely to be other individuals who agree with them, as they have already shown they will engage with the content through actions such as participating in comment sections or sharing the content on social media. Even those who disagree with the content may share it, if only out of disgust, spreading its framework and its reach. Because of the algorithms and user engagement, this has the potential to create an echo chamber, where audiences are interacting with the same content and forming shared experiences based on their digital location (Bray, 2018; Cody & Paz, 2021; Mazzarella, 2019).

If mediation is intentionally manipulated and generates strong polarization, mass media has the potential to become a centralized ideological narrative on which a populist movement can center (Mazzarella, 2019). Groups frequenting polarized echo chambers have a greater possibility of morphing into a populist mobilization (Bray, 2018; Cody & Paz, 2021; Mazzarella, 2019). Sharing specific ideological narratives through mass media online can be taken advantage of and manipulated by those with power over the algorithm or even simply an advanced knowledge of how it works, in order to direct a growing populist movement. (Bray, 2018; Cody & Paz, 2021).

This kind of polarization and circulation of mis- and disinformation has contributed to comment sections on websites becoming increasingly toxic and requiring more rigorous moderation by website owners. Employing a moderation team can be both mentally and financially draining for news media companies, and as a result, due to a lack of resources, more and more news sites have been choosing not to have comment sections (Radio Active, 2016). As a larger company, CBC Radio-Canada is one of the few Canadian news sites that still offers commenting on articles, but due to budget cuts over the last two decades and the toxicity of comments around certain topics, comment sections on CBC Radio-Canada articles are not always available (McLeod & Camlot, 2019).

Environmental Reporting in News Media

Climate change is a topic that is politically polarized and thus prone to generating outrage. It is at a high risk of manipulation to generate shares and engagement on social media platforms. This also means content related to climate change is more likely to be misframed to further populist agendas because of the passionate interactions it can generate online. Here I use

Roosvall and Tegelberg's definition of misframing as "a form of misrepresentation that occurs when some members of a constituency are denied access to just representation due to their geographical location in relation to the structure of a political arena" (2015, p. 41); indigenous populations are one such constituency. Since moving from a global scale to a local scale always requires mediation by framing, framing can easily become misframing when referring to a global topic such as climate change (Roosvall & Tegelberg, 2015).

The environmental justice movement originated in the 1970s among racialized and marginalized communities in the United States who are the most impacted by pollution and climate change. As the movement grew in popularity, however, reporting on environmental justice and climate change took up a mainstream scientific framing that separated nature from humanity. This version of "normal science" (Latour & Woolgar, 1986) also situated nature as a resource from which capital and wealth could be extracted. This can be seen today in the way the news media often frames climate change in terms of lifestyles and traditions in wealthy nations, focusing on "air, water, wages, housing, education, health, equity, and justice" (Roosvall & Tegelberg, 2015, p. 43).

When it comes to news media, the need to understand framing is important because articles come from specific ideological standpoints and produce future ideologies. When reporting on climate change, news media choose which speakers to focus on, based on the stories they want to tell, and speakers are given voices based on the ideologies that the authors want the article to convey. From here, implications of the articles result from views of the already established status quo and contribute to reaffirming or challenging it. The ideologies of both the media and the audience are involved in creating different interpretations of the information in the article (Carvalho, 2007).

To understand how this has impacted the way Canadians, and specifically Quebecois, view climate change, the archive of news media that has reported on climate change must be examined critically. News media articles reporting on climate change do not question the construct of climate change that they employ; they rely on its embedded assumptions and associations. These, in turn, are spread each time the construct is used. Examining what the articles say about climate change can shed light, not just on what events or which facts count as climate change in these places, but also on how the writing climate change is conceptualized in the writing. This is how climate change arrives to individuals consuming the news media.

The examination of climate reporting can also lead to insight into “the tension between different extensions of space and how these relate to people” (Roosvall & Tegelberg, 2015 p. 44). To make an impact, an article must resonate with its audience. As a result, the way climate change is framed in Canada may differ from the way it is reported on in another country, or even within Canada across different provinces and communities (Ellen Good, 2008).

A study by Konieczna et al. (2014) found that Canadian journalism has a smaller audience and less impact globally than American journalism. Canadian journalists also rely on Canadian voices. As a result, Konieczna et al. explain that news media coverage of climate change in Canada deploys a national focus on the “global problem” (2014, p. 503). They found that Canadian sources reporting on the Copenhagen summit were more likely than American sources to use a local framing than a global framing and did not make as many references to global causes and effects.

However, because of Canada’s political ecosystem and the presence of CBC Radio-Canada as a public broadcaster that is “less dependent on advertisers and audiences”, CBC Radio-Canada has the privilege of being able to focus less on luring audiences and advertisers

(Konieczna et al., 2014, p. 493). And in fact, Konieczna et al. found that the number of articles covering climate change in Canada was much larger than in the United States, due largely to CBC Radio-Canada, “which aired more than twice as many climate change stories as did any other channel” (2014, p. 503). This was especially true during the 2008 Canadian federal election when the importance of climate change as a political issue grew significantly (Konieczna et al., 2014).

Ellen Good also found that Canadian news media reported on climate change with greater frequency than news media in the United States and than in other international papers. She additionally notes that science is the most popular frame for reporting on climate change in Canada, with greenhouse gasses as a fairly popular framing device. These, she observes, are ascribed the blame for climate change rather than direct human causes (Ellen Good, 2008). Both studies (Ellen Good, 2008; Konieczna et al., 2014) showed that the more a topic is covered by the media, the larger awareness is about it in the public agenda, and the more its audience considers it important, meaning that climate change is a prominent issue in Canada.

We can also see the importance of understanding framing when it limits a news source’s ability to communicate the seriousness of a situation. This is apparent with articles when climate change is framed as a threat, such as portraying it as the cause of natural disasters, which were found to not be as frequently written as those with a more positive outlook (Ellen Good, 2008). Framing can be problematic when used in this way, because it can cause the audience to misunderstand what is happening with climate change in Canada (Konieczna et al., 2014).

As discussed above, failure to question this type of framing is dangerous because an article “reproduces rather than contests given ideological systems” or social conventions around climate change (J. W. Scott, 1991, p. 778). An article presents experiences that are necessarily

located. Further, what counts as an experience is “neither self-evident nor straightforward”; it is “always contested, and always therefore political” (J. W. Scott, 1991, p. 797). To challenge the norm and invite change, an author would need to call into question the portrayal of climate change in the language of their own text, and question how that portrayal came into existence. Even when done, this will not ultimately guarantee neutrality, but it will give insight into the creation of that subject over time (J. W. Scott, 1991).

Konieczna et al. also pointed out the impact of leaving out this kind of questioning when looking at the overwhelmingly local focus of Canadian articles on climate change. When it comes to a global issue like climate change, it can be difficult to convey the complexity of the issue without filtering it through a domestic lens, framed by local history and politics. Using a global framing of climate change allows journalists to shape the image of climate change more ethically, focusing on the wellbeing of a “global humanity” (Konieczna et al., 2014, p. 504) and emphasizing “global values” and “global citizenship” (p. 492). A more local focus is more specific to a certain community at a specific time, which they explain happens “because of a lack of connection to a global community”, and at the same time can reinforce isolation from the global community (Konieczna et al., 2014, p. 492). For example, nation-states dominate media representations of climate change, especially reporting on climate conferences. Groups that are not nation-states are left out, such as Indigenous peoples.

As previously mentioned, just like with framing, Roosvall and Tegelberg explain how misframing can also shape identity and tie articles to specific geography. Climate change articles about specific provinces and countries are about those areas at the expense of other areas; this separation of climate change into separate individual events and areas is an example of the failure of news media reporting on the scale of climate change. Understanding misframing of

events such as climate conferences “allows researchers to determine whether climate related issues are connected to relevant scales in media reporting” and better understand how local understandings of climate change shape politics (Roosvall & Tegelberg, 2015, p. 50). When it comes to digital news media, this is especially important because of how accessible and influential reporting on climate conferences is (Roosvall & Tegelberg, 2015).

One way this plays out in Canada is that Canadian media often portrays a “western” perspective of climate change, while news media often misunderstands, misrepresents, or outright excludes the perspectives of different Indigenous groups in coverage. Roosvall and Tegeleberg note that their research “indicates that indigenous peoples are ‘used’ in media reporting to highlight the urgency of climate change, while their political perspectives are largely ignored” (Roosvall & Tegelberg, 2015, p. 44). They found that independent and alternative news media was more likely to include Indigenous perspectives on climate change. When it came to larger mainstream media, there was more concern about how much attention a story would generate, citing an example of the focus on the impacts climate change will have on polar bears in Canadian arctic media, and the absence of reporting on the concerns and impacts climate change will have on the indigenous communities living there (Roosvall & Tegelberg, 2015).

Methods and Design

Through the process of carrying out my research and working with existing archives, I created my own archive by collecting articles about climate change from Quebecois news media sources. As I previously discussed, the methods that I used to create my archive can inform what the archive can tell me. In the same vein, because I created this archive, it will be filtered through my own framing and biases, as well as those of the tools that I used to help me create the archive.

I have documented the process here to shed light on how I arrived at the archive I have as well as to keep the context of my archive with the archive itself.

I chose to do my research online because we obtain so much of our news online through social media and news sites today, through various algorithms and search engines. Specifically, I looked at Quebecois online news media because of its easy accessibility and the influence that online news media has over the actions of groups and individuals. Understanding how climate change is reported in Quebec provides anthropological insight into the way that this media shapes their view of climate change (Stalcup, 2020). To find the articles for my research, I used the platform Media Cloud. Media Cloud is an online “open source platform” that allows individuals to “[study] media ecosystems” (*About*, n.d.). I chose Media Cloud because it can display media stories and articles that different online platforms have published, and more specifically allowed me to filter the stories and articles to those that corresponded with one specific geographical location: Quebec.

To determine the sources and articles I would include, I used the pre-created media collection on Media Cloud titled “Quebec, Canada – State & Local” from the Media Cloud Source Manager tool. This media collection contains a total of 209 sources with stories going back to 2010. Media Cloud created the collection as one of many geographical collections using the ABYZ News Links index. The Media Cloud staff has worked on these collections as well, working to verify that the sources are reporting from or about the areas that they are linked to. They also take suggestions from their userbase and individuals who are from these locations (*Approaches to Searching by Place in Media Cloud*, n.d.).

The search term I used when exploring this media collection was “*changements climatiques*,” or “climate change” in English. This was the term that was most commonly used to

describe climate change in French among the media sources in the collection, as well as the term used by the government of Canada (Canada, 2017). I examined sources over a five-year period, starting with Justin Trudeau's election as prime minister during the week of November 4th of 2015 and ending the same week in November of 2020. I chose to start on this date because, not only did Trudeau promise to focus more on climate change during the election campaign (Narwhal, n.d.), but a month later the Paris Agreement was signed at the 2015 UN Climate Change Conference (COP21).

I used two tools from Media Cloud to find the articles that I looked at. The first tool is Explorer, which gives details on how certain keywords or phrases media is reporting on. It allowed me to track attention over time as well as the percentage and number of articles published on a given day containing specific keywords. It also showed me other statistics, such as what other words trended with the keywords I searched (*About / Explorer / Media Cloud*, n.d.).

The second Media Cloud tool I used to find articles was Topic Mapper, which also looks at specific keywords and phrases, allowing me to collect specific articles that were related to those that I had viewed with Explorer. It collects the articles via a process of "spidering" which follows links that are in the stories related to my keywords, returning a collection of related stories and how often those stories were linked or further reported on by other news sources at the time of the search. Like with Explorer, Topic Mapper also allowed me to see other words that were commonly associated with my keywords. It also gave me an idea of which sources reported on climate change based on the parameters of my search. This allowed me to get a better idea of the kinds of climate change articles that were most prominent online (*About / Topic Mapper / Media Cloud*, n.d.).

When looking at the results from Explorer and Topic Mapper, I chose to view my results by week, rather than by day or year. This allowed me to see spikes in popularity more clearly, especially when, after periods of low engagement, a day with two or three stories would cause a spike. Viewing the stories by week also made it more manageable to view trends over a five-year period, even as the number of stories increased over time.

I chose to analyze stories from the weeks with spikes in popularity and selected the top ten peaks over the entire five-year period. I also selected the top two peaks from each year, starting the week of November 4th, 2015. This was to account for the fact that there was more media released in later years, skewing the peaks in favour of later years when viewing the amount of content published. I did this for three different data sets. The first two data sets were from Explorer; one showed the percentage of stories published every week that contained my key phrase “*changements climatiques*,” while the other showed me the number of stories published per week containing the phrase. The third data set was from Topic Mapper and showed me how many times an article was linked back to in each week.

After I had determined which weeks I would be looking at, my next step was to look up each week to determine what events may have been happening at the time that might have contributed to the spike. I examined the Topic Mapper results for each week that I had collected and sorted the data by the articles that had the most link shares. I chose the top five articles from each week to analyze in more depth. I then looked for the main themes and topics of each article including the events and places they contained. I also recorded which source had published the article, when it published the article, and whether the source allowed comments on its articles. If the source did allow comments on an article, I would record whether there were comments

present, and, when comments were present, I recorded the number of comments and the topics of discussions in the comment sections.

Findings

First, I will discuss the dates of the weeks when climate change reporting was trending. The first measure of trends was what percentage of the media on a given week matched my search terms. When looking at the weeks with the highest percentage of stories published related to “*changements climatiques*,” the earlier years had higher percentages which then declined as time went on. As a result, the top ten weeks by percent had a higher concentration in the earlier years: all but two of the weeks are from either 2015 or 2016, and no weeks appeared after 2018.

Table 1: Percent of Stories Per Week on “changements climatiques” (cc)

Top 2 <i>cc</i> Articles for Each Year	Percent of <i>cc</i> Articles Published	Top 10 <i>cc</i> Articles Overall	Percent of <i>cc</i> Articles Published
4-Nov-15	6.31%	4-Nov-15	6.31%
2-Dec-15	13.08%	18-Nov-15	6.03%
16-Nov-16	3.34%	2-Dec-15	13.08%
14-Dec-16	3.14%	9-Mar-16	5.07%
19-Sep-18	1.94%	23-Mar-16	3.18%
17-Oct-18	1.79%	8-Jun-16	2.56%
12-Dec-18	2.83%	12-Oct-16	2.73%
10-Apr-19	2.1%	16-Nov-16	3.34%
4-Dec-19	1.31%	8-Mar-17	2.46%
12-Feb-20	1.68%	12-Dec-18	2.83%

The second measure of trends was the total number of stories published related to “*changements climatiques*” during a given week. The number of articles related to my search gradually went up over the five-year period. The number of weeks clustered around later years in the top ten weeks for articles published reflects this as well, as no top weeks appeared before 2018, and all but four of the weeks are from 2019.

Table 2: Number of “changements climatiques” (cc) Stories per Week

Top 2 cc Articles for Each Year	Number of cc Articles Published	Top 10 cc Articles Overall	Number of cc Articles Published
2-Dec-15	31	12-Dec-18	403
12-Oct-16	24	1-May-19	416
17-May-17	137	2-Oct-19	707
7-Jun-17	194	16-Oct-19	546
19-Sep-18	164	30-Oct-19	545
31-Oct-18	254	13-Nov-19	348
2-Oct-19	707	4-Dec-19	343
16-Oct-19	546	29-Jan-20	331
7-Oct-20	382	7-Oct-20	382
28-Oct-20	397	28-Oct-20	397

The final measure of trends I used was the number of stories related to “*changements climatiques*” that were linked to, measured through the process of spidering. As with the results for the number of articles published over time, the number of articles that were linked to increased over time. In the top ten, the earliest week was in 2017, and all but three of the weeks are from 2019.

Table 3: Number of Links per Week

Top 2 cc Articles for Each Year	Number of Links to cc Articles	Top 10 cc Articles Overall	Number of Links to cc Articles
18-Nov-15	19	7-Jun-17	124
2-Dec-15	38	12-Dec-18	155
7-Jun-17	124	1-May-19	172
13-Sep-17	81	12-Jun-19	118
13-Jun-18	81	10-Jul-19	115
19-Sep-18	106	26-Aug-19	123
2-Oct-19	316	2-Oct-19	316
16-Oct-19	247	16-Oct-19	247
13-Nov-19	127	13-Nov-19	127
29-Jan-20	109	29-Jan-20	109

Many of the weeks also corresponded with significant environment related events, such as international climate change conferences, the release of high-profile climate change reports or policies, climate change related strikes, natural disasters, and heat records. Other weeks also corresponded to high profile political events that were not necessarily overtly related to the environment or climate change, such as national election campaigns in Canada and the United States and the change of government officials in both countries.

Despite collecting a total of 60 weeks, only 32 of those weeks were unique because some were in the top for multiple categories. Among the weeks that appear in the top ten overall and the top two per year, the weeks that came up in the top the most were: Dec 2, 2015, Dec 12, 2018, Oct 2, 2019, and Oct 16, 2019. Dec 2, 2015 corresponds with the Paris Agreement, Dec 12, 2018 corresponds with a different UN climate change conference, and the two weeks in October of 2019 both took place after the climate marches and during the campaigning leading up to a Canadian federal election.

Table 4: Weeks and Corresponding Events

Week	Occurrences	Events
2-Dec-15	4	Paris Agreement
12-Dec-18	4	UN climate change conference
2-Oct-19	4	Climate marches, Canadian election
16-Oct-19	4	Climate marches, Canadian election, new IPCC report
7-Jun-17	3	G7 summit, Trump's climate change actions, Environment Day
19-Sep-18	3	Quebec elections, G7 meeting
13-Nov-19	3	Greta Thunberg speaks in Vancouver, new Canadian government
29-Jan-20	3	Hottest January on record, Australia fires
4-Nov-15	2	New Environment Minister, Paris Conference
18-Nov-15	2	Paris Conference
12-Oct-16	2	International agreement to limit emissions, Paris Agreement ratified
16-Nov-16	2	COP22, US election
01-May-19	2	UK promise to cut emissions to zero
4-Dec-19	2	New Canadian government
07-Oct-20	2	Prince William TED talk about climate change
28-Oct-20	2	US election
9-Mar-16	1	Vancouver Declaration on climate change, new heat record
23-Mar-16	1	New heat record
8-Jun-16	1	World Environment Day
14-Dec-16	1	US election
8-Mar-17	1	UN climate change panel OHCHR
17-May-17	1	UN climate change conference
13-Sep-17	1	US leaving Paris Agreement
13-Jun-18	1	New IPCC publication
17-Oct-18	1	IPCC report, UN climate change meeting
31-Oct-18	1	IPCC report, UN climate change meeting
10-Apr-19	1	Substantial rain and ice storms
12-Jun-19	1	Environment Day
10-Jul-19	1	Hottest July ever recorded
26-Aug-19	1	IPCC report released
30-Oct-19	1	Upcoming COP25, Chile cancelling hosting the conference
12-Feb-20	1	Fires in Australia

I recorded a total of 160 articles over the 32 unique weeks. Most of the articles were popular in the week they were published; however, there were also some articles that came up as popular a few years after their publication date. Many of these articles were about the Paris Agreement, while the others were about the American president Donald Trump's climate change views and actions as well as the actions of other politicians related to climate change.

Over the 160 articles, there were a total of 52 unique sources represented, with 14 of those sources responsible for more than one article. The most common sources were Radio-Canada with 60 articles and La Presse with 17 articles. The next most common sources were Les Affaires, Le Journal de Montréal, Le Journal de Québec, and the government of Canada with six articles apiece. The remaining sources had five or fewer articles.

Table 5: Sources with More Than One Article

Source of Article	Count of Source
Radio-Canada	60
La Presse	17
Le Journal de Montréal	6
Le Journal de Québec	6
Les affaires	6
Gov Canada	6
Le Devoir	5
TVA Nouvelles	3
Le Monde	3
Reporterre	2
L'Éveil	2
Gov Quebec	2
Cirano	2
Le Charlevoisien	2

There were 24 separate locations that were the primary focus of their respective articles. Of these locations, 11 were the focus of more than one article. The three most popular locations

were Quebec with 46 articles, Canada on a national level with 36 articles, and articles with an international focus with 31 articles. Of the articles focused on Canada, 105 were either at a national level or pertaining to specific provinces, territories, or regions. Quebec specifically was the focus of 69 articles. The most referenced country outside of Canada was the United States, with 13 articles, and the most referenced provinces outside of Quebec were Alberta and Saskatchewan, with five articles each. All other locations were the primary focus of an article three or fewer times.

Table 6: Locations Reported on Two or More Times

Location in Article	Count of Location
Quebec	46
Canada - National	36
International	31
United States	13
Alberta	5
Saskatchewan	5
France	3
BC	2
Nova Scotia	2
The Arctic	2
Manitoba	2

I identified a total of 115 different events reported on across all the articles, with the most frequently reported events being the Paris Climate Conference and the carbon tax, both with nine different articles. There were 13 different events that were the focus of more than one article. The remaining events covered by more than one article are as follows: Canada's national climate change strategy had seven articles. The effects of climate change on agriculture and Donald Trump's climate change stance in 2016 each had six articles. The floods in Quebec in 2017 and 2019 came up in four articles. The United States leaving the Paris Agreement in 2019, the Trans

Mountain Pipeline, and electric transportation each had three articles. Finally, Trudeau's new cabinets in 2015 and 2019, Canadian space satellites, the greenhouse gas agreement in 2018, and the IPCC, all had two articles apiece.

Table 7: Events Reported on Two or More Times

Event in Article	Count of Events
Canada's carbon tax	9
Paris Conference and Agreement	9
Canada's national climate change strategy	7
Agriculture and the effects of climate change	6
Donald Trump's climate change stance	6
Floods in Quebec in 2017 and 2019	4
The US leaving the Paris Agreement	3
Trans Mountain pipeline	3
Electric transport	3
Canadian satellites	2
Trudeau's new cabinet	2
The international greenhouse gas agreement	2
IPCC/GIEC	2

I coded 36 different general themes within the articles, which occurred a total of 336 times throughout the articles. Eight themes occurred ten or more times. The most frequently occurring theme was politics and the actions of politicians and governments, occurring in 77 different articles. The second most frequently occurring theme was the local impacts of climate change with 39 articles, followed by economics with 33 articles, energy with 31 articles, research with 25 articles, conference with 22 articles, elections with 14 articles, and activism with 10 articles.

Table 8: Table 7: Themes Occurring Two or More Times

Theme in Article	Count of Themes
politics	77
local impacts	39
economics	33
energy	31
research	25
climate conferences	22
election	14
activism	10
natural disaster	9
agriculture	9
technology	8
protests	6
greenhouse gasses	6
pipeline	5
anti-skeptic	4
weather	4
pollution	4
transportation	3
health	3
biodiversity	3
petition	2
journalism	2
mining	2
holiday	2
conservation	2

Another feature I recorded data on was the presence of comment sections. Of the 160 articles, 75 offered the option to comment. Of those 75 articles with comment sections, only 32 had one or more reader comments. Radio-Canada articles were both most likely to have the option to comment, with 45 articles, and most likely to have comments, with 27 articles. Le Devoir had two articles with reader submitted comments, and L'Actualité, Sciences et avenir, and Le Figaro each had one article with reader submitted comments.

In total, there were 1,623 comments across all the articles. There was one outlier with a larger comment count than all other articles combined, which was an article by Le Figaro, a French language newspaper from France, with 906 comments on a single article. The second most commented on article was a Radio-Canada article with 113 comments. Radio-Canada articles were responsible for 676 comments, while the other three sources were responsible for a combined total of 41 comments across four articles.

Table 9: Sources of Articles with Comment Sections

Source	Count of Sources	Count of Comments
Radio-Canada	27	676
Le Devoir	2	6
L'Actualité	1	34
Sciences et avenir	1	1
Le Figaro	1	906
Total	32	1623

Of the articles with comments, the articles featured 12 separate geographical locations. Eight of them were about international events; Canada, on a national level, and the United States were the main subject of six articles each; and four of them were about Quebec. There were 16 articles that referred to Canada on any level, and the remaining articles each focused on one location each. Without the outlier, articles about the United States attracted the most comments with a total of 205 comments, followed by internationally focused articles with 181 comments, and an article about Alberta with 113 comments. All other locations had fewer than 100 comments. With the outlier, articles with an international focus had the most comments with 1,087 comments.

Table 10: Locations with More than One Article with Comments

Location	Count of Locations	Count of Comments
International	8	181 (1,087)
Canada - National	6	87
United States	6	205
Quebec	4	68
Total	24	541 (1,447)

The articles that had comments were most often about Canada's national climate change strategy and the carbon tax, with four articles each with comments. Other events that came up more than once were Donald Trump's climate change stance, with three articles, the United States leaving the Paris Agreement, with two articles, and the Paris Conference, also with two articles. Without the outlier, articles about Canada's national climate change strategy attracted the most comments at 146, closely followed by Trump's climate change stance with 145 comments. All other events had fewer than 100 comments. With the outlier included, the most commented on event was the Paris Conference, with a total of 945 comments.

Table 11: Events with More than One Article with Comments

Event	Count of Events	Count of Comments
Canada's national climate change strategy	4	146
Canada's carbon tax	4	46
Donald Trump's climate change stance	3	145
The US leaving the Paris Agreement	2	57
Paris Conference and Agreement	2	39 (945)
Total	15	433 (1,339)

I recorded 67 themes across all 32 articles with comments. Articles about politics were the most likely to have comments, with a total of 18 of the articles about politics having comments. Economics and local impacts were the second most likely to appear, with seven

articles each having comments. Climate conferences and energy were third, with six articles each. All other themes came up five or fewer times. Without the outlier, articles with the theme of politics also had the most comments with 521, followed by economics with 208, energy with 195, election with 115, research with 112, and climate conferences with 102. All other themes had less than 100 comments. With the outlier included the articles about a climate conference had the most comments with 1,008 comments.

Table 12: Themes with More than One Article with Comments

Theme	Count of Themes	Count of Comments
politics	18	521
economics	7	208
local impacts	7	59
climate conferences	6	102 (1,008)
energy	6	195
research	5	112
election	2	115
technology	2	54
agriculture	2	20
pollution	2	32
greenhouse gasses	2	36
Total	59	1,454 (2,360)

In the comment sections, the topic of discussion was often either a debate about politics or a debate as to what the most correct or best way to solve climate change problems would be. Questions to the author of the article or other commentors were also common. While there were the occasional comments outright denying climate change, they were not common and other commentors often responded directly to them with explanations as to why climate change is, in fact, real.

Discussion and Analysis

Articles

One of the first things I noticed in my findings was that the percentage of articles published related to “*changements climatiques*” decreased from 2015-2020, while at the same time the number of articles related to “*changements climatiques*” and the number of times these articles were linked to increased from 2015-2020. The first result, the decrease in percentage of articles as time goes on, is supported by Cody’s (2015) and Bray’s (2018) explanation of the increase in mass media online. Their findings for newspapers in southern India and for English-language scientific article alt-metrics, respectively, holds for Quebec: the percentage of articles referencing “*changements climatiques*” is decreasing, while the overall number of articles referencing “*changements climatiques*” increased in Quebecois news media. Despite the decreasing percentage, the increase in the amount of news media reporting on climate change signifies that this decrease in percentage does not necessarily mean that climate change is disappearing from the public sphere in Quebec (Ellen Good, 2008; Konieczna et al., 2014).

Supporting this interpretation, context shows that events inspired spikes not only in publications of stories about “*changements climatiques*,” but also in the sharing of content related to the subject. Most of the events that corresponded with spikes in publication and linking to articles have a direct connection to climate change or the environment, unsurprisingly as I selected for those terms. However, there were also spikes that did not have such a direct connection. These were political events, such as elections and international conferences, which highlights a connection between politics and climate change in news media. This is also supported by Bray’s (2018) findings that politicians and politics are where the digital news media is turning to when looking for strategies to combat climate change. As mentioned in

Skinner's framework (Tully, 1988) and Scott's discussion of it (2004), placing the articles in the context of the events happening around when they were written is useful. Understanding what was going on helps understand not just what is in an article, but how a topic comes into being. Thus, it is relevant that not all the articles I collected which were published at the time of major events discussed those events; they also mentioned other news related to climate change.

In a few cases, some articles were linked to more frequently months or years after they had originally been published. Because these articles were often covering the details of noteworthy events such as the Paris Agreement or the US announcing withdrawal from the Paris Agreement, they served as foregrounding articles in the moment. Later on, they are used by other articles to reference the news media coverage of those events as they happened (Bray, 2018).

When it comes to the different organizations writing content about climate change, over a third (60) of the articles came from Radio-Canada. *La Presse*, the second most linked to source, had less than half the number of articles that Radio-Canada did at 17. *La Presse* is one of Canada's largest French language newspapers, as well as an independent, non-profit organization (*La Presse*, n.d.). Nearly half (77) of the 160 articles came from these two sources, which are largely regarded as reputable news sources in Quebec with a center-left bias (*ICI Radio-Canada*, 2022; *La Presse*, 2022). Radio-Canada's dominance of the findings is predictable due to its ability to take advantage of government funding and its reputation as a pillar of Canadian culture (McLeod & Camlot, 2019).

Other sources that came up frequently, however, were *Le Journal de Montréal* and its sister paper, *Le Journal de Québec*. Together they are responsible for 12 articles, making them the third most popular source in the findings. Both founded and owned by Quebecor, the two papers are right-leaning tabloids with a reputation for sensationalizing content and a mediocre

fact-check rating (*Le Journal de Montreal*, 2022). The sensationalized stories allow them to compete with larger and better funded news media companies, such as Radio-Canada, by boosting the likelihood that their articles will be promoted by social media and search engine algorithms (Bray, 2018; Cody, 2015). Together, Radio-Canada, La Presse, and Quebecor are the organizations that are being linked to online more frequently in Quebecois communities, which gives them a greater reach and greater influence over the perception of climate change in Quebec.

When it comes to locations, most of the articles' (105) focus is on Canada-related news. Articles focused on Quebec (46) came up most frequently, followed by Canada at a national level (36), and then articles with an international scope (31), which demonstrates a more local framing by Quebecois news media. This is in line with Ellen Good (2008)'s and Konieczna et al.'s (2014) findings on the way Canadian news media frames climate change. Quebec sources would choose to frame climate change related news locally first, with the intention to appeal to a Quebecois audience, before a national, and then an international framing. Each level of modulation from international to provincial adds another lens and another framing to the portrayal of climate change, as the journalists strive to find a story that will resonate with their specific audience. It also decreases the scope of climate change the audience is exposed to, as they are more likely to have narrowly and specifically framed pieces of what is happening related to climate change rather than a larger, more complete picture (Ellen Good, 2008).

Outside of Canada, the United States was the most frequent country targeted by articles (13), even above other Canadian provinces. This is not merely because Quebec shares a border with the United States, because the other provinces that border Quebec, such as New Brunswick and Ontario, were only the focus of one article each. This is also congruent with Konieczna et

al.'s (2014) findings, as the United States' news media perspective is more global, due to its need to cater to a much larger audience than Canada.

Alberta and Saskatchewan, both provinces from the prairies, were the provinces most featured in articles outside of Quebec itself, with five articles each. This becomes more significant when taken in context of Quebec's perceived ongoing rivalry with Alberta and the prairies regarding energy production, climate change strategies, and Canadian politics. Articles about Alberta or the Prairies, including Saskatchewan, are more likely to generate outrage. Alberta and Saskatchewan are easier to sensationalize as a villain or antagonist to Quebec's efforts, making them appealing subjects to Quebecois journalists looking to boost engagement of their content source (Bray, 2018; Cody & Paz, 2021).

When it came to events reported on, the Paris Conference and the carbon tax were the two most popular topics with nine articles each. The two topics are connected in Quebec, as Quebec was the first province to implement a provincial carbon tax, and the agreement reached at the Paris Conference would eventually lead to a nation-wide Canadian carbon tax program. They are also polarizing topics, with many arguments and disagreements about how the government and politicians should apply both the carbon tax and the results of the Paris Conference in practice. Articles about Canada's national climate change strategy (7) and articles about Trump's effects on climate change (6) and pulling out of the Paris agreement (3) were also prevalent in addition to being highly contested and polarizing topics. Each of these events is a government initiative that affects individuals' lives and journalists would have initially covered them as the news broke, and then again as people began to propose solutions and disagree, making them topics that were more likely to generate engagement and become prioritized by algorithms. All of these reasons make these topics more appealing to journalists, especially

because they can be framed as directly affecting individual Quebecois (Bray, 2018; Cody & Paz, 2021; Roosvall & Tegelberg, 2015).

When it comes to the themes in the articles, articles mentioning politics (77) were the most common by more than double, with close to half of all the articles containing references to politics. Included in these articles are international conferences, government regulations and policies, and protest movements. Even articles that did not primarily focus on political events often contained information about the political effects of natural disasters or climate change on a single community, which demonstrates a heavy political framing in the media ecology surrounding “*changements climatiques*” in Quebec. This also fits with the rise in politics and political figures consulted in digital news media, as mentioned previously (Bray, 2018).

The second most common theme was the exploration of the local impacts of climate change on an area (36). This type of framing is consistent with findings about the prevalence of local framing surrounding climate change in Canada (Ellen Good, 2008; Konieczna et al., 2014). It also means that these articles are more susceptible to misframing as they seek to make connections with their local audiences. Climate conferences are also on the list, as the sixth most common theme, mentioned in 22 of the articles, supporting how a lot of climate change in Canada is reported on via framing through these conferences (Roosvall & Tegelberg, 2015). However, despite this, research was just above climate conferences with 25 articles, implying that Quebec news media still considers research to have an impact when framing articles related to climate change in Quebec. Natural disasters were not as frequently featured in articles (9), which also makes algorithmic sense because they are shared, unifying events, less likely to generate polarized reader engagement. News media has less incentive to publish them, and when

they are published, less engagement means lower priority within algorithms, leading to even less visibility (Ellen Good, 2008).

The data on the main events and themes covered in the articles further supports the argument made by Scott (1991) on how the way climate change is portrayed can reproduce specific ideological systems. We can see this most visibly in what the news media is not reporting on in the articles that were shared, such as various species going extinct, the use of chemicals and pesticides in farming, and the effects of their runoffs on water sources, or, apart from the Trans Mountain Pipeline, the extraction of natural resources. Even the stories covering the Trans Mountain Pipeline focused on the scandal it caused for Trudeau and the implications it would have for relations between the government and Indigenous communities. The way these articles frame the pipeline also supports the way that indigenous communities are used in news media with regard to climate change in Canada (Roosvall & Tegelberg, 2015). Overall, Indigenous narratives and perspectives are broadly missing from the findings, apart from those articles about pipelines and climate related protests.

Comments and the Comment Sections of Climate Change Articles

When it comes to reader engagement, comment sections on the articles were uncommon, with less than half of the articles (68) offering the option to comment. This number decreased by more than half again to 31 articles that had attracted one or more reader comments. Radio-Canada was responsible for nearly all the comment pages (27). This is due to the previously mentioned lack of resources, both in workforce and financial, required to host a sufficiently moderated comment section. Radio-Canada themselves have reported on the difficulties of

running news media comment sections, with smaller news sites finding the job taxing and a minefield of harassment (Radio Active, 2016).

Despite its more robust funding, moderation limitations also affect the nature of the comments on articles published by Radio-Canada. Radio-Canada removed anonymous commenting (Radio Active, 2016), and other comment sections required sign-up with email and verification before posting or used Facebook comment sections. These changes, combined with comment moderation by newspapers staff on the lookout for misinformation and disinformation, means it is also probable that moderators have dissuaded or removed more inflammatory or misleading comments. This pushes the contents of comments to a more moderate tone than they might have otherwise had. This is one probable reason for the lack of comments about climate change denial. Commenters were more likely to discuss the political ramifications of climate change and debate viable solutions to climate change problems. Not all the solutions mentioned were feasible or even made sense, but they demonstrated a desire to come up with a solution rather than to deny that there was a problem.

We can also see difficulties in dealing with comment sections in the absence of results in this paper on comments from *Le Journal de Montréal* and *Le Journal de Québec*. Both sources regularly include comment sections on their articles, however, in mid 2020, the company stopped outsourcing their comment sections to Facebook due to technical difficulties and now self-host and run their comment sections on their own site. This resulted in articles published in or prior to 2020 having their comment sections deleted (Journal, 2020).

In the findings, Radio-Canada would be the source with the most comments (676), if not for an outlier from *Le Figaro*. *Le Figaro* only had one article in my findings, but there were 906 comments on that single article. *Le Figaro* is a large francophone newspaper from France, with a

reputation for factual reporting and a right-center bias (*Le Figaro*, 2022). The article in question is a foregrounding (Bray, 2018) article announcing the Paris Agreement and detailing the results of the Paris Conference. The article had a much more international reach than any of the Canadian news media articles in the findings, and the framing of this article is abundantly global, with a slight focus on France. The behaviour of the participants also reflects this in the comments, with a more diverse population engaging than those on the Canadian sites with comments.

Most of the comments from the outlier, however, express extreme dissatisfaction with the Paris Agreement because they do not feel like it is doing enough. There are also a lot of comments by individuals voicing their discontent and mocking political leaders and NGOs for not living up to expectations of their desired efforts against climate change. These comments are an example of how outrage drives engagement. As readers interact through the comment section, the cycle of outrage grows, as an increased number of individuals feel the need to contribute their thoughts to the discussion. The increased levels of engagement contribute to boost the article's popularity in social media and search algorithms (Bray, 2018).

Looking at the rest of the findings for the comment sections, the types of articles that were more likely to have comments framed in a more international scope, which is supported by their appeal to a wider audience. However, the location featured in the articles with the highest comment count (205), was the United States. Articles about the United States that readers commented on were almost entirely about Trump's climate change policies, including pulling the US out of the Paris Agreement. These kinds of articles attracted comments that criticized American politics as well as a lot of ridicule towards Trump.

Similarly, excluding the outlier, the article with the most comments overall (113), focuses on Alberta pulling out of Canada's national climate change strategy. This fits with the earlier discussion of Quebec's villainization of Alberta and the prairies, combined with the controversiality of Canada's national climate change strategy. It is also consistent with the same outrage driven engagement that we can see in the comment sections of both the outlier and the articles about the United States. Understanding how social media algorithms prioritize outrage and engagement (Bray, 2018; Cody & Paz, 2021), an article about Alberta pulling out of Canada's climate change policy is more likely to motivate engagement from Quebecois who are angry or dissatisfied with Alberta's actions or excited to berate its choices.

With the outlier, articles about climate conferences generated the most engagement from readers in comment sections (945). Without it, articles about politics generated the most engagement in the comments (521). Articles with an economic focus or discussing local impacts were equally likely to attract comments, but articles about economics had a far greater number of comments (208) than those about local impacts (59). One way this can be explained is that the framing of articles about local impacts are far more specific to certain communities and receive less engagement outside of those communities, while economics is a much less location-bound topic, allowing for engagement from individuals who might not be from the specific location that an article is framed towards (Konieczna et al., 2014; Roosvall & Tegelberg, 2015). Another reason is because the topic of economics is one that lends itself much more easily to outrage and polarization than a report about climate change in a local area. This explains how the articles with economics would generate more engagement, as an algorithm would be more likely to pick them up and promote them, in addition to further spreading through those who are engaging with them sharing them with others.

We can see the overwhelming use of a political framing of climate change in the impact on the perception of individuals discussing events in comment sections, as they constantly decried specific politicians for their mistakes. The popularity of more localized framing can also be seen here as readers wrote comments that, at times, blamed one individual for a problem that is much larger than any one person could be responsible for (Roosvall & Tegelberg, 2015). This kind of environment is ripe for the type of exploitation that Cody (2015) and Carvalho (2007) argue populist leaders seek to take advantage of. Through the polarization and political (mis)framing of climate change, it is easier for populist leaders to take advantage of these spaces, drive outrage, and mobilize the individuals interacting with this type of news media.

Conclusion

In the end, I gained a deeper understanding of what climate change reporting looked like in Quebec over a five-year period. Some things I expected, such as the outrage generated by articles about the climate change policies of the United States and Alberta and the general increase in climate change reporting over the years, especially since both Trudeau's election and the Paris Conference at the end of 2015. I was not expecting to find so little outward climate change denial, instead finding it in a more subtle form, rather than outright denial. What was missing from the articles told me a lot more. It also surprised me how few news media companies offered comment sections on their pages, although in the context of budget cuts and laws surrounding responsibility for web content, it makes sense that comment sections have become less popular over the years.

The way I interact with news media online has the potential to shape future news media about climate change. In my group chat, we had posted outrage driven articles and sometimes

discussed them solely based on the sensationalized headlines, without fully reading the content of the article. Even though I did not agree with the content in some of the articles, I still shared them and contributed to their popularity and their exposure to others. This kind of engagement with news media might have negative consequences that I do not immediately see, such as how others might understand the article I shared and where it might go after. It tells social media algorithms that this is the type of content that I want to see via my engagement.

It is extremely easy to manipulate groups of people into mobilizing around an ideology, especially when others intentionally shape that ideology through misframing and deceit. Seeing how I have been unknowingly contributing to it disturbs me. I also realize that I am not alone in this behaviour. I have seen many other people, friends and family engage with news media in this way. A lot of sensationalized news media spreads because of people who do not necessarily agree with it but are engaging with it. Together we are telling algorithms and news media companies that we will click on and share that kind of content, making it more profitable for them.

Sharing media is only one part of engaging with news media though. Another aspect is making sure that I pay more attention to the framing and mediation of articles that I read. The benefits of doing this allow us to think more critically about what is going on around us, and to remember to look for the perspectives and framing that are missing when researching information or reading news media. This way we can work to fill in the blanks and create or boost the perspectives that are missing.

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