# The impact of artificial intelligence on journalistic practices in Canada

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Résumé: Le domaine journalistique est fortement influencé par les innovations techniques et technologiques. L’émergence des GAFAM force les médias à revoir leur modèle d’affaires et à innover pour survivre. Les outils liés à l’intelligence artificielle gagnent en popularité dans les salles de nouvelles pour aider les journalistes. Cette recherche aborde les usages faits de la technologie dans les salles de rédaction au Canada.

Abstract: Journalism is strongly influenced by technological and technical innovations. The increase of GAFAM’s use and popularity forces media outlets to review their business model and find ways to survive. The uses of tools related to artificial intelligence are increasing in media outlets around the globe. This paper presents the technology’s usage in Canada’s top newsrooms.

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## Introduction

Journalism is at a crossroads. The field is experiencing declining revenues caused by the shift of advertising investment to the digital world, and more specifically to the pockets of GAFAM (Google, Amazon, Facebook, Apple, Microsoft). Added to this is a paradigm shift in media consumption, now also taking place online, creating a one-sided dependence of traditional media outlets on digital platforms in the broadest sense, including Facebook, Instagram, Twitter, but also Apple News, Google News and many others. All of which is unlikely to change, because the COVID-19 pandemic has only accelerated society's trajectory into a more online, mobile and platform-oriented media world (Newman et al., 2020). This new digital economy is affecting media revenues to such an extent that it seems to partly justify media outlets' difficulty in innovating. In fact, our research seems to show that financial means do play a role in the integration of new technologies, including tools related to artificial intelligence (AI). This article presents AI as a potential solution for media to optimize the profitability of their online content, detect fake news, recommend evergreen content or personalized archives to the reader, as well as several other applications that will be detailed below. The ultimate goal is to free journalists from routine tasks so they can produce high value-added content, such as data or solutions journalism, long-form interviews, feature stories, podcasts or any other journalistic content produced through tasks that AI-based tools cannot accomplish.

Historically speaking, the evolution of journalism is intimately linked with technical and technological innovation (Pavlik, 2000). More recently, with the arrival of the Internet and then social media, traditional media had to adopt these tools to reach their audience (Beckett, 2020). The integration of IA-related tools is in continuity with this, as media appropriates technical and technological innovations in order to better serve its readership. As Christian Delporte writes:

"Information appropriates technical innovation, causes it to deviate from its primary destination, applies it to its own needs, because information, down to its very characters, must absolutely take hold of the most recent progress in the area of communications technology." (Delporte, 2005, p. 204)

In our present case, the aims of AI-related tools are twofold. They not only fulfill the need for media to remain up-to-date with technology, but also create the possibility of improving its product in such a way that showcasing its journalistic content is something that can be monetized, while improving and personalizing what it offers to readers, with the ultimate goal of increasing revenue. The range of applications for AI-related tools will be detailed in the section on [definitions and links between journalism and artificial intelligence](#_o7fcec85ag8s), but generally speaking, this technology can be applied in three areas: newsgathering and analysis, content production and distribution of produced content.

This research is specifically focused on the uses of artificial intelligence (AI)-related tools in newsrooms in Canada, to paint a picture of the current situation in the country. In other words, we want to know if media outlets use these tools, and if so, how they use them. This article outlines the findings of a survey sent in fall 2020 to 13 major Canadian media outlets, or media outlets operating in Canada.

## The State of the Press in Canada

Before delving into the subject at hand, it is important, as stated in the introduction, to consider the situation of the press in Canada, and to provide certain definitions in order to demystify a few concepts that are key to the integration of AI-related tools.

The first thing to understand is that GAFAM took over a significant portion of the online advertising market, creating a new digital economy (Bizimana et Kane, 2019). To illustrate this, the Centre d’études sur les médias at the Université Laval states that in Canada in 2019, 58% of the advertising market was digital (CEM, 2020). Of that percentage, 78% was purchased from Google and Facebook, according to numbers from École des médias Professor Jean-Hugues Roy at the Université du Québec à Montréal (UQAM), produced using methodology from the Canadian Media Concentration Research Project at Carleton University (Roy, 2020). In 2003, digital ad investments represented 3% of the Canadian ad market. Over this same period, ad investment in magazines — 1% in 2019 vs. 7% in 2003 —, in weekly newspapers — 4% in 2019 vs. 11% in 2003 —, on the radio — 10% in 2019 vs. 15% in 2003 —, in daily newspapers — 5% in 2019 vs. 31% in 2003 — and on television — 22% in 2019 vs. 34% in 2003 — were all declining (CEM, 2020). This example shows that money has changed hands and is now to be found in GAFAM's pockets.

At the same time, a paradigm shift has taken place in Canadian citizen's media consumption. Indeed, the digital world is becoming more and more important in the lives of Canadians, with 78% of the population saying they got their news online in 2020, according to the *Reuters Institute Digital News Report (*[*https://www.digitalnewsreport.org/*](https://www.digitalnewsreport.org/)*)* (Newman *et al.*, 2020). Similarly, the COVID-19 pandemic has taken a heavy toll on this sector, with 2,553 people losing their jobs in the news media sector in Canada in 2020, according to a compilation made public by the Canadian Association of Journalists and various other organizations (White, 2020). We can see, therefore, that the paradigm shift in media consumption is directly related to this new digital economy, which is increasingly impoverishing Canadian media organizations.

As detailed above, the use of digital media is certainly not going to decrease. The media must therefore learn to operate in this universe by trying to maximize its interactions as much as possible. And it is from this perspective that an analysis of AI-related tools becomes relevant. This technology could in fact offer a range of possibilities to media companies for improving journalistic content and generating additional revenue. There are several successful initiatives, such as *The Globe and Mail* and its Sophi tool, which will be discussed in the results section, as well as one at The Canadian Press/La Presse Canadienne (CP/PC). Besides these, there are numerous uses of this technology in the United States and in Europe. For example, these tools can aid in a journalist's daily work. One case in point is the *Atlanta Journal-Constitution* creating a program that used machine learning to filter more than 100,000 records. Using this tool, they isolated 6,000 records, each of which was manually reviewed by the journalists, allowing them to find "450 cases of doctors who had appeared before medical boards or courts for sexual misconduct, nearly half of whom were still licensed to practice (Lever, 2019 ; Robbins *et al.*, 2015). Similarly, several AI-related uses have allowed media outlets to produce more content for readers. This type of use is common during elections, where several media companies have automated the writing of news briefs based on election results. This was the case at the *Washington Post* and their AI tool Heliograf, which has made it possible for them to cover over 500 electoral races since 2014 (Lever, 2019). At Bloomberg, technology is used to send automatic alerts to journalists when anomalies or trends in data are detected, and they use a tool called Cyborg to automate financial reporting (Mullin, 2016 ; van Rijmenam, 2020). It is therefore clear that more often than not, this technology increases both journalists' productivity and the amount of content produced, without eliminating any jobs or even replacing them. This issue will be discussed in the conclusion.

## Definitions and Links Between Journalism and Artificial Intelligence

In order to make things a little clearer in this article, when we use the term "artificial intelligence," we are drawing on a definition provided by the Director of the Computational Journalism Lab at Northwestern University**,** Nicholas Diakopoulos: "AI is a computer system that can perform a task that would typically require some level of human intelligence" (Kelly, 2020). And so, the term "AI-related tools" refers to automated programs that assist a journalist with their daily tasks, the same way computers and photography did when they were first introduced. This expression better illustrates what is expected from this technology, that is, to assist in journalistic work, not to replace the workforce.

Furthermore, our article lists applications of AI-related tools in three areas of journalism, namely newsgathering and analysis, news production and news distribution.

When it comes to newsgathering and analysis, it is possible to use this technology to highlight trends in datasets that could warrant creating positions in data journalism, or even automated monitoring based on weak signals on a given journalistic beat, whether that be sports, economics, finance, politics or others (Marconi, 2020). On the news production side, there are some AI-related tools that facilitate automatic transcription of interview verbatims (Journalism AI et al., 2019) or automated writing of routine news in sports or finance. Unfortunately, the majority of these tools are in English, even though the Google Cloud speech-to-text tool (<https://cloud.google.com/speech-to-text>) offers French transcription. That said, using it requires basic programming knowledge or audio files with a duration of less than one minute. The Agence France-Presse (AFP) also has a tool called Transcriber (<https://www.afp.com/fr/lagence/medialab/afp-transcriber>) which offers transcription in over 20 languages, but it is exclusively for internal use. The cost varies based on the usage. Finally, this technology has applications in news distribution, making possible the automation of front-page content on different pages of news sites to personalize the experience for the reader (The Globe and Mail Inc, 2020a, 2020b) or even by automatically posting evergreen articles to a news organization's social media accounts (Team Twipe, 2021).

## Research Results

As explained in the introduction, the goal of our research is to paint a portrait of the uses of AI in Canadian newsrooms. Based on a 12-question questionnaire with a comments section sent to 13 major Canadian media outlets or those doing business in Canada, this research has allowed us to establish two general findings detailed below. It must also be said that nine of the media outlets surveyed requested anonymity, so the term *respondent* will be used to refer to this group. The other four will be quoted directly where applicable.

### Limitations

Our research project does have some clear limitations. The fact that we only looked at 13 media outlets, out of the hundreds in existence in Canada, means that we can only draw a summary portrait of the uses of AI across the country. As a result, there may be several ventures of which we are unaware. The purpose of this research is not to provide an overview of all the innovative projects that have been implemented to date, but rather to provide an initial portrait of the situation in Canada. The figures presented in this report will therefore only reflect the media outlets surveyed. However, the results obtained through this questionnaire seem to lay out a number of trends that are directly connected to our research on the subject. Also, since we know what place our respondents occupy in the Canadian media landscape and their reality, we can determine their relevance to the study of this phenomenon. The organizations interviewed are important, established media outlets in Quebec and English Canada.

### First Finding

Our first finding is that there is a disparity in the use of AI-related tools, and the use of this technology varies between media outlets. Aside from *The Globe and Mail* and The Canadian Press/La Presse Canadienne, who use it fairly extensively, six other respondents use it in a much more limited way. In addition, five respondents stated that they do not use these tools. These results seem to indicate that financial means and a media outlet's reach play a role in whether or not they have integrated the use of this technology. Specifically, *The Globe and Mail,* Canada's only national daily newspaper, uses AI-related tools to a great extent in all three of the areas listed above, while at the other end of the spectrum, the Montreal-based daily *Métro,* owned by Métro Média, does not use AI at all. The latter, as well as another of our respondents, do not expect to begin using it within the next five years either. This trend, which is related to a media outlet's financial means and reach, seems to be consistent with trends observed abroad, namely that the wealthiest outlets are often those that can afford to integrate these types of tools, given their ability to absorb the financial risks. Unfortunately, this trend cannot be confirmed. Since *The Globe and Mail* and The Canadian Press/La Presse Canadienne are private entities, their financials are not public. We can nevertheless make that assumption, based on the vital place they occupy in the country, with *The Globe and Mail* as the only national daily and the CP/PC as the only news agency in Canada. And our research does show that the primary listed uses of AI are by major outlets like *The New York Times, The Washington Post, Le Monde* and the *L.A. Times,* among others.

In terms of actual usage in Canada, *The Globe and Mail* uses a tool called Sophi (sophi.io/) that automatically finds and promotes content on the various pages of its website and decides whether or not the article should be behind the paywall. (The Globe and Mail Inc, 2020b). The tool performs this task every 10 minutes and automatically updates all the pages on the site. The media company reports that this tool has increased traffic to its site by 40% and subscription rates by 10% (Proulx, 2020a ; The Globe and Mail and Sophi Automation, n.d.). The media company also states that the rate of people clicking through to an article from the homepage has increased by 17% since the tool's integration. The company mentions that they have reduced their dependence on advertising, which now accounts for only 30% of their revenue, down from 70% in the past. At the same time, subscription revenue now accounts for 70% (Turvill, 2021). *The Globe and Mail,* as well, states that they had 170,000 digital subscriptions as of April 2021, which would put that newspaper in the top 30 in the world for digital subscriptions (Turvill, 2021). The Phillip Crawley-led company was ranked 31st in a more recent ranking published by Visual Capitalist (Ang, 2021). In short, these numbers show that integrating AI-related tools into newsrooms can be beneficial for media outlets. Obviously, the changes did not happen overnight, as media organizations took time to integrate a tool gradually to ensure that the results were conclusive (Turvill, 2021). This approach is precisely part of best practices when it comes to integrating these tools, according to our readings on the subject.

As for other AI-related tools used by our respondents, the results are quite varied. For example, La Presse Canadienne and its English-language counterpart, The Canadian Press, uses a service called Ultrad that translates stories from the Canadian Press (CP) or the Associated Press (AP) into French, which are then proofread and corrected by a journalist, thereby considerably reducing the amount of time spent on the story. The national news agency also uses a tool that automatically writes articles from simple statistical data, such as sports results from the Quebec Major Junior Hockey League (QMJHL), but also from other junior leagues across the country, in addition to financial results, statistical data from Statistics Canada or even electoral data. This article automation technique works from a template whereby the structure of the article is written in advance with or without certain terminological variants, and the statistical data is added from a linked database. In addition, our respondents use AI-related tools to design conversational bots and make use of various tools such as DataMinr and CrowdTangle to monitor social networks and identify viral trends. Finally, many of our respondents also use a reader profile to suggest other articles based on interests. This approach of using first-party data[[1]](#footnote-1) allows the company to store data generated directly by the user on its website and to couple it or not with that of other users, creating a personalized experience by predicting as efficiently as possible the next article that might interest them. *The Washington Post* has developed the *Zeus* tool (https://www.zeustechnology.com/) based on precisely this type of data collection, with the avowed aim of offering a more complete solution to advertisers on their sites, thus increasing the media company's revenues (Davies, 2019).

We can see that the initiatives involving AI-related tools are rather limited, except for *The Globe and Mail* and The Canadian Press/La Presse Canadienne, whose applications are more widespread and innovative.

### Second Finding

Our second finding is that, overall, our respondents have a basic knowledge of AI-related tools and their applicability, but they do not have the necessary expertise to create the tools themselves. Respondents are aware of ways this technology could be beneficial, especially in terms of time savings, but there are still those who simply don't see it as being feasible, mostly for economic reasons, making it pointless to even consider the possibility of integration. This suggests that media outlets simply may not have the time for innovation, considering that many are in survival mode, as shown in the first section of this paper.

Moreover, one of our respondents summed up the feeling of ambivalence towards the use of this technology by stating, on the one hand, it would "help journalists focus on value-added tasks, [but on the other hand] the technology [is not] transparent enough to be used unsupervised, and supervision is not a value-added task." This concern, along with the other fears expressed by our respondents about the opacity of algorithms, the risk of an overabundance of content generated by automated articles, the possible decrease in manpower as well as likely machine errors and the risk of presenting homogenized information to the reader by only showing them the articles they want to see — based on first-party data — are all legitimate. It is important to recognize that this technology is not perfect, that it will make mistakes and have biases, just like any new colleague joining a newsroom. It must also be said that the layoffs of editors at MSN Quebec and MSN UK, all of whom were replaced by algorithms in 2020, have captured the imagination, especially following the error made by the AI tool in question. It selected the wrong photo to illustrate an article and confused two mixed-race members of the group Little Mix. While the article referred to singer Jade Thirlwall, the photo of Leigh-Anne Pinnock was shown instead (Proulx, 2020b; Waterson, 2020a, 2020b). For all these reasons, we recommend that the integration of these tools be done in collaboration with journalists, whose opinions should be taken into account during the design phase. This is precisely what is being done at *The Globe and Mail,* where a good relationship between the chief technology officer (CTO) and the editor-in-chief has led to the Sophi tool being integrated into newsroom practices without resistance. At *The Globe and Mail,* this collaboration means that reporters can focus on their job of finding and telling stories, leaving Sophi to manage website pages and content development (Turvill, 2021).

As for the lack of media expertise in creating and implementing these tools, it is worth noting that the media companies using this technology do so with the assistance of a research and development team that includes data experts, along with the active participation of journalists, where the desired objectives of the tool are clearly established. Once again, this is what was done at *The Globe and Mail.* It is clear that the issue of transparency both in tool design and with the newsroom is essential for the successful implementation of this technology. The importance of collaboration is therefore just as much about the tool being developed based on the newsroom's recommendations as it is about helping them in their work, not replacing them. Furthermore, establishing the right goals for a tool means both choosing the type of data used to produce it and its long-term objectives. In order to better understand the potential goals of a tool and the steps that need to be automated, researcher Nicholas Diakopoulos recommends a "decomposition" process, where the goal is to deconstruct the different steps the tool will perform (Knight Center Courses, 2019). It is therefore necessary to have a good knowledge of the area to be automated, and of the media outlet's editorial line and target audience, so that a tool supports the company's goals rather than working against them. This would also make it easier to adjust it, since the tool's design would have been clearly articulated.

## Recommendations and Future Perspectives

In order to address the lack of expertise mentioned by our respondents, one of the recommendations of this report is to improve collaboration between media organizations, universities and start-ups, in order to foster an exchange of knowledge on these practices. Our concrete proposal is that all the players in the field meet to identify the challenges ahead and find solutions, as was done in Europe with the JournalismAI program, where 40 journalists from more than 20 media outlets met to discuss AI-related tools and ways of integrating them, under the supervision of the Polis think tank at the London School of Economics (LSE), with support from Google. This initiative took place during the first wave of the pandemic and presented its research results in December 2020. The question that launched the project was quite simple: What is the next challenge for which AI can help us find a solution? The project was eventually divided into five sub-questions forming five research teams. The questions were: "How might we leverage AI to understand, identify and mitigate newsroom biases? How might we create an automated suggestion engine that puts the power of our archives in the hands of our journalists? How might we use methods of structured journalism to identify and re-use evergreen articles in a way that makes our content more accessible? How might AI help us design a content recommendation funnel that increases engagement and ultimately drive subscriptions? How might we use AI to minimise churn and increase loyalty in our audiences?" (Peretti, 2020). The results obtained by the different research teams are all available on the think tank's website, as a way of making them accessible to as many people as possible. In order to facilitate even more the access to resources related to these two fields, LSE Polis has made them available to all on its website (https://www.lse.ac.uk/media-and-communications/polis/JournalismAI/Case-studies), an index with several examples of AI-related tools developed by media organizations, in a wide range of fields, from ethics to content moderation, fact-checking, news distribution and personalization. This type of index gives media companies who want to develop their own tool a basis for determining its feasibility and relevance.

## Furthermore, it is important to underscore the fact that technology is not here to replace journalists in their work. In fact, the percentage of workers at risk of having their jobs automated ranges from 8% for editors and journalists to 11% for reporters and correspondents, according to estimates by two Oxford University researchers (Frey and Osborne, 2017). The goal is for this small percentage of affected journalists to be reassigned to high-value work, either by collaborating on investigations that otherwise would never have seen the light of day, or by establishing positions with a focus on solutions or data reporting, or specialized newsletters and long-form podcasts. This popular belief that technology will replace journalism is also caused, at least in part, by the use of the word "robot" instead of the terms like "computer program" or "AI-related tools" whenever these innovations are discussed in the media or in academic work. For researchers Carl-Gustav Lindén and Laurence Dierickx, the term "robot journalism" is slowing the integration of AI-related tools in newsrooms, and they therefore recommend discontinuing its use (Linden and Dierickx, 2019). Similarly, the apocalyptic association with the term "artificial intelligence," caused in part by Hollywood studios where robots are seen superseding humans, is not helping the cause. Therefore we believe that other terms such as "augmented journalism," "augmented intelligence," or "AI-related tools" should be used and favored when these innovations are discussed in the media, but also in research on this topic.

## Conclusion

Our finding suggest that this technology is in its infancy in Canadian newsrooms, with the exception of *The Globe and Mail* and The Canadian Press/La Presse Canadienne, which is not at all surprising given the state of the press in this country. In light of this, we note that the majority of our respondents, nine out of thirteen, would require financial assistance to implement AI-related tool projects. Additionally, while we understand the ethical reasons for anonymity, we are a bit surprised that nine media outlets requested that their data be anonym zed. Considering that one of our proposals for facilitating the integration of AI tools in newsrooms is to increase collaboration between media outlets, the fact that they asked to keep their participation in this study quiet seems to indicate that competition is still steep in this sector, especially with decreasing advertising revenues to the profit of web giants. However, we must admit that we did not survey media organizations about the possibility of collaborative efforts among themselves to advance the field and find innovative ideas in a digital universe that, let's not forget, is favorable to GAFAM and not individual media outlets. In short, this research offers a perspective on the use of AI-related tools in Canadian newsrooms and presents some examples of the integration of these tools elsewhere in the world. As well, this report recommends that the terms "artificial intelligence" and "robot" be replaced by "augmented intelligence," or even "augmented journalism" and "computer program".

Finally, one question remains unanswered despite the overview provided by this article: how to implement initiatives in the context of the current media and health crisis? The answer is simple, but also complex. First of all, it is important to note that there is no magic formula. However, it seems there are some things that can be put in place to mitigate the risks associated with integrating these tools. In fact, the results of the research, both those from the questionnaire and those based on the literature studied, show that having a clear vision of the intended use of these tools helps when initiating the process (Peretti, 2020). In this sense, the document produced by the JournalismAI program, "7 things to consider before adopting AI in your news organization: A training module for newsrooms," referenced here, offers a good starting point. In addition, and in keeping with the focus of this report, collaboration is key. Whether that takes place within a media company between departments, or between media outlets through sharing practices and tips, it can start a discussion and foster innovation.

In addition, hiring data experts within the research and development team makes the various projects imagined by the newsroom possible. The JournalismAI program also produced an article entitled "How to create an AI strategy for your newsroom," which discusses two of the previous points — having a clear vision and hiring data scientists with different skill sets — and adds the point about not being overly ambitious at the start.

As discussed earlier with *The Globe and Mail,* which took the time to develop its Sophi.io tool before implementing it across its entire website, it is better to start with a few initiatives that add value to the content being produced and then evaluate how to integrate them across the company (Argoub, 2021).

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1. *First-party data* is a form of data collected directly by the website a user is visiting. In concrete terms, that can take place through user authentication, when users answer questions about their preferences or simply as they navigate between different pages of the website. [↑](#footnote-ref-1)