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House of Lords Select Committee on Communications and Digital. Future of journalism inquiry

Submission in response to Question 4:

'How have digital technologies changed the production of journalism?'

Advances in Automated News Production

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Abstract

Journalism – both as a profession and an industry – has been transformed by digital technology. In its halcyon days the fourth estate was a bastion of democracy, one that possessed an unrivalled capacity for advocating for transparency, accuracy, and disseminating information on issues of national and international significance. Journalists were trusted for their impartiality, apolitical coverage of stories, and truthfulness. Now, reputable news outlets are relying as much on bots and stories generated by algorithms as traditional journalistic skills. While this has its advantages, bots used in the 2016 United States presidential election, the 2017 German federal election, and the 2016 United Kingdom European Union membership referendum influenced, if not manipulated, public opinion and outcomes.

Automating news production offers new possibilities for creating content at scale, personalising information with a low cost of adaptation, and covering events more quickly than traditional methods. Bots, or, more precisely, the agents behind them, also have a reach that far exceeds traditional print media.

Following a review and analysis of the sociological research on this topic, this report makes two key assertions: (1) there is significant evidence that bots pose a threat to public communication (journalism); however, (2) algorithms and automation can also be used to improve the quality of journalism, news production, and public understanding of current events.

Keywords: disinformation, manipulation, infodemic, computational propaganda

Introduction and Background

With the advent of Web 2.0 in 2004, the ubiquity of social media, and the accessibility of smartphones, tablets, and other portable digital devices, news consumption increased exponentially (Maniou & Veglis, 2016). To keep pace with the rate of consumption, new forms of journalism arose to streamline, even automate, the writing process. This has had a profound impact on journalistic narratives, content, and professional communication practices. The evidence presented in this report points to the rise and use of bots as the most significant change in the production of journalism in recent times.

Communication and content creation bots have come to be regarded as computer programs that were purpose-built to perform automated tasks. Typically, they are used to collate, deconstruct, reconstruct, and share news through a range of social media outlets and other channels. Often, this is news that would have otherwise gone unpublished, for better or worse.

In terms of structure, this report is divided into four sections. It begins by describing the evolution and eventual prevalence of automation in generating news. It then explores the ethical issues of how the general public (the 'majority') consumes journalistic content created by bots (the 'minority'). Reflecting on the evidence, two distinct but interrelated conclusions are offered (a) there is significant evidence that bots pose a threat to public communication, (b) algorithms and automation can also be used to improve the quality of journalism, news production, and public understanding of current events. Finally, the report concludes that there is an urgent need for questions to be asked about the rise and use of bots in public communications through the establishment of an all-party parliamentary group on communications in the United Kingdom. This would provide a non-biased forum for parliamentarians, educators, and employers to develop a greater understanding of how the digital transformation has changed journalistic practices, the industry, and how the public acts based on the news they receive.

Journalism and Automated News

1. The British news and media website, TheGuardian.com (formerly known as Guardian.co.uk) has been using bots to generate news content for at least a decade. In 2010, the platform focused on automated sports news. Essentially, journalists were able to obtain statistics from games as well as historical information on individual players and teams. After combining this data with prewritten phrases, staff members could automatically compose stories (Bunz, 2010). The website's leadership team did not stop there, however:
 - In 2011, they launched an app that automated searching for current news on Twitter.
 - In 2014, they introduced 'Guarbot', a program that paired financial information with complex data, avoiding the need for journalists to complete this task (Gani & Haddou, 2014; Sanchez-Gonsales & Sanchez-Gonsalez, 2017).
 - In 2016, the team introduced a chatbot to communicate with readers via Facebook Messenger – sending them a news briefing every morning with their top stories (Good & Wilk, 2016).

Industry-wide, bots began surpassing journalists' output by 2014. *The Washington Post* reported that its own 'robot reporter' had published 850 articles within a 12-month period (Miller, 2015). Putting this into perspective, it is questionable as to

whether a seasoned reporter could ever reach that level of output. It stands to reason that as bots continue to improve their performance, editors will become increasingly reliant on them.

2. Based on the experiences of the staff at TheGuardian.com and the transparency of *The Washington Post*, it is clear that journalism and the communication industry generally are undergoing a paradigm shift. This is perhaps most evident in the training and capacity building efforts of university departments, who are wondering how to best prepare future generations of journalists for on-the-job demands and the nature of their work (Pavlik, 2013). Experienced journalists tend to view recent graduates as possessing advanced skills in technology but lacking in the traditional skills the industry was founded upon (Pierce & Miller, 2007). Above all, new journalists require robust interviewing and critical thinking skills, not to mention the ability to discern when information is newsworthy (Ferrucci, 2018).
3. Yet, these skills are disappearing from the curriculum in favour of "...algorithmic, social-scientific, and mathematical processes and systems for the production of news" (Young & Hermida 2015, 381). These technological innovations, in particular algorithmic advances and automation, allow news stories to be created and disseminated faster than what is humanly possible (Cohen, 2015). So much so, in fact, that these rapidly-produced stories are often dubbed 'churnalism' (Van Hout & Van Leuven, 2017) – highlighting the careful balance that must be struck between new technologies and traditional skills.

Bots, Automated News, and Political Communication

4. In 2014, Venezuela's government officials used bots to enhance their social media impact. Although they began by inflating their numbers to grow their followers, their social media representatives quickly switched tactics to retweeting their own commentary and announcements (Biddle et al., 2015). It is estimated that 2,500 of the accounts retweeting President Maduro's comments were bots (Perez, 2014). While this was the first recorded instance of automatically disseminated news, the technique was quickly copied and reproduced. As early as 2015, extensive use of autonomous bot-based political lobbying tactics were recorded from Russia, Mexico, China, Australia, the United Kingdom, the United States, Azerbaijan, Iran, Bahrain, South Korea, Turkey, Saudi Arabia, and Morocco – constituting 60% of all online activity (Bastos & Mercea, 2019).
5. Over the past five years, researchers have investigated the role of bots in automated news and political communication (Bastos & Mercea, 2019). This topic has also received extensive press coverage (Silva, 2016) focused on the implications for political communication, democracy, and elections (Shorey & Howard, 2016; Silva, 2016; Woolley & Howard, 2016). The scale of bot deployment is a concern in political news (Bessi & Ferrara, 2016), with previous research reporting that, perhaps not surprisingly, bots are most common in polarised political discussions (Ferrara et al., 2016).
6. In the 2016 United States presidential election, Donald Trump won the 'Twitter Debate' based on his campaign team's strategic use of bots (Bessi & Ferrara, 2016; Silva, 2016). In more detail, bots are social media accounts that exist on various networks that send automatically-generated content and interact with other social media accounts and individual users. Their creators strive to maintain the appearance of human-managed accounts by establishing a profile and replicating tone of voice and typical communication patterns (Beskow & Carley, 2018). It has been widely reported that 19 million bot accounts were used to tweet news for Donald Trump and Hillary Clinton in the week leading up to the election. The Trump

campaign dominated artificially generated news, with his bots outnumbering Clinton's by 5:1 (Michael, 2017; Shu et al., 2017). Pro-Trump bots worked in an insidious (or efficient way, depending on your perspective) to influence public opinion by surreptitiously hijacking pro-Clinton hashtags like #ImWithHer and propagating fake news stories (Byrnes, 2016).

7. More recently, a report issued by the Reuters Institute for the Study of Journalism at Oxford University (Nielsen et al., 2020) explored how people accessed and rated news and information about COVID-19 in six countries, including the UK, in the early stages of the pandemic (31 March to 7 April 2020). The purpose of the report was to offer an analysis that would "...be useful to journalists, news media, platform companies, public authorities, and citizens as they think about the flow of news and information around coronavirus". Overall, Nielsen and colleagues documented *how much* misinformation people claim they encounter from different news sources and platforms and were able to show that the use of news has increased and to get news about COVID-19 people were using social media and video sites and approximately a third of the respondents on average said that "they have seen a lot or a great deal of ... misinformation in the last week" (Nielsen et al., 2020).
8. On a related note, issues surrounding disinformation about COVID-19 are highlighted by Collins (2020) who argued that it should be "... an offence for people to knowingly, maliciously, and, at scale, spread disinformation about COVID-19 with the intent of harming public health". Further, he suggested that big tech companies will only "take more effective action against the source of it, and the means by which it is being distributed" if disinformation is regarded as a legal offence. Indeed, Collins observes that "the 'infodemic' around the coronavirus also demonstrates, like the anti-vaccine movement before it, the risk of physical harm that can come from online disinformation". Easily produced and accessible pseudo-journalism is having a tangible, and in some cases detrimental, effect on human life and well-being. At the same time, it is worth noting that in this evolving pandemic, most of what we learn about COVID-19 is difficult to clearly and neatly separate into information and disinformation, true and false, reliable and unreliable (Brennen et al., 2020).
9. Even as far back as 2017, a study into that year's federal election in Germany found that political conversation on Twitter did not correspond with the polls. There were two issues of note. Compared to their popularity in the polls, the right-wing opposition party, AfD was disproportionately dominant on Twitter with most of the bots working in their favour. More broadly, German social media users shared links to political news and information over junk news by a ratio of 4:1 (Neudert et al., 2017).

Ethical Issues: The manipulation of the majority by a minority

10. There is a clear ethical distinction between misinformation and disinformation. Even though they are each sources of misleading and inaccurate information, they are conceptually distinguished based on authorial intent. "Misinformation" is the inadvertent sharing of false information. By contrast, "disinformation" is the deliberate creation and sharing of information that is known to be false with the aim of causing confusion or leading the recipient to believe a lie (DiResta, 2018). Computational propaganda is the manipulation of public life through the use of data analytics, algorithms and automation (Woolley & Howard, 2016 p.4886). Used in modern disinformation campaigns (Woolley & Howard, 2018), computational propaganda presents multiple issues for social media platforms including the digital challenges of sustainable journalism models (Bradshaw & Neudert, 2018 p. 5)

which the platforms responded to with various initiatives in an effort to strengthen quality journalism. The initiatives included financial support for training journalists and, in the case of Google, the employment of journalists in several countries to monitor misinformation during the lead-in to elections (Taylor and Hoffmann, 2019).

11. There are many ethical issues associated with the use of bots (as a minority force) in news production, not least that bots now have the power, capability, and means to manipulate the news viewed by the public (the majority, and recipients) for very little cost, minimal effort, and with an incredible reach. News-creating bots have played a major role in the weaponisation of news on social media platforms, as they are an easy to use, cost-effective, and agile (Confessore et al., 2018) way to tap into the social media attention economy (Tufekci, 2013). Diverse organisations, including NATO (Bertolin et al., 2017), Data & Society Research Institute (Marwick & Lewis, 2017), Facebook (Weedon et al., 2017), and the Canadian Security Intelligence Service (2018) have all issued reports exploring news creation and communication warfare on social media.
12. Automated news can be used as a propaganda mechanism to draw attention to or away from political news. In their 2016 report, professors at Harvard, Stanford, and the University of California, San Diego estimated that the Chinese government had created 488 million media comments annually, which had been used to control the narrative around political issues (Oster, 2016). In addition to creating comments, they actively deleted messages that did not conform to their agenda. Within a three-month period, Sina Weibo (the Chinese equivalent of Twitter) saw 13% of its user content openly deleted by government officials. In general, the deleted information included the terms 'Tibet', 'Falun Gong', and 'democracy', or what officials deemed politically charged messages (King et al., 2017).
13. During the 2011 Arab Spring, journalists were empowered to give eyewitness accounts of events in real time through Twitter, using the hashtags #Syria, #Daraa, and #Mar15 to amplify their messages (York, 2011). However, these journalists were threatened online, as one blogger noted, "These accounts were believed to be manned by Syrian intelligence agents with a poor command of both written Arabic and English, and an endless arsenal of bile and insults" (Michael, 2017). When the journalists did not succumb to these threats, bots that were created by the Bahrain-based company, EGHNA operated pro-regime accounts that were able to outrank the journalists' work and replace it with "acceptable" photography of Syria (York, 2011). While the journalists did their best to adapt to the new technologies, the regimes were better funded and resourced. In fact, EGHNA even noted on their website (under the category 'Success Stories') how much they had achieved in terms of public opinion by promoting Syria's beauty.
14. Following the Arab Spring, Iran attempted to gain dominance over Saudi Arabia through the use of social media to broaden its influence across the Arab states (Zweiri, 2016). Since 2018, the country's political leaders have created and operated news websites to promote their political agendas with a particular focus on criticising Saudi Arabia and supporting Syria's President, Bashar al-Assad. That being said, the Iranian origins of the sites have remained well-concealed and would not be apparent to Arab users (Elsawah et al., 2019).
15. Furthermore, the Islamic State terror group (ISIS) 'ghost tweeted' its propaganda from automated accounts to make it appear as though it had a large, sympathetic following (Woolley 2014). This took the form of an international news campaign that aimed to attract personnel and funding from a global audience. The fake news that they generated and promulgated included stories of mass killings of Iraqi

soldiers. On one occasion they reported 1700 deaths when there had only been 11 (Nordland & Rubin, 2014).

Conclusion

16. This brief, evidence-based report makes two distinct but interrelated points: (1) there is significant evidence that bots pose a threat to public communication (journalism); however, (2) algorithms and automation can also be used to improve the quality of journalism, news production, and public understanding of current events. The literature highlights the fundamental change in the nature of journalistic practices and the industry brought about by technologies and the ubiquitousness of social media. In discussing artificially created news, Napoli (2015) raised an important point about the extent to which social media platforms and the algorithms behind them reflect the public's interests and values. For example, ISIS employs the same media strategies as some recognised governments, mainstream political parties, and social activists.
17. During the United States 2016 presidential election and the 2017 German federal election, bots were considered to have influenced (or even manipulated) public opinion through disinformation and misinformation. That being said, compared to traditional journalism, automating the production of news and information offers new possibilities for creating content at a high speed and scale, with more personalisation and a relatively low cost of production. Undeniably, the agents behind bots have an extensive reach that far exceeds traditional print media. Furthermore, as was seen during the Arab Spring and more recently in Iran and China, automated journalism can change (or at least disguise) the narrative and flood political public discourse with counter-arguments, claims, or even suppress a particular topic by inundating social media users with irrelevant content. Finally, the threat posed by disinformation makes the journalists' job more complex and presents a heightened risk of sharing misinformation.
18. For reasons not limited to these, an all-party parliamentary group (APPG) on communications is required to raise awareness and understanding of the threat that bots and nefarious users pose to the integrity of democracy and to professional public communications from mis/disinformation and computational propaganda. This is particularly important during times of national crisis, such as the COVID-19 pandemic. The formation of an APPG on communications will provide a parliamentary platform to identify and debate emerging issues, disseminate knowledge, and facilitate engagement between industry, academia and Parliamentarians regarding contemporary issues and concerns associated with communication. Open to all members of both Houses, the APPG on Communications would provide a valuable opportunity for parliamentarians to engage with individuals and organisations outside Parliament on issues related to communications and technologies. Further, in support of the communications industry, the committee should aim to:
 - Raise the profile of communications within Parliament and government;
 - Discuss online communication challenges, particularly the need for improved standards and legislation;
 - Develop policies that address the threat from disinformation and, computational propaganda and that pose to public communications, including journalism;

- Raise awareness of what can be done by the government, Parliament, and other agencies to address the threat; and
- Prepare reports and make recommendations to Parliamentarians, as appropriate

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