Social Media, Fake News and Misinformation

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ABSTRACT

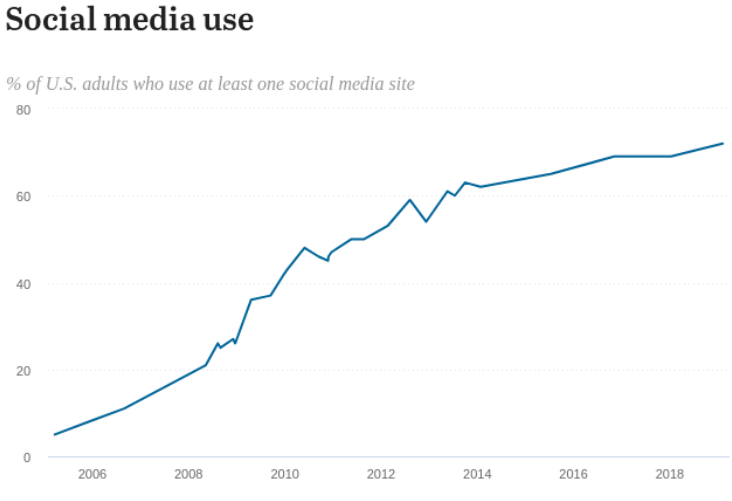
The influence of social media when it comes to reporting “news” rivals major traditional media sources like the New York Times and CNN. This paper investigates the growth of social media worldwide and nationally, focusing on Facebook and Twitter as the two platforms most commonly used to access and read news, as well as the identification of fake news and examining the part these platforms play in circulating it. This paper also defines bots and their impact on the spread of fake news via social media.

Keywords: social media, fake news, bot, cyborg, information literacy

Social media have become a ubiquitous part of our society, providing users and non-users alike with constant commentary on music, arts, celebrity, sports, business and current events. Social media platforms inform us about who are friends are, who is inquiring about us, and what trends are happening right now. Many Americans have come to rely on their social media feeds for news as well, even though most admit the news they read there is probably not accurate. The rise of social media and the associated increase in dependence on it for news has created a toxic deficiency of truth in our society.

SOCIAL MEDIA 101

Social media is a huge part of society today, growing from nothing just two decades ago into one of the main ways we communicate with each other, pass information and experience the world. It's now a powerhouse of both information and misinformation. Social media are interactive computer-based technologies with two main functions: to bring people together as a community (or "network") and to promote and enable the sharing of content, which may include text, digital photos, news links, videos or other materials. Social media can be defined as "any application that allows users to create a profile and build a friend list" (Cooper, 2019), while Webster's dictionary recently defined it as "forms of electronic communication (such as websites for social networking and microblogging) through which



users create online communities to share information, ideas, personal messages, and other content (such as videos)" (Merriam-Webster, 2019). When the Pew Research Center began tracking social media usage in 2005, only 5% of US adults used at least one social media platform. By 2011, half of US adults used social media and by February of 2019, almost three-quarters (72%) of US adults were logging on (Pew, 2019). Within only fourteen years, the proportion of Americans participating in social media had skyrocketed.

All social media are not created equal. There are many ways to categorize social media and several have created jargon that's now part of the global offline conversation. LinkedIn focuses on professional networks that help make "connections" and "grow your network" to enhance a user's professional identity and career advancement. Facebook's sphere is friends and family, allowing you to make "friend requests" and "post to your timeline." Snapchat features fleeting posts of photos on "your story" using "Snapchat filters" such as "puking rainbow" that you can send to friends you locate on your "snap map." The ubiquity of these social media platforms (and others like them) has given them tremendous influence on our daily lives. Content in traditional media, such as television, newspapers and magazines, frequently features the social media posts of celebrities and political figures so that even those in our culture who choose not to engage in social media themselves are constantly exposed to it.

Social media has its roots in the bulletin board systems (BBS) of the early 1990s, run by online service providers such as CompuServe and America Online, which allowed users to create a profile and connect in real-time via "chatrooms" - constantly updating forums set up around topics of interest. SixDegrees is considered by many to

be the first social media platform as we define them today. In existence from 1997 to 2001, SixDegrees allowed its users to create profiles, list their friends and contacts and invite non-users to join them in the site. Friendster launched in 2003 and quickly gained popularity as one of the first sites to attain over 1 million members and was the largest social network until MySpace quickly overtook it in 2004. Facebook, today's most popular social media network, launched in 2004, famously founded by Mark Zuckerberg first as an electronic "meet book" for Harvard students and later branching out to other universities and, eventually, the world. Facebook's users surpassed MySpace's in 2008 and it remains the top social networking site in the world today, with video-posting site YouTube in second place.

As of December 2019, Facebook boasts over 2.5 billion monthly active users globally, with 1.66 billion users logging on in an average day (Zephoria, 2020). According to Hootsuite, the social media management site, three-quarters of all U.S. adults log onto Facebook every single day, with more than half of Americans checking it more than once a day. Facebook's appeal crosses generations. Facebook is "the most popular social network among seniors" with almost half (46%) of Americans age 65 and older using it and it also reaches "the largest number of users aged 13 to 17" (Hootsuite, 2019).

Twitter, launched in 2006, was designed as an SMS (Short Message Service or "text") platform meant to send out brief messages to small groups of users. These short Twitter messages, or "tweets," were originally limited to 140 characters, but capacity was doubled to 280 characters in 2017. The growth of this platform has been exponential, as evidenced by the abundant references of "hashtags" (Twitter's way of

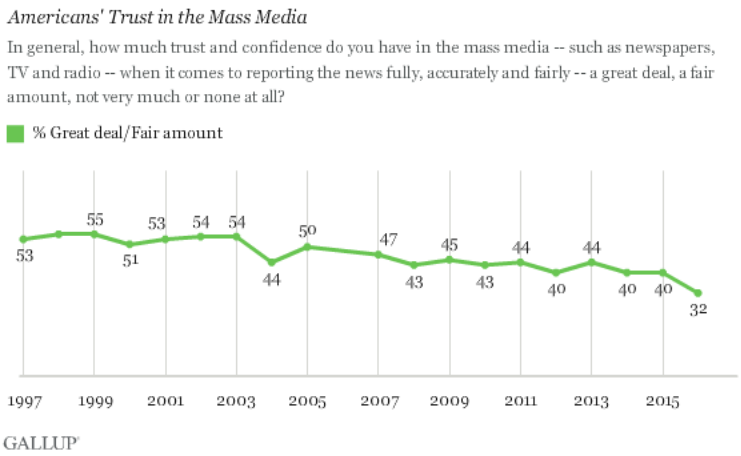
grouping tweets together by topic) in daily offline conversation. In the first quarter of 2019, Twitter reported 330 million monthly active users. About a fifth of Twitter's daily users is American, with Japan and the UK as their next biggest markets (Hootsuite, 2020). Aside from regular users, every celebrity, political entity, retailer, and special interest group has a Twitter handle which they use to stay in constant contact with their fans, constituents, customers and supporters. While only "22% of US adults use Twitter…over 92% of the US population is familiar with it (even if they don't use it)" (Hootsuite, 2020). This is quite possibly attributable to President Trump's persistent usage of Twitter to advance his several-times-daily opinions on everything from the trade deficit to Meryl Streep's lack of talent.

SOCIAL MEDIA AS A SOURCE OF NEWS

While the original intent of social media might have been to connect friends and family, its ability to quickly distribute content to large targeted groups of people has had a massive impact on the exchange of news, information and opinion in today's culture. The Pew Research Center reports that "about two-thirds of Americans get news on social media" (Shearer, 2018). Beginning in 2018, Pew findings indicate that more Americans now get their news from social media (20%) than from traditional print newspapers (16%) such as the New York Times or USA Today. Although the same report states that half of Americans (49%) still often get their news from television, this proportion has decreased from 57% in 2016. Over two-thirds of users of Facebook (67%) and Twitter (71%) are exposed to news on those sites, making them, along with Reddit (73%) the social media platforms with the most news exposure. With the

majority of Americans now using social media, and the largest social media platforms exposing these users to news, does that mean that citizens today consider themselves well-informed? Although most Americans are using at least one social media platform, and most of those users are being subjected to news information on one or more of those platforms, the consumers who are exposed to news this way, unfortunately, expect that the news they see there is "largely inaccurate" (Shearer, 2018).

Traditional news sources have long espoused the ideals of objectivity, balance and rigor, which make up the backbone of legitimate journalism in the U.S. The ease of posting and clicking via the internet has eroded these principles in the past few years, especially since social media usage has grown substantially. Now, truly, anyone is capable of becoming a source of “news.” “Content can be relayed among users with no significant third-party filtering, fact-checking, or editorial judgment. An individual user with no track record or reputation can in some cases reach as many readers as Fox News, CNN, or the New York Times” (Allcott, 2017). Trust in the mass media has declined precipitously, especially since the 2016 presidential election when Gallup's annual poll found that a "great deal" or "fair amount" of trust in mass media plummeted to only 32%, its lowest point in history. In 2016, Republican trust in the media was only 14%, compared to 51% for Democrats, probably based on President Trump's "sharp criticisms of the press"



(Gallup, 2016). With the explosion of social media in the past few years, "perhaps Americans decry lower standards for journalism. When opinion-driven writing becomes something like the norm, Americans may be wary of placing trust on the work of media institutions that have less rigorous reporting criteria than in the past" (Gallup, 2016). According to Allcott and Gentzkow, "referrals from social media accounted for a small share of traffic on mainstream news sites, but a much larger share for fake news sites" (2017). The loss of trust in mainstream media could very well be both a cause and an effect of the growth of fake news.

FAKE NEWS IS REAL

This brings us to the connection between social media and misinformation, or "fake news." Fake news is deliberate disinformation in news media or online social media to mislead the public to damage the reputation of a person or entity, to cause chaos or instability, or for political or financial gain. A 2018 article in *Science* magazine defines 'fake news" as:

> "…fabricated information that mimics news media content in form but not in organizational process or intent. Fake-news outlets, in turn, lack the news media's editorial norms and processes for ensuring the accuracy and credibility of information" (Lazer et al, 2018).

While the term "fake news" has mainly political connotations, it has also been used in reference to other topics, such as medical issues (like vaccination, or DIY COVID-19 cures) and the propagation of potentially dangerous online "challenges" that

disproportionately attract young people (such as the Tide Pod and Cinnamon challenges).

Twitter and Facebook, along with YouTube to some extent, have emerged as the social media platforms with the most traffic in fake news. Most websites feature "paid content" clickbait which refers to clickable links with outlandish headlines often accompanying a doctored graphic. These links drive clicks, which marketers track to monetize their sites. Oftentimes there is not even any related content once clicking through the headline. But how much influence does seeing these clickbait headlines have on a person's reputation, especially in such a politically polarized environment? Quantifiable metrics do not yet exist on the real-life impact of brief (or extended) exposure to fake news, such as voting outcomes. How can we measure how disruptive a clickbait headline will be, such as "Hillary talks about her past abortions, you won't believe it," once glanced at by millions of users, even if nobody clicks and "takes the bait"?

Grinberg's 2016 study of tweets during the 2016 election found that the vast majority of tweets containing fake news were shared by a very small proportion of their sample of Twitter users. However, the study also identified "supersharers" and "superconsumers" of fake news sources on Twitter, those "accountable for 80% of fake news sharing or exposure," sharing dozens of times more than the typical user and consuming thousands more exposures to political URLs.

A study in the Journal of Economic Perspectives on the effects of fake news on the 2016 presidential election confirmed that "fake news was both widely shared and heavily tilted in favor of Donald Trump…[including] 115 pro-Trump fake stories that were

shared on Facebook a total of 30 million times, and 41 pro-Clinton fake stories shared a total of 7.6 million times" (Allcott & Gentzkow, 2017). Their study concluded that these 38 million shares of fake news (just among the stories they studied) projects to "760 million instances of a user clicking through and reading a fake news story, or about three stories read per American adult" (Allcott & Gentzkow, 2017). In his 2019 study, Princeton scholar Andrew Guess found that, while the sharing of fake news links by their Facebook sample was a rare occurrence, Republicans and older people appear to be more likely than their younger and more liberal counterparts to share fake news via social media.

> "Conservatives were more likely to share articles from fake news domains, which in 2016 were largely pro-Trump in orientation, than liberals or moderates. We also find a strong age effect, which persists after controlling for partisanship and ideology: On average, users over 65 shared nearly seven times as many articles from fake news domains as the youngest age group." (Guess, 2019).

However, in a study by Craig Silverman for Buzzfeed.com, he concluded that the top-performing fake election news stories on Facebook generated more shares, reactions or comments than the top true election stories from traditional news including the *New York Times*, *Washington Post* and NBC News (Silverman, 2016). An MIT study published in Science magazine in 2018 underscored that fake news was distributed up to six times faster than the truth and reached more people (Vosoughi, 2018). The real news is dull by comparison when fake news can be any outrageous item a writer wants to circulate. It makes perfect sense that a tidbit of fake news is more

likely to spread than a true story because, by its nature, it has been designed to grab attention.

If fake news is getting more clicks via social media than real news in any format, then fake news has become a major disruption indeed. A 2018 New York Magazine article asking “How Much of the Internet Is Fake?” revealed that:

> Studies generally suggest that, year after year, less than 60 percent of web traffic is human; some years, according to some researchers, a healthy majority of it is bot. For a period of time in 2013, the Times reported this year, a full half of YouTube traffic was “bots masquerading as people,” a portion so high that employees feared an inflection point after which YouTube’s systems for detecting fraudulent traffic would begin to regard bot traffic as real and human traffic as fake. They called this hypothetical event “the Inversion.” (Read, 2018).

SOCKPUPPETS, CYBORGS, AND BOTS (OH MY!)

Facebook and other social media networks were designed to help people to come together to form a community. The ability to create a persona online via social media has compelled some users to conceal their true intentions and identities in several ways. Creating imposter accounts, or "sockpuppets" can be used to either steal someone else's identity to impersonate them online (spoofing) or to create fake identities to engage in activity that you wouldn't want to be caught doing. Presidential candidate Mitt Romney confessed to having a Twitter account under a false name which

he used to defend himself against criticism (Vanity Fair, 2019). And Senator Romney is not alone. Facebook itself acknowledges that around 116 million accounts are fake, which is an estimated 5% of Facebook's worldwide monthly active users. Over the spring and summer of 2019, Facebook admitted to disabling 3.2 billion fake profiles and it also estimates that over 250 million of its accounts are duplicates, or about 11% of its global monthly users (Hootsuite, 2019). While this has troubling monetary consequences for marketers who bank on audience size to justify their ad spend, it also begs the question, who are the people behind all these accounts, and what is their agenda?

Grinberg's study of 2016 election tweets acknowledged the likelihood that the "superspreaders" of fake news that he discovered on Twitter were in fact "cyborgs," which are machine/human hybrid accounts in which a human takes over the controls of a "bot" to periodically respond to other users and post original content. A bot is an automated program created to perform a certain task, and while many are harmless (programmed to search out new words appearing for the first time in the *New York Times*, colorize black and white photos, connect you to a customer service agent or crawl through cyberspace to complete Google searches), others are not so friendly. Social bots, designed to retweet the same content hundreds of times per day, and to access multiple accounts to make the same article appear as though it is trending quite possibly have the power to manipulate anything from the stock market to a presidential election. MIT Technology Review reported on a 2017 study by Chengcheng Shao and colleagues, where the team studied 14 million messages spreading 400,000 articles on Twitter during and following the 2016 presidential election. Their conclusions were that:

> We find evidence that social bots played a disproportionate role in amplifying low-credibility content. Accounts that actively spread articles from low-credibility sources are significantly more likely to be bots. Automated accounts are particularly active in amplifying content in the very early spreading moments, before an article goes viral. Bots also target users with many followers through replies and mentions. Humans are vulnerable to this manipulation, retweeting bots who post links to low-credibility content. Successful low-credibility sources are heavily supported by social bots. These results suggest that curbing social bots may be an effective strategy for mitigating the spread of online misinformation. (Shao, 2017)

A 2018 Pew Research study led by Stefan Wojcik examined about 1.2 million tweets in the summer of 2017 and found that two-thirds of tweeted links are made by automated bots, not human beings. And they are busy bots indeed. The 500 most active bot accounts sent 22% of the tweeted links to popular news and current events sites, compared to the 500 most active human users who sent only 6% of tweeted links to these sites (Wojcik, 2018).

Bots identify fake news early on in its life cycle and can be programmed to target it to the most influential users with the most connections to raise the probability of taking the news viral. Undoubtedly, bots designed to confuse and mislead are doing the legwork for the spread of fake news. But who is at the controls? Evidence points to a couple of suspects. Domestic hackers, moved by ideology, or perhaps financial gain, to manipulate a positive image for a certain candidate and smear the reputation of the

other are one of the bad actors. Foreign agents are also famously at work. Testimony before the Senate Judiciary Committee in 2017 concluded that Russia successfully manipulated several social media platforms during the 2016 presidential election, especially Facebook and Twitter. They've done it before and all signs indicate that they'll do it again with the 2020 election, but this time with four more years of experience behind them to make their efforts even more fruitful.

Based on these findings, we can conclude that the confluence of several factors creates ideal conditions for a level of misinformation that is both systemic and, also, frighteningly acceptable. The ubiquity of social media, the fragmentation of our society into two teams who seem determined to find nothing in common except their mutual disgust for one another, the loss of trust in credible news sources and the ideals of investigative journalism, and the behind-the-scenes manipulation of social bots and fake accounts to promote lies, instability and mistrust all add up to a world in which "truth" doesn't matter anymore. Our entire democracy is at risk. The freedom of the legitimate press that we depend upon to ensure a true framework for our democracy has been hamstrung, weakening the foundations of a free country. All news becomes suspect when it is known that some news is a complete fabrication. If we have no news we can believe in, isn't that the same as having no news at all? When nothing is perceived as really true, the result is an Orwellian society in which we can no longer believe in anything.

BOT WARS: A NEW HOPE

We are already constantly being asked to prove we are human. Everywhere we go online, we are asked to retype a wonky word, or pick from a dozen blurry images the ones that show a traffic sign. We all must be ready to input our mother's maiden name, the street where we grew up and the model of our first car. The trust that we are who we say we are online is gone. What we now see online as truth is whatever algorithms manipulated by bots have determined that we should see. There is currently no regulation regarding the usage of bots in politics. According to The Atlantic's 2016 article "How Twitter Bots are Shaping the Election":

> The Federal Elections Commission has shown no evidence of even recognizing that bots exist. Bots that are used to trumpet hate speech, harass women journalists, and spread propaganda are also designed to conceal the identity of their creators. This layer of anonymity challenges the ability to hold people legally responsible. Moreover, it challenges notions of free speech—what happens when a bot, which might do things unforeseen by its maker, is the entity committing malicious acts? (Guilbeault, 2016).

How can we bring back truth, or at least the approximation of truth that we once had when traditional news sources were considered trustworthy and before sockpuppet and bot traffic outnumbered the human type?

Independent fact-checking sites such as politifact.com, factcheck.org, the Associated Press, and snopes.com, which has a long history of disproving urban

folklore stories (such as the location of the remains of Walt Disney's frozen head) are effective tools for those news consumers who doubt the verity of a story. However, these sites themselves come under fire at times as being politically slanted or having their own agendas, and they do nothing to uncover the truth for those who simply don't take the time (or know enough) search it out. It might be more effective for platforms such as Facebook and Twitter to automatically scan news links through these fact-checkers behind the scenes and return suspect links along with a "grade" for their veracity. Providing "fact-check alerts" could help to raise awareness of fake news and remind human users to think first before forwarding.

The social media platforms themselves could do a lot to mitigate the spread of misinformation and fake news. They could integrate source quality checks in their algorithmic rankings of content so that what you see has already been fact-checked to some degree. They could curb the spread of news content by bots and cyborgs and increase their investigations so they can delete more fake and duplicate accounts. But this would mean that we would have to trust Facebook and Twitter to minimize and eliminate valuable clicks that would otherwise contribute to their bottom line. Once platforms institute bot-reduction techniques, bot producers then incorporate effective countermeasures for any attempts to foil them. What results is a kind of modern cyber-arms race. Bots would always be two steps ahead, able to react and overcome any attempt at identifying and stopping them and forcing platforms to respond yet again with more prevention stratagems. At the time of this writing, fake news is circulating on social media that 5G telecommunications are responsible for the spread of COVID-19,

the coronavirus pandemic. Several 5G towers in the UK have been set fire to by vandals as a result of this unfounded rumor. In response:

> Facebook is taking an “aggressive” stance against this false information, removing posts that falsely link 5G to coronavirus or incites people to act violently against this technology. YouTube also made a commitment to remove videos that claim there is a link between 5G and the coronavirus epidemic. These videos violate the company’s new policy prohibiting videos that promote “medically unsubstantiated methods” of preventing a coronavirus infection. (Hodgkins, 2020).

Identifying bot-like activity is not easy. There are indicators of bot-like behavior, but these are not comprehensive and can (and do) mistakenly identify a human as a bot and vice versa. A typical human Twitter user will likely post a few times a day on several topics. Bots will post hundreds of times per day (and during the night), and often only about one specific subject. They’re also most likely to only repost content, rather than write anything original. Two online platforms developed by researchers at the University of Southern California and the Center for Complex Networks and Systems Research at Indiana University are working on identifying bot-like activity. Hoaxy tracks fake news claims from questionable sources and how often they’ve been fact-checked by sites such as Snopes. Its companion platform, Botometer, is showing great promise as a scoring system that attempts to figure out whether a Twitter account is run by a human or a bot and gives it a score based on that determination. The Atlantic study “How Twitter Bots are Shaping the Election” utilized the Botometer platform to scan and score its Twitter stories.

Our libraries and schools can also increase awareness of this crisis and work to ensure that students recognize misinformation when confronted by it? Teaching information literacy has become an essential part of the curriculum in schools and the librarian's mission. The Center for News Literacy (centerfornewsliteracy.org), has collaborated with the American Library Association to create an invaluable resource for educators trying to instill the critical thinking skills necessary in today's world to separate fact from fiction. Everyone in a democratic society needs to be a knowledgeable news consumer. Knowing how to evaluate credible versus unreliable sources on television, print and online is a necessary skill and librarians have a huge part to play going forward in teaching it.

CONCLUSION

The risks to our society are real. Our belief as Americans is that a free country depends at least partly upon a free press and freedom of speech. When humans use automated bots to weaken those beliefs, to use the freedoms of speech and press granted to them by the Constitution to erode those very ideals, then our civil society is in danger of collapse. Polarized politics have already reduced the level of discourse in our country. Cyborgs, bots and their kind are similar to viruses speeding through the body of social media and then passing that infection on to our society. A combination of

education and aggressive countermeasures by the social media platforms are urgently needed to meet this challenge and help us to avoid a “post-truth” society.

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