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‘Fake news’ is a key subject of data politics, but also a tricky a one. As this chapter aims to show, various phenomena signified by this misleading label have little in common, except being opposite to the kind of *algorithmic intelligence* that most other chapters present as the main concern of data politics. This does not mean that ‘fake news’ is not related to computational analytics or political intentions, but it does mean that this relation is not straightforward.

To discuss this relation, I will go through a three-stage argument. First, I will criticise the notion of ‘fake news’, dismissing the idea that this type of misinformation can be defined by its relationship to truth. Second, I will propose a different definition of this phenomenon based on its circulation rather than of its contents. Third, I will reintroduce the connection to data politics, by describing the economic, communicational, technological, cultural and political dimensions of *junk* news.

Junk news is not about algorithmic persuasion

The first stage of my argument consists in showing that the ‘data’ and ‘politics’ of ‘fake news’ are *not* where they are supposed to be. This entails questioning the idea that ‘fake news’ results from sophisticated *psy-ops*, based on computational techniques processing social media data to distil highly persuasive messages and dispatch them to the most suggestible audiences. This idea has been popular in the debate over Cambridge Analytica (see Venturini & Rogers, 2018). Cambridge Analytical (or CA) is a disreputed marketing firm that, according to its own admissions, maliciously acquired data on several millions of Facebook profiles and used it to push Donald Trump election. While the first part of this reconstruction is correct, the second is questionable.

In 2014, CA tried to buy data from the earlier “myPersonality project” of the University of Cambridge (Stillwell & Kosinski, 2012). The project was based on a personality quiz delivered through a Facebook app, which collected the quiz answers and data on the user’s activity in the social network. When the negotiations failed (because the researchers refused to lend their data to non-scientific uses), CA commissioned Aleksandr Kogan to replicate the protocol and collect a new batch of data. Kogan created a similar quiz, but introduced two crucial differences: first, he recruited his respondents through the microwork platform Amazon Mechanical Turk; second, it collected data not only on the users taking the quiz, but also on their friends (as allowed by the Facebook’s API until 2015). Through this ‘indirect harvesting’, Kogan was able to collect information on millions of Facebook profiles even though fewer than 300,000 people took his quiz.

Besides violating several basic ethics principles, the protocol developed by Kogan made it impossible for CA to actually carry out the sophisticated “psychographic analysis” that the consultancy boasts as its competitive advantage. Being harvested indirectly, 99.5% of the CA records do not contain any psychological information. Though the original research at Cambridge suggested the possibility to infer personality traits from Facebook traces (Kosinski, *et al.*, 2013 and Youyou *et al.*, 2015), it remains unclear whether such inference can yield subtler information than classic marketing. Kogan himself admitted that the standard Facebook’s advertisements have better coverage and segmentation. Investigations carried out by *The Guardian* (Cadwalladr, 2018) and *Channel 4* (2018) further indicated that CA’s services might rely less on algorithmic intelligence than on standard disinformation techniques (eg. defamation, bribery and honey traps).

The Cambridge Analytica affair suggests that computational misinformation might be a marketing myth. But the definition of ‘fake news’ as algorithmic propaganda is also problematic because it presupposes that the goal of misinformation is deception. At close inspection, however, most of the contents that constitute the present upsurge of misinformation does not appear to ask for the ‘cognitive adherence’ of their addresses. Another example will illustrate this claim.

One of the fake contents most circulated during the 2017 French presidential campaign was a story about Emmanuel Macron (later to become the French president) being homosexual and supported by a gay lobby. The most interesting thing about this story was that its falsehood was never in question (Bounegru et al, 2018b). While hundreds of websites and social media accounts retransmitted the story, the vast majority explicitly labelled it as false. Apart from the original publication on the Russian information agency *Sputnik News*, few sources credited the rumour. Most venues cited the story to debunk it and to exhibit the trophy of a French fake news. The ‘Macron-is-gay’ story struck a chord not because people believed it, but because it incarnated the ‘fake news’ imagery: it involved the Russian propaganda; had sexual implications; resonated with rumours about Macron’s wedding, etc. While the ‘Macron is gay’ story had little resonance, the ‘Russian-propaganda-helps-French-online-trolls’ story was a resounding success (even *Sputnik News* soon begun to denounce the story rather than promoting it).

This example reveals how misleading is the label of “fake news.” Announcing a “post-truth era” (Keyes, 2004), it presupposes that there was a time in which the distinction between true and false was unproblematic. Now, if there is a lesson to be learned from half a century of *science and technology studies* (Jasanoff et al., 1995 and Hackett et al., 2008) is that this separation is never straightforward. This does not mean that true and false are the same, but that their opposition is not binary or static. As STS scholars have shown, a Manichean true/false distinction is not enough to capture the vast spectrum of reliable-yet-not-without-uncertainties status of facts. Even more important: the true/false dichotomy fails to render the way in which enunciations are solidified by the work of all sorts of actors (Latour, 1979 & 2005). Far from being established by sheer force of evidence, facts are built by a complex work of ‘truth-grounding’ (Lynch, 2017).

The notion of ‘fake news’ is misleading because it supposes that malicious pieces of news are manufactured, while reliable ones correspond directly to reality, denying the very essence of journalistic mediation in its efforts to select, combine, translate and present different pieces of information in a news story (Tuchman, 1978 and Schudson, 1989). The distinction worth making is not between manufactured and unaffected information, but between stories that are supported by a large and honest truth-grounding work and stories that are not.

Many stories labelled as fake news circulate without asking the ‘cognitive adherence’ of those who spread them. Some are openly satirical; others are put out front their ideological biases; others are just titles used to lure readers into clicking. And while some of these contents are meant to trick their readers into believing them, this is rarely their only purpose, instead their objectives “might include acting as monetisable clickbait for viral content pages, doing issue work for grassroots activist groups, grassroots campaigning work for political loyalists and providing humour for entertainment groups (Bounegru et al, 2018a).

As noted by the director of MIT *Center for Civic Media*, in a post entitled “Stop saying ‘fake news’. It’s not helping”, the impossibility to define disinformation on the base of its *authenticity* has turned the notion of “fake news” in “a vague and ambiguous term that spans everything from false balance (actual news that doesn’t deserve our attention), propaganda (weaponized speech designed to support one party over another) and disinformazya (information designed to sow doubt and increase mistrust in institutions)” (Zuckerman, 2017).

Because of its vagueness, the term “fake news” has become a weapon to discredit opposing sources of information (Donald Trump has provided several excellent examples of such use). According to Claire Ward, director of First Draft (a coalition bringing together the main players of journalism and social media):

The term ‘fake news’ is insufficient and dangerous to use is because it has been appropriated by politicians around the world to describe news organisations whose coverage they find to be problematic. The term “fake news” is being used as a mechanism for clamping down on the free press, and serves to undermine trust in media institutions, hoping to create a situation whereby those

in power can circumvent the press and reach supporters directly through social media (Wardle & Derakhshan, 2017).

Junk news as a viral pollution

So, if “fake news” is not about false information, what is it about? As the ‘Macron-is-gay’ example suggests, *spread*, rather than *fakeness*, is the birthmark of these contents that should be called “viral news” or possibly “junk news” for, just as junk food, they are consumed because they are addictive, not because they are appreciated. Shifting the attention from falsity to diffusion does not belittle its sway. Quite the contrary, it suggests that these contents are all the more dangerous because they cannot be defused simply by debunking them. Discussing a widespread fake story about the support that Pope Francis would have offered to Trump, Danah Boyd observes:

“I can’t help but laugh at the irony of folks screaming up and down about fake news and pointing to the story about how the Pope backs Trump... From what I can gather, it seems as though liberals were far more likely to spread this story than conservatives. What more could you want if you ran a fake news site whose goal was to make money by getting people to spread misinformation? Getting doubters to click on clickbait is far more profitable than getting believers because they’re far more likely to spread the content in an effort to dispel the content”. (Boyd, 2017)

‘Junk news’ is dangerous not because it is false, but because it saturates public debate, leaving little space to other discussions, reducing the richness of public debate and preventing more important stories from being heard. Like rumours (Morin, 1969), junk news proliferates by transmission and transformation. In this, it provides a dark illustration of the mechanism through which social phenomena are constructed according to Gabriel Tarde (1890). In his dispute with Durkheim over the fundamentals of the nascent sociology, Tarde refused the idea that collective phenomena would be driven by underlying structures. Instead, he claimed that the social consists in the ‘simple’ imitation of individual behaviours and in their progressive alteration (Latour, 2002):

A social thing [...] devolves and passes on, not from the social group collectively to the individual, but rather from one individual [...] to another individual, and that, in the passage of one mind into another mind, it is refracted. The sum of these refractions, [...] is the entire reality of a social thing at a given moment; a reality which is constantly changing, just like any other reality, through imperceptible nuances (Tarde, 1898)

Tarde found it difficult to defend its position *empirically*, because the research methods of his time did not allow to follow collective transmission at the scale and with the sharpness demanded by his argument. This may be possible today thanks to digital traceability (Latour *et al.*, 2012 and Boullier, 2015). Junk news, thereby, is both the dream and the nightmare of Tarde’s sociology. The dream, because it offers an opportunity to map the transmission and transformation of collective actions (Venturini, 2018); the nightmare, because it represents an *Orwellian* degeneration of such mechanisms.

According to Tiziana Terranova (2012), the ‘psychological economy’ imagined by Tarde (1902) has found a dark accomplishment in the contemporary system of the ‘attention economy’. Drawing on Lazzarato (2002) and Stigler (2008 & 2010), she argues that “modern media enhanced and extended the range and scope of those processes of invention and imitation that for him [Tarde] constituted the essence of economic life” (Terranova, 2012 p. 11), but also “caused the processes of individuation that connect psychic and social life to be short-circuited, resulting in the destructive hegemony of the short term over the long term” (ib. p. 12).

I both agree and disagree with this interpretation. While it is useful to turn to Tarde as a reminder that collective virality has not begun with social media, it would be wrong to believe that there is nothing new in the current weave of misinformation. Like most ‘attention economy’ theories, such an interpretation is too generic. According to Crogan and Kinsley (2012) there are three main ways of conceptualising the ‘attention crisis’: as a form of biopower bridling critical thinking (Stigler, 2010); as a push to extend capitalist economy to leisure intellectual activities (Marazzi, 2008, Beller, 2009, Lazzarato, 2014); as a neurological consequence of the exposure to digital technologies (Hayles, 2007 & Carr, 2010). While these arguments are convincing (cognition is certainly a site of political struggle, immaterial labour is indeed threatened by capitalist exploitation and intellectual technologies do affect our neurological capabilities), they are also too broad to account for the specific misinformation treated in this chapter.

Five modes of junk news production

While collective virality is a constant and essential dimension of social existence, ‘junk information’ is a relatively new phenomenon, because only recently virality has become the object of a complex system dedicated to its production and circulation. Such a system is effective (but also difficult to seize by research and regulation) because it brings together developments that are simultaneously:

- 1) Economic (the establishment of a market for online attention);
- 2) Communicational (the socialisation of a ‘prosumer’ audience);
- 3) Technological (the development of behavioural algorithms and spreading bots);
- 4) Cultural (the development of virality-oriented subcultures);
- 5) Political (the technique of trolling).

1. The economy of junk news. The economy of virality surfaced in the early 2000s when many Internet companies gave up the hope of selling contents and services and decided to maximise advertising revenues. According to observers (especially Goldhaber, 1997), such evolution derived from the inevitable inversion of “information economy.” Because of its abundance, information cannot be the *scarce resource* driving digital economy. Instead, as observed by Herbert Simon in 1971, its increase gives value to its opposite, namely attention:

The wealth of information means a dearth of something else: a scarcity of whatever it is that information consumes. What information consumes is rather obvious: it consumes the attention of its recipients. Hence a wealth of information creates a poverty of attention. (Simon, 1971, p. 40)

Scarcity, however, is not enough. To be sold, attention needs to be “marketized” (Çalışkan & Callon, 2010), which in turn demands a ‘metrological system’ to standardize and quantify the variety of things that we call “attention.” Setting up such a system had already proved difficult for broadcasting media (Bourdon & Méadel, 2014) and the solutions found for radio and television could not be applied to the Internet because of the larger number of online sources. Survey based rating systems, could assess the visibility of the most top-tier websites, but cannot harness the teeming richness of online offers.

Google solved this problem in the early 2000s with the launch of two services called *AdSense* (allowing websites owners sell advertising space) and *AdWords* (allowing web advertisers to buy such a space). The distinctive feature of this network is the automation of its marketplace thanks to two algorithms. As in all advertisement systems, buyers are not interested in attention *in general*, but in attention on specific matters (if you sell kitchenware you want your ads in cooking blogs rather than in sports forums). In AdWord, this matching is operated by allowing buyers to buy keywords and then displaying the ads on the AdSense websites that PageRank, the algorithm that made Google’s fortune as a search engine, (Rieder, 2012; Cardon, 2013), associates to such queries. In this way, PageRank. The second algorithm concerns the auctions through which the price of keywords is established. To allow these auctions to be carried out ceaselessly and with little human intervention, Google implemented a variant of the Vickrey system in which advertisers set their bids independently and the auction is won by highest bidder at the price proposed by the second-highest (Mehta et al. 2007).

This double automation allowed Google to handle micro-transactions unprofitable for traditional advertising agencies and to scale up its network to millions of buyers and sellers (thereby becoming the cornerstone of Google’s revenues). Google Ads is thus the precursor (and dominant player) of a series of ‘advertisement networks’ offering to every website, *no matter how marginal or flimsy*, the possibility to sell its traffic (O’Reilly, 2007).

Another crucial feature of Google Ads is that the value of attention is calculated on the basis of the number of clicks generated by advertisements (unlike previous systems of audience measurement, which could only estimate the number of viewers). This “hit economy” (Rogers, 2002) creates incentives for the thriving of *clickbait* techniques. “Clickbaiting” is a crucial and yet understudied phenomenon consisting in the proliferation of advertisements with the only objective of being clicked. Clickbaits do seek the sustained attention pursued by newspapers, television, radio or classic websites. They only need to be remarkable enough to pull visitors in for a few seconds. Lowering the barriers of the attention market and

merchandising a fleeting attention, the hit economy encouraged the development of a clickbait industry that is responsible for much of the disinformation discussed in this chapter (Graham, 2017, p. 12).

For many junk news producers, the name of the game is not to create catchy stories to generate political effects, but to exploit political interest to clickbait attention. This is famously the case of the teenagers of the Macedonian city of Veles where many highly visited pro-Trump websites and Facebook pages were created (Tynan, 2016 and Subramanian, 2017):

The young Macedonians who run these sites say they don't care about Donald Trump. They are responding to straightforward economic incentives: ... they learned the best way to generate traffic is to get their politics stories to spread on Facebook — and the best way to generate shares on Facebook is to publish sensationalist and often false content that caters to Trump supporters. As a result, this strange hub of pro-Trump sites in the former Yugoslav Republic of Macedonia is now playing a significant role in propagating ... false and misleading content (Silverman & Alexander, 2016).

2. The communication mechanism of junk news. The fact that Web advertisements are paid by ‘click’ and not by ‘impression’ suggests that online attention is merchandised a form of engagement (albeit a shallow one). Audience studies have long demonstrated that publics are never mere receivers, but always active interpreters (Morley, 1993). Already in 1981, Dallas Smythe observed that the commodity sold by mass media is the ‘labour power’ extracted from their audiences: “the work which audience members perform for the advertiser to whom they have been sold is learning to buy goods and to spend their income accordingly” (p. 243).

Such an “audience power” has become more important as *online platforms* have learnt to exploit even the lightest engagement of their audiences. In the 1990s, a distinction existed online between “posters”, the minority of individuals contributing to the life of digital communities, and “lurkers,” the silent majority who just read their discussions (Nonnecke & Preece, 2003). Such distinction has been thinned by the advent of social platforms, which have drastically reduced the effort necessary to “act” online through the so-called “social buttons” (Gerlitz & Helmond 2013). Introduced by content aggregators like Reddit and Digg, such buttons can be placed on any webpage and allow visitors to share such page on the aggregator. Thanks to social buttons, recommending a content has become as easy clicking on it.

‘Like’ and ‘share’ buttons allow embedding in Facebook contents coming from virtually any webpage, making it possible to consume external contents without leaving the platform. Removing the need to manually copy and paste URLs, “these buttons facilitate the cross-syndication of web content and... introduce a participatory and user-focused approach to recommendation” (Gerlitz & Helmond 2013, p. 1351). Together with the automatic re-publishing of friends’ posts on personal profiles, the one-click-share function dissolves the distinction between lurkers and posters. All Facebook users are posters, for they all contribute to the circulation of contents by simple fact of having friends and liking contents.

The difference between the audience commodity on traditional mass media and on the Internet is that in the latter the users are also content producers: ... the users engage in permanent creative activity, communication, community building and content production... [This] does not signify a democratization of the media towards participatory systems, but the total commodification of human creativity (Fuchs, 2009, p. 82).

This does not mean that all uses of social platforms are shallow – as proven by activists all over the world (Gerbaudo, 2012). It means that social platforms rely on the merchandising of a *click-and-share engagement* that, in turn, encourages the circulation of messages that are not only sticky, but also “spreadable”, i.e. designed to be circulated and engaged with. According to Jenkins *et al.* (2013), spreadability is obtained by “the use of shared fantasies, humor, parody and references, unfinished content, mystery, timely controversy, and rumors” (p. 202) – all elements typical of online misinformation. Even though falseness is not always associated with virality, it is not by chance that many junk news stories are also false. Precisely because they are not meant to obtain a deep cognitive adhesion but to arouse a superficial click-and-share engagement, junk news leverages the bias of fast thinking (Kahneman, 2011). Exaggerated, hyper-partisan stories are highly ‘spreadable’ (Mihailidis & Viotty, 2017) and this explains why the majority of junk news is more similar to satire than to journalism (Horne & Benjamin, 2017).

3. The technology of junk news. Social media platforms did not just prepare the ground for junk news, they also set up a technological system to nurture it, through a series of techniques to maximise the “audience labour.” As noted above, one novelty of Google Ads is the billing by clicks (rather than by impressions). The *clickthrough rate* is also increasingly complemented “conversion rates” quantifying product sales, service registration, but also application downloads or content redistribution (Hoffman & Novak, 2000).

Facebook, for instance, proposes eleven different *advertising objectives* defined as “what you want people to do when they see your ads” divided into three groups: awareness (brand awareness, reach), consideration (traffic, app installs, engagement, video views, lead generation, messages) and conversion (conversions, catalogue sales, store visits) (Facebook Business, 2018). Google uses its technological network to allow quantifying website actions (through Google Analytics), video views (through YouTube), phone calls (through forwarding numbers), app installs and app actions (through Android) and even offline actions (through customer relationship software).

Furthermore, platforms are not the only players in the tracking economy. Nowadays, most webpages contain software tracing visitors’ behaviours and many sell this information to companies that aggregate and resell them (Anthes, 2015 and Crain, 2018). Increasingly, *data brokers* collect data directly through “third-party cookies”. A “cookie” is a file that stores information on users in the memory of their web-browser. Traditionally, cookies were used by websites to collect information about their users and provide a more personalised experience. Lately, however, websites have started to be paid to host cookies belonging to data brokers (Mayers & Mitchell, 2012). Thanks to these “third-party cookies”, junk news websites can monetise their traffic even when their visitors do not click on advertisements. Clickbaits sell audiences’ attention *indirectly*, by helping data brokers to collect information on Internet users that will allow to feed them personalised advertisements on other websites.

Online tracking became thus a way to improve the matching between advertisements and audiences. Once again, this mechanism was universalised by Google Ads which does not simply award spaces to the highest bidders, but ‘weights’ tenders on the basis of their “quality score” (Jensen & Mullen, 2008). The *quality score* is crucial, because it implies that advertisements with high ‘quality scores’ can win auctions by bidding *less* than their competitors (Geddes, 2014, p. 215-256). This score measures the match between a specific advertisement and a specific auction and is computed through an undisclosed formula

“Real-time, auction-specific quality calculations of expected clickthrough rate, ad relevance, and landing page experience, among other factors, are used to calculate Ad Rank at auction time. These factors, which are based on things known only at the time of the auction, can heavily influence the quality of the user’s experience” Google Support (2018).

The expected clickthrough rate (the probability that users will engage with the ad) is the most important of these factors. This makes perfect sense in a system in which revenues are generated only when users actually click on an announcement. Favouring the *expected engagement* benefits both advertisers and hosting websites (as well as Google which retains 32% of the paid price) and, crucially for the argument of this chapter, introduces a positive feedback between tracking and engagement.

Through this feedback data collected on online behaviours becomes the basis for promoting the same behaviours. These feedback mechanisms are heavily deployed in all online platforms and are an integral part of their addictive power. YouTube, for example, measures the time you spend on videos (and the time spent by users with similar viewing habits) to suggest videos that will maximise your viewing time. Likewise, Facebook measures scrolling behaviours to build personal pages that will induce more scrolling – which explains why the platform has reduced the possibility of posting on friends’ walls and favoured the automatic composition of “timelines” (Lorenz, 2017). The data used to nourish this behavioural feedback, of course, are also collected outside the platforms through third-party cookies as admitted by Twitter’s *Growth Director* :

“These tailored suggestions are based on accounts followed by other Twitter users and visits to websites in the Twitter ecosystem. I receive visit information when sites have integrated Twitter buttons or widgets, similar to what many other web companies – including LinkedIn, Facebook and YouTube – do when they’re integrated into websites” (Laraki, 2012).

The tracking/engagement loop explains the resources invested by media companies in *deep learning algorithms* (Mackenzie, 2017). Both the “deep” and “learning” nature of these algorithms deserve

discussion. “Deep” refers to the *plural* and *layered* functioning of the techniques employed in contemporary artificial intelligence (neural networks in particular). Consider the recommendation algorithm recently introduced by YouTube to maximise users engagement (Covington *et al.* 2016). Instead of writing a complex equation that would match users and videos, the computation is broken down in dozens of detection blocks, each considering a single feature of the video or the user. The output of each of these elementary blocks becomes the input for a higher level of computation and so forth for several layers (sometime with recursive calls to lower levels). Though each of the blocks is relatively simple, their combination by the machine is extremely difficult to interpret (as acknowledged by Google computer scientists themselves, Olah *et al.*, 2018): “So, when YouTube claims they can’t really say why the algorithm does what it does, they probably mean that very literally” (Gilen, 2017, Gilen & Rosen, 2016).

Because of their *depth*, neural networks are then black boxes which can only be validated through their results (which is why these techniques are considered a form of *learning*). Oftentimes, the ground truth of these comparisons is the human execution of the same operation (e.g., when an image detection algorithm is compared to manual classification). In the case of recommendation algorithms, however, the ground truth is the increase of the engagement, as recognised by YouTube engineers:

“for the final determination of the effectiveness of an algorithm or model, we rely on A/B testing via live experiments. In a live experiment, we can measure subtle changes in click-through rate, watch time, and many other metrics that measure user engagement” (Covington *et al.* 2016, p. 192).

Deep learning is thus characterized by a “radical behaviourism” (Cardon, 2010): online platforms don’t care about why their users engage with them, how engagement is generated, or what engagement even means – the only thing that matters is increasing their measures of clicking, viewing, scrolling. Add to this that, in the last few years, platforms and marketing enterprises have introduced a multitude of “social bots” (Ferrara *et al.*, 2014) performing automatically and on a large scale the same behaviours of users and thus amplifying viral dynamics (Bessi & Ferrara, 2016; Shao *et al.*, 2017).

This is why asking online platforms to implement filters to neutralise junk news is like asking fast-food chains to implement a recipe to reduce junk food consumption. The core of platforms’ algorithmic intelligence (and of their business model) lies in the capacity to maximise the virality of online contents, in ways over which their very creators have little control. They may be able to stop blatantly false and mischievous contents, but they will not oppose the very virality that generates their profits.

4. The culture of fake news. While the role of behavioural algorithms should not be overlooked, technology is not the only forces at play in junk news production. People play a crucial role in the system, through the phenomenon of micro-celebrity and the emergence of virality-oriented subcultures.

Micro-celebrity refers to the renown obtained through social media by individuals who do not enjoy a high visibility in other arenas (such as sport, show business, economy or politics). While its emergence can be tracked back to reality-TV, micro-celebrity has been encouraged by the practice of social platforms to provide to their users some of the metrics collected for their advertising market.

These “vanity metrics” (Rogers, 2018) tend to capture a superficial kind of attention and measure a celebrity that is ephemeral and shallow – hence the suffix “micro-”. This does not mean, however, that micro-celebrity is inconsequential. The idea that every individual has an audience that can be gauged by the same metrics of commercial and political brands (Marwick & Boyd, 2011) push many online users to adopt strategies of “personal branding” (Marwick, 2015, Khamis *et al.*, 2017). This invites many users to curate their online engagement and re-publish viral contents. Vanity metrics mobilise platform users in support of the spreading economy of online media (Hearn & Schoenhoff, 2016). By re-posting contents that they hope will interest their followers, users work to increase their visibility and at the same time contribute to the maintenance of interpersonal communication networks propitious for junk information. Much has been written about how social media allows companies and political leaders to circumvent traditional gatekeepers and address directly their audiences, but much should also be said about the way in which individuals maximising their personal reach amplify commercial (Murphy & Schhram, 2014) and political messages (Vaccari & Valeriani, 2015).

As a cultural phenomenon, virality plays out not only at the individual level, but also at the level of online subcultures. A particularly interesting case is that of 4chan – a popular Internet forum created in 2003 and

characterized by two features. First, 4chan encourages its users to post anonymously (the hacker movement “Anonymous” famously got its name from the pseudonym employed by the majority of 4chan posters). Anonymity works as a liberating feature that allows the publication of contents that would be outrageous in most other online and offline venues.

The second feature of 4chan is the way in which it promotes viral ephemerality. As many online forums, 4chan is organised in boards structured as a list of “threads” ranked according to the most recent post. Given the popularity of many 4chan boards, threads are immediately pushed down by new arrivals, unless they are “bumped up” by new comments. Based on a two-week sample, Bernstein *et al.* (2011), calculated that the median lifespan of a thread in the “random board” (4chan/b/) is 3.9 minutes, with the longest-lived thread lasting 6.2 hours. Though threads life in other boards may be a bit longer (Hagen, 2018), these figures indicate how 4chan has specialised in the kind of ephemeral attention typical of junk news.

Moreover, threads are limited to a maximum of 300 comments, which means that even threads generating lots of comments are eventually closed and deleted. To deal with this mechanism, the 4chan community introduced the practice of summarising popular discussions and re-posting them. This assures that the most popular ideas are constantly distilled and re-posted in a constant swing of fluidification and condensation that closely resemble Tarde’s theory of social change.

The combination of a technical incentive encouraging swelling and of a social practice encouraging mutation (both occurring in an anonymous medium) has created an extremely virulent subculture that generated many of the most popular online memetic images (Shifman, 2013) and many of the fake news that polluted the US election (see Tuter et al., forthcoming).

Junk news thus is not only a commercial enterprise, but also a cultural phenomenon. 4chan communities have developed vernacular practices, ideas and expressions. The political board, 4chan/pol/, has been particularly successful in this process of subculture creation, thus becoming the online epicentre of the “alt-right” (Nagle, 2017) and developing a universe of symbolic references that is both rich and opposed to the mainstream culture – in line with Hebdige’s (1979) definition of subcultures. 4chan/pol/ posters depict themselves at the population of a fictional country, the *Kekistan*, with its flag (a green and black version of the Nazi flag); its religion (the cult of the ancient Egyptian god of darkness “Kek”); its symbols (above all the character of “Pepe the Frog”); and its enemies (the “normies” of mainstream culture).

This last element is crucial because much of the Kekistani subculture revolves around the refusal of the “politically correct”. According to its members, this refusal justifies the racism, misogyny and extremism of their discourses. Kekistani “shitposters” (as in their self-definition) commonly adopt a mocking attitude and affirm that they do not stand by the ideas they profess but, instead, spread them as jokes and provocations to generate viral effects (the so-called “meme magic”) in other platforms such as Reddit (Squirrell, 2018), YouTube (de Keulenaar, 2018) and Twitter (Zannettou et al. 2018).

5. The politics of junk news. It is against this economic, technological and cultural background that pressure groups and governments have seized the political uses of junk news. This use is very different way from classical propaganda (Chomsky, 1991; Jack, 2017) and resembles instead to the campaigns led by ‘sceptics’ against health and environmental regulations.

According to Robert Proctor (Proctor & Schiebinger, 2008) and Naomi Oreskes (Oreskes & Conway, 2010), groups of rogue scientists and marketing experts have been financed since the 1950s by industrial groups to counter the mounting evidence on the risks of tobacco smoking and later of acid rain, the ozone hole and climate change. Interestingly, these “merchants of doubts” do not deny these threats directly, but to nurture the doubt emphasising other potential risk causes. In direct confrontations, sceptics would insistently try to displace the discussion to marginal questions or use provocations to make the discussion noisier.

A similar communicational strategy is known under the name of “online trolling” (Schwartz, 2008; Bishop, 2014). Trolls attack online discussions by asking silly questions; insulting other users; blatantly violating the community codes ; and, in general, by pushing other users into useless controversies (Lee, 2005; Schachaf & Hara, 2010). Most of the time, trolls are not interested in the contents of the messages they post. Their objective is not to convince their addressees, but merely to provoke them, in a *communicational game* that bears many similarities to the memetic culture of 4chan (Bergstrom, 2011).

While trolling is classically carried out as ludic activity (Buckels, et al., 2014), it has commercial and political equivalents. Firms and marketing companies have long tried to disguise their lobbying activities as forms of native engagement. This form of “sock-puppetry” consists in using false online *personae* to promote products (a technique known as “shilling”, Stevens *et al.*, 2103; Luca & Zervas, 2016) or to simulate grassroots support (a technique known as “astroturfing,” Cho *et al.*, 2011). More recently some companies have started using sock-puppets more aggressively to capture attention through deliberately outrageous messages (Mahdawi, 2015) or by attacking their opponents and disrupting their conversations (Foucart & Horel, 2017). Once again, these forms of *corporate trolling* are not necessarily meant to spread false information, but to capture or deviate attention.

Political trolling has similar objectives and has been documented by journalistic investigations all over the world. One of the first of evidence that junk news is produced and spread by government agencies for political purposes has been offered by documents in the “Snowden archive,” revealing how a unit of the British intelligence agency prepared briefs on how “(1) to inject all sorts of false material onto the internet in order to destroy the reputation of its targets; and (2) to use social sciences and other techniques to manipulate online discourse and activism” (Greenwald, 2014).

Similarly, an investigation by the *New York Times* (Chen, 2015) has documented the setting up of campaigns of viral misinformation in Russia by the infamous *Internet Research Agency*. This “troll factory” appears to be less interested in persuading public opinion of pro-Kremlin propaganda than in depriving online debate of all credibility:

“The Internet still remains the one medium where the opposition can reliably get its message out. But their message is now surrounded by so much garbage from trolls that readers can become resistant before the message even gets to them” (ibidem).

The same strategy has been also deployed by the Russian agency as a form of intervention in other countries (Seddon, 2014; MacFarquhar, 2018).

A third example of political trolling is offered by the study of King, Pan and Jennifer (2017) of the so-called “50c party members” an army of Internet commentators hired by Chinese authorities to influence public opinion. One of the most interesting findings is that Chinese misinformation campaigns tend to be concentrated in bursts of a few days replicating “the bursts that occur naturally when discussions go viral” (ibidem). Interestingly, this claim has not been denied, but in fact acknowledged by the Chinese government:

The Chinese internet media’s largest problem is ... the amplification of negative and alternative information on Chinese domestic issues caused by opinion formation mechanisms that have been a part of the Internet since it was invented in the US; Chinese society, in the midst of a transformation, does not have the hedging mechanisms to deal with this amplification, so traditional public opinion guidance systems don’t seem to be pulling their weight when it comes to overcoming these problems (Appendix B of King, Pan & Margaret 2017).

Finally, these communication strategies are amplified by automatic means. In the same way in which “social bots” contribute to the spread of commercial junk news, “political bots” are used for viral warfare (Cook *et al.* 2014). In their simplest applications, bots are used to artificially increase the metrics of popularity of political leaders; in their most vicious they are employed to “flood” the discussions of opponents (Woolley, 2016):

During the Arab Spring, online activists were able to provide eyewitness accounts of uprisings in real time. In Syria, protesters used the hashtags #Syria, #Daraa and #Mar15 to appeal for support from a global theatre... spambots created by Bahrain company EGHNA were co-opted to create pro-regime accounts. They flooded the hashtags with pro-revolution narratives. This was essentially drowning out the protesters’ voices with irrelevant information – such as photography of Syria (Michael, 2017).

Conclusions

So, after all, junk news is indeed a form of data politics. Yet, not in the way often imagined. When we consider the power of data, we often conjure some sort of *Big Brother* dystopia: a centralised organisation monitoring our actions through a technological panopticon and influencing them through cutting-edge persuasion techniques. This is not the case for junk news, which does *not* draw on the collection of

detailed datasets of personal information and does *not* exploit advanced influencing algorithms. “Fake news” is more prosaically “junk news”, for its cycle of production and distribution resembles to the one of junk food.

In a sense, this is even more worrying, because no single organisation (no matter how sophisticated) is as strong as a system with gears in the economy, media, technology, culture and politics. This is the take-away message of this chapter, that junk information is the consequence of a multiplicity of developments emerged in different spheres but directed to the same purpose: to accelerate but also trivialize the dynamics of variation and reproduction that Tarde saw as the two basic forces of collective life.

The creation of a standardised market for online publics and its expansion to the long tail of the Web; the quantification of engagement through metrics of clicking and sharing; the emergence of a flourishing clickbait economy and the diffusion of clickbait techniques to all types of communication; the training of online audiences to contribute to the distribution of junk information; the introduction of third-party cookies and the advent of data brokers; the use of deep learning algorithms amplify the consumption of viral contents; the deployment of armies of social and political bots; the rise of micro-celebrities and the pervasiveness of vanity metrics; the emergence of virality-oriented subcultures in specialised platforms and their spread to mainstream media; and the perfecting of political trolling and discussion hijacking. All these developments are aligned to promote a type of attention and of engagement that (because of their ephemerality and shallowness) are opposite to those necessary for a healthy democratic debate. This alignment is not fortuitous or vaguely inspired by the same *zeitgeist*, but connected through a series of reinforcing relations that need to be empirically exposed and legally dismantled to slow down the rise of junk misinformation. The multiplication of the appeals to truth and fact-checking miss its target for it refers to a regime of information (that of traditional journalism) that could not be further away from that of junk news. It only by understanding the system of digital virality that we can stand against online misinformation.

References

- Anthes, Gary. 2015. “Data Brokers Are Watching You.” *Communications of the ACM* 58 (1): 28–30. doi:10.1145/2686740.
- Bakir, Vian, and Andrew McStay. 2018. “Fake News and The Economy of Emotions: Problems, Causes, Solutions.” *Digital Journalism* 6 (2). Routledge: 154–75. doi:10.1080/21670811.2017.1345645.
- Beller, Jonathan. 2009. *The Cinematic Mode of Production: Attention Economy and the Society of the Spectacle. Learning, Media and Technology*. Vol. 34. doi:10.5860/CHOICE.44-6137.
- Bergstrom, Kelly. 2011. ““Don’t Feed the Troll”: Shutting down Debate about Community Expectations on Reddit.Com.” *First Monday* 16 (8): 9–11. doi:10.5210/fm.v16i8.3498.
- Bernstein, Michael S, Andrés Monroy-Hernández, Drew Harry, Paul André, Katrina Panovich, and Gregory G Vargas. 2011. “4chan and/b: An Analysis of Anonymity and Ephemerality in a Large Online Community.” In *ICWSM*, 50–57.
- Bessi, Alessandro, and Emilio Ferrara. 2016. “Social Bots Distort the 2016 U.S. Presidential Election Online Discussion.” *First Monday* November. doi:https://doi.org/10.5210/fm.v21i11.7090.
- Bishop, Jonathan. 2014. “Representations of ‘trolls’ in Mass Media Communication: A Review of Media-Texts and Moral Panics Relating to ‘Internet Trolling.’” *International Journal of Web Based Communities* 10 (1): 7. doi:10.1504/IJWBC.2014.058384.
- Boullier, Dominique. 2015. “Socio Vie et Mort Des Sciences Sociales Avec Le Big Data.” *Socio* 4: 19–37.
- Bounegru, Liliana, Mette Simonsen Abildgaard, Andreas Birkbak, Jonathan Gray, Mathieu Jacomy, Torben Jensen Elgaard, Anders Koed Madsen, and Anders Kristian Munk. 2018. “Five Provocations about Fake News.” *STS Encounters*, no. Forthcoming.
- Bounegru, Liliana, Jonathan Gray, Tommaso Venturini, and Michele Mauri. 2018. *A Field Guide to Fake News and Other Information Disorders*. Amsterdam: Public Data Lab. https://ssrn.com/abstract=3024202.
- Bourdon, Jérôme, and Cécile Méadel. 2014. *Television Audiences across the World: Deconstructing the Ratings Machine. Television Audiences Across the World: Deconstructing the Ratings Machine*. doi:10.1057/9781137345103.
- Boyd, Danah. 2017. “Did Media Literacy Backfire?” *Points*. https://points.datasociety.net/did-media-literacy-backfire-7418c084d88d.
- Buckels, Erin E., Paul D. Trapnell, and Delroy L. Paulhus. 2014. “Trolls Just Want to Have Fun.” *Personality and Individual Differences* 67. Elsevier Ltd: 97–102. doi:10.1016/j.paid.2014.01.016.

- Cadwalladr, Carole. 2018. "I Made Steve Bannon's Psychological Warfare Tool: Meet the Data War Whistleblower." *The Guardian*, March. <https://www.theguardian.com/news/2018/mar/17/data-war-whistleblower-christopher-wylie-faceook-nix-bannon-trump>.
- Çalışkan, Koray, and Michel Callon. 2010. "Economization, Part 2: A Research Programme for the Study of Markets." *Economy and Society* 39 (1): 1–32. doi:10.1080/03085140903424519.
- Cardon, Dominique. 2010. *La Démocratie Sur Internet. Promesses et Limites*. Paris: Seuil.
- Cardon, Dominique. 2013. "Dans l'esprit Du PageRank." *Réseaux* 177 (1): 63. doi:10.3917/res.177.0063.
- Carr, Nicholas. 2010. *The Shallows: What the Internet Is Doing to Our Brains*. New York: Norton & Company. http://lse.summon.serialssolutions.com/2.0.0/link/0/eLvHCXMwTV09C8JADD1EwVnQW_0DLXfp9T7mYhUqDlKpUl3anJsg-v8xVAWn8KYMce_IDeEJsSbvY1AwYEAq41kijSGIpJkstRoD-66d2TZldSz2f2xeL8SE7kvR1pu22mXfMID55gq2OQYHy_44euv4KiEHgE0ejYAcMjzoRDBJcPqGkKfjENMJtoAaHUPBHolpuynSYp.
- Channel 4 News. 2018. "Revealed: Trump's Election Consultants Filmed Saying They Use Bribes and Sex Workers to Entrap Politicians." *Channel 4*, March 19. <https://www.channel4.com/news/cambridge-analytica-revealed-trumps-election-consultants-filmed-saying-they-use-bribes-and-sex-workers-to-entrap-politicians-investigation>.
- Chen, Adrian. 2015. "The Agency." *The New York Times Magazine*, June 7. <https://www.nytimes.com/2015/06/07/magazine/the-agency.html>.
- Cho, Charles H., Martin L. Martens, Hakkyun Kim, and Michelle Rodrigue. 2011. "Astroturfing Global Warming: It Isn't Always Greener on the Other Side of the Fence." *Journal of Business Ethics* 104 (4): 571–87. doi:10.1007/s10551-011-0950-6.
- Chomsky, Noam. 1991. *Media Control: The Spectacular Achievements of Propaganda*. New York: Seven Stories. doi:10.1007/s13398-014-0173-7.2.
- Cook, David M, Benjamin Waugh, Maldini Abdipanah, Omid Hashemi, and Shaquille Abdul Rahman. 2014. "Twitter Deception and Influence: Issues of Identity, Slacktivism, and Puppetry." *Journal of Information Warfare* 13 (1): 58–71.
- Covington, Paul, Jay Adams, and Emre Sargin. 2016. "Deep Neural Networks for YouTube Recommendations." *Proceedings of the 10th ACM Conference on Recommender Systems - RecSys '16*, 191–98. doi:10.1145/2959100.2959190.
- Crain, Matthew. 2018. "The Limits of Transparency: Data Brokers and Commodification." *New Media and Society* 20 (1): 88–104. doi:10.1177/1461444816657096.
- Croghan, Patrick, and Samuel Kinsley. 2016. *Paying Attention: Toward a Critique of the Attention Economy*. Lebanon, NH: Dartmouth College Press.
- Daniel Kahneman. 2011. *Thinking, Fast and Slow*. New York: Farrar, Straus and Giroux.
- de Keulenaar, Emillie V. 2018. "The Rise and Fall of Kekistan: A Story of Idiomatic Animus as Told Through Youtube's Related Videos." *Open Intelligence Lab*, April 6.
- Facebook Business. 2018. "About Advertising Objectives." *Advertiser Help Center*. <https://www.facebook.com/business/help/517257078367892>.
- Ferrara, Emilio, Onur Varol, Clayton Davis, Filippo Menczer, and Alessandro Flammini. 2014. "The Rise of Social Bots" 59 (7): 96–104. doi:10.1145/2818717.
- Foucart, Stéphane, and Stéphane Horel. 2017. "Monsanto Papers : La Guerre Du Géant Des Pesticides Contre La Science." *Le Monde*, May 5. https://abonnes.lemonde.fr/planete/article/2017/06/01/monsanto-operation-intoxication_5136915_3244.html.
- Fuchs, Christian. 2009. "Information and Communication Technologies and Society." *European Journal of Communication* 24 (1): 69–87. doi:10.1177/0267323108098947.
- Geddes, Brad. 2014. *Advanced Google AdWords (3rd Edition)*. Hoboken, New Jersey: John Wiley & Sons.
- Gerbaudo, Paolo. 2012. *Tweets and the Streets: Social Media and Contemporary Activism*. London: Pluto Books.
- Gerlitz, Carolin, and Anne Helmond. 2013. "The like Economy: Social Buttons and the Data-Intensive Web." *New Media and Society* 15 (8): 1348–65. doi:10.1177/1461444812472322.
- Gielen, Matt. 2017. "Reverse Engineering The YouTube Algorithm : Part II," February. <https://www.tubefilter.com/2017/02/16/youtube-algorithm-reverse-engineering-part-ii/>.
- Gilen, Matt, and Jeremy Rosen. 2016. "Reverse Engineering The YouTube Algorithm: Part I." *Tubefilter*, June. <http://www.tubefilter.com/2016/06/23/reverse-engineering-youtube-algorithm/>.
- Glenn Greenwald. 2014. "How Covert Agents Infiltrate the Internet to Manipulate, Deceive, and Destroy Reputations." *The Intercept*. <https://www.theguardian.com/commentisfree/2015/aug/20/advertising-trolls-marketing>.
- Google Support. 2018. "Things You Should Know about Ads Quality." *AdWords Help*. <https://web.archive.org/web/20180425195711/https://support.google.com/adwords/answer/156066>.

- Graham, Richard. 2017. "Google and Advertising: Digital Capitalism in the Context of Post-Fordism, the Reification of Language, and the Rise of Fake News." *Palgrave Communications* 3 (1): 45. doi:10.1057/s41599-017-0021-4.
- Hackett, Ej, O Amsterdamska, M Lynch, and J Wajcman. 2008. *The Handbook of Science and Technology Studies*. Cambridge Mass.: MIT Press.
http://medcontent.metapress.com/index/A65RM03P4874243N.pdf%5Cnhttp://eprints.lse.ac.uk/28629/.
- Hagen, Sal. 2018. "Rendering Legible the Ephemerality of 4chan/Pol/." *Open Intelligence Lab*, April 12.
oilab.eu/rendering-legible-the-ephemerality-of-4chanpol/.
- Hebdige, Dick. 1979. *Subcultures: The Meaning of Style. Queen's Quarterly*. Vol. 89. London: Methuen & Co. Ltd.
https://ezproxy.bibl.ulaval.ca/login?url=http://search.proquest.com/docview/61194747?accountid=12008%5Cnhttp://sfx.bibl.ulaval.ca:9003/sfx_local?url_ver=Z39.88-2004&rft_val_fmt=info:ofi/fmt:kev:mtx:journal&genre=unknown&sid=ProQ:ProQ:socabshell&atitle=S.
- Hine, Gabriel Emile, Jeremiah Onalapo, Emiliano De Cristofaro, Nicolas Kourtellis, Ilias Leontiadis, Riginos Samaras, Gianluca Stringhini, and Jeremy Blackburn. 2016. "Kek, Cucks, and God Emperor Trump: A Measurement Study of 4chan's Politically Incorrect Forum and Its Effects on the Web," no. Icwsm: 92–101.
http://arxiv.org/abs/1610.03452.
- Hoffman, DL, and TP Novak. 2000. "Advertising Pricing Models for the World Wide Web." *Internet Publishing and beyond: The ... and beyond: The ...*, 1–22. http://elabresearch.ucr.edu/blog/uploads/papers/Advertising Pricing Models for the World Wide Web [Hoffman and Novak - 2000].pdf.
- Horne, Benjamin D., and Sibel Adali. 2017. "This Just In: Fake News Packs a Lot in Title, Uses Simpler, Repetitive Content in Text Body, More Similar to Satire than Real News." http://arxiv.org/abs/1703.09398.
- Jack, Caroline. 2017. "What's Propaganda Got To Do With It?" *Points*. https://points.datasociety.net/whats-propaganda-got-to-do-with-it-5b88d78c3282.
- Jansen, Bernard J., and Tracy Mullen. 2008. "Sponsored Search: An Overview of the Concept, History, and Technology." *International Journal of Electronic Business* 6 (2): 114–31. doi:10.1504/IJEB.2008.018068.
- Jasanoff, Sheila, Gerard E Markle, James C Peterson, and Trevor Pinch. 1995. "Handbook of Science and Technology Studies." Thousand Oaks California: Sage. http://www.amazon.com/Handbook-Science-Technology-Professor-Jasanoff/dp/0761924981.
- Jenkins, Henry, Sam Ford, and Joshua Benjamin Green. 2013. *Spreadable Media*. New York: New York University Press. doi:10.1017/CBO9781107415324.004.
- Keyes, Ralph. 2004. *The Post-Truth Era: Dishonesty and Deception in Contemporary Life*. New York: St. Martin's.
- Khamis, Susie, Lawrence Ang, and Raymond Welling. 2017. "Self-Branding, 'Micro-Celebrity' and the Rise of Social Media Influencers." *Celebrity Studies* 8 (2). Routledge: 191–208. doi:10.1080/19392397.2016.1218292.
- King, Gary, Jennifer Pan, and Margaret E. Roberts. 2017. "How the Chinese Government Fabricates Social Media Posts for Strategic Distraction, Not Engaged Argument." *American Political Science Review* 111 (03): 484–501. doi:10.1017/S0003055417000144.
- Kosinski, Michal, David Stillwell, and Thore Graepel. 2013. "Private Traits and Attributes Are Predictable from Digital Records of Human Behavior." *Proceedings of the National Academy of Sciences* 110 (15): 5802–5. doi:10.1073/pnas.1218772110.
- Laraki, Othman. 2012. "New Tailored Suggestions for You to Follow on Twitter." *Twitter Official Blog*.
https://blog.twitter.com/official/en_us/a/2012/new-tailored-suggestions-for-you-to-follow-on-twitter.html.
- Latour, Bruno. 2002. "Gabriel Tarde and the End of the Social." In *The Social in Question. New Bearings in the History and the Social Sciences*, edited by Patrick Joyce, 117–32. London: Routledge.
- Latour, Bruno. 2005. *Reassembling the Social An Introduction to Actor-Network Theory*. Oxford: University Press.
- Latour, Bruno, Pablo Jensen, Tommaso Venturini, Sébastien Grauwin, and Dominique Boullier. 2012. "'The Whole Is Always Smaller than Its Parts': A Digital Test of Gabriel Tardes' Monads." *The British Journal of Sociology* 63 (4): 590–615. doi:10.1111/j.1468-4446.2012.01428.x.
- Latour, Bruno, and Steve Woolgar. 1979. *Laboratory Life. The Construction of Scientific Facts*. Los Angeles: Sage.
- Lazzarato, Maurizio. 2014. *Signs and Machines: Capitalism and the Production of Subjectivity*. Cambridge Mass.: MIT Press.
- Lazzarato, Maurizio. 2002. "Puissances de l'invention : La Psychologie Économique de Gabriel Tarde Contre l'économie Politique." Paris: Les empêcheurs de penser en rond.
- Lee, Hangwoo. 2005. "Behavioral Strategies for Dealing with Flaming in an Online Forum." *Source: The Sociological Quarterly* 46 (2): 385–403.
http://www.jstor.org/stable/4120995%5Cnhttp://www.jstor.org/stable/4120995?seq=1&cid=pdf-reference#references_tab_contents%5Cnhttp://about.jstor.org/terms.
- Lorenz, By Taylor. 2017. "The Facebook Wall Is Dead — and Facebook Is Struggling to Get Personal Again." *Mic.Com*, May 10. https://mic.com/articles/176599/the-facebook-wall-is-dead-social-network-struggles-to-get-personal-again#.CL3KRSusd.

- Luca, Michael, and Georgios Zervas. 2016. "Fake It Till You Make It: Reputation, Competition, and Yelp Review Fraud." *Management Science* 62 (12): 3412–27. doi:10.1287/mnsc.2015.2304.
- Lynch, Michael. 2017. "Post-Truth, Alt-Facts, and Asymmetric Controversies." *First 100 Days*. <http://first100days.stsprogram.org/2017/02/06/post-truth-alt-facts-and-asymmetric-controversies-part-i/>.
- MacFarquhar, Neil. 2018. "Inside the Russian Troll Factory: Zombies and a Breakneck Pace." *The New York Times*, February 18.
- Mackenzie, Adrian. 2017. *Machine Learners: Archaeology of a Data Practice*. Cambridge Mass.: MIT Press.
- Mahdawi, Arwa. 2015. "Don't Feed the Advertising Trolls." *The Guardian*, August 20. <https://www.theguardian.com/commentisfree/2015/aug/20/advertising-trolls-marketing>.
- Marazzi, Christian. 2008. *Capital and Language*. Los Angeles: Semiotext(e). <http://books.google.com/books?id=WO4dAQAAIAAJ>.
- Marwick, Alice E. 2015. "Instafame: Luxury Selfies in the Attention Economy." *Public Culture* 27 (1 75): 137–60. doi:10.1215/08992363-2798379.
- Marwick, Alice, and Danah Boyd. 2011. "To See and Be Seen: Celebrity Practice on Twitter." *Convergence* 17 (2): 139–58. doi:10.1177/1354856510394539.
- Mayer, Jonathan R., and John C. Mitchell. 2012. "Third-Party Web Tracking: Policy and Technology." *Proceedings - IEEE Symposium on Security and Privacy*, 413–27. doi:10.1109/SP.2012.47.
- Mehta, A., A. Saberi, U. Vazirani, and V. Vazirani. 2007. "AdWords and Generalized On-Line Matching." *46th Annual IEEE Symposium on Foundations of Computer Science (FOCS'05) V* (August): 264–73. doi:10.1109/SFCS.2005.12.
- Michael, Katina. 2017. "Bots without Borders: How Anonymous Accounts Hijack Political Debate." *The Conversation*, January 24. <https://theconversation.com/bots-without-borders-how-anonymous-accounts-hijack-political-debate-70347>.
- Mihailidis, Paul, and Samantha Viotty. 2017. "Spreadable Spectacle in Digital Culture : Civic Expression , Fake News , and the Role of Media Literacies in ' Post-Fact ' Society." *American Behavioral Scientist* 61 (4): 441–54. doi:10.1177/0002764217701217.
- Morin, Edgar. 1969. *La Rumeur d'Orléans*. Paris: Seuil.
- Morley, David. 1993. "Active Audience Theory: Pendulums and Pitfalls." *Journal of Communication* 43 (4): 13–19. doi:10.1111/j.1460-2466.1993.tb01299.x.
- Nagle, Angela. 2017. *Kill All Normies*. Winchester: Zero Books.
- Nonnecke, Blair, and Jenny Preece. 2003. "Silent Participants: Getting to Know Lurkers Better." In *From Usenet to CoWebs*, edited by Christopher Lueg and Danyel Fisher, 110–32. doi:10.1007/978-1-4471-0057-7_6.
- O'Reilly, Tim. 2007. "What Is Web 2.0: Design Patterns and Business Models for the Next Generation of Software." *International Journal of Digital Economics* 65 (March): 17–37.
- Olah, Chris, Arvind Satyanarayan, Ian Johnson, Shan Carter, Ludwig Schubert, Katherine Ye, and Alexander Mordvintsev. 2018. "The Building Blocks of Interpretability." *Distill*. doi:10.23915/distill.00010.
- Oreskes, Naomi, and Erik M Conway. 2010. "Merchants of Doubt: How a Handful of Scientists Obscured the Truth on Issues from Tobacco Smoke to Global Warming." London: Bloomsbury Press.
- Proctor, Robert. 2011. *Golden Holocaust: Origins of the Cigarette Catastrophe and the Case for Abolition*. Univ of California Press.
- Proctor, Robert, and Londa Schiebinger. 2008. "Agnotology: The Making and Unmaking of Ignorance." Stanford: Stanford University Press.
- Rieder, Bernhard. 2012. "What Is in PageRank? A Historical and Conceptual Investigation of a Recursive Status Index." *Computational Culture a Journal of Software Studies*, 1–28. http://computationalculture.net/article/what_is_in_pagerank.
- Rogers, Richard. 2002. "Operating Issue Networks on the Web." *Science as Culture* 11 (2): 191–213. doi:10.1080/09505430220137243.
- Rogers, Richard. 2018. "Otherwise Engaged: Social Media from Vanity Metrics to Critical Analytics." *International Journal of Communication* 12 (732942): 450–72.
- Sanjuán, Rafael, and Pilar Domingo-Calap. 2016. "Mechanisms of Viral Mutation." *Cellular and Molecular Life Sciences* 73 (23): 4433–48. doi:10.1007/s00018-016-2299-6.
- Schachaf, P, and N Hara. 2010. "Beyond Vandalism: Trolls in Wikipedia." *Journal of Information Science* 36 (3): 357–70.
- Schudson, Michael. 1989. "The Sociology of News Production." *Media, Culture & Society* 11 (3): 263–82. doi:10.1177/016344389011003002.
- Schwartz, Mattathias. 2008. "The Trolls Among Us." *The New York Times*, August 3. <http://www.nytimes.com/2008/08/03/magazine/03trolls-t.html>.

- Seddon, Max. 2014. "Documents Show How Russia's Troll Army Hit America." *Buzzfeed*, June 2. <http://www.buzzfeed.com/maxseddon/documents-show-how-russias-troll-army-hit-america>.
- Shao, Chengcheng, Giovanni Luca Ciampaglia, Onur Varol, Kaicheng Yang, Alessandro Flammini, and Filippo Menczer. 2017. "The Spread of Low-Credibility Content by Social Bots." doi:1707.07592.
- Shifman, Limor. 2013. *Memes in Digital Culture*. Cambridge Mass.: MIT Press.
- Silverman, Craig, and Lawrence Alexander. 2016. "How Teens In The Balkans Are Duping Trump Supporters With Fake News." *BuzzFeedNews*, November. https://www.buzzfeed.com/craigsilverman/how-macedonia-became-a-global-hub-for-pro-trump-misinfo?utm_term=.cro1E9mye#.bemMKQqmV.
- Simon, H.A. 1971. "Designing Organizations for an Information Rich World." In *Computers, Communications, and the Public Interest*, edited by M Greenberger, 37–72. Baltimore: Johns Hopkins Press.
- Smythe, D. W. 1981. "On the Audience Commodity and Its Work." *Media and Cultural Studies* 2006: 230–256. doi:10.1177/026858094009002003.
- Squirrel, Tim. 2017. "Linguistic Data Analysis of 3 Billion Reddit Comments Shows the Alt-Right Is Getting Stronger." *Quartz*, August. <https://qz.com/1056319/what-is-the-alt-right-a-linguistic-data-analysis-of-3-billion-reddit-comments-shows-a-disparate-group-that-is-quickly-uniting/>.
- Stevens, B J, J Harlan, and D B Scibelli. 2013. "The Art of Shill: Internet Product Consumption for Savvy Consumers." *Issues in Information Systems* 14 (1): 311–14.
- Stiegler, B. 2010. *Taking Care of Youth and the Generations*. Stanford: University Press. doi:2009025390.
- Stiegler, Bernard. 2008. "Within the Limits of Capitalism, Economizing Means Taking Care." *Ars Industrialis*.
- Stiegler, Bernard. 2010. *For a New Critique of Political Economy*. Cambridge: Polity Press.
- Stillwell, David J, and Michal Kosinski. 2012. "MyPersonality Project : Example of Successful Utilization of Online Social Networks for Large-Scale Social Research." *The Psychometric Centre, University of Cambridge*.
- Subramanian, Samanth. 2017. "Welcome to Macedonia, Fake News Factory to the World." *Wired*. <http://libproxy.cortland.edu/login?url=http://search.ebscohost.com/login.aspx?direct=true&db=aci&AN=121203861&site=eds-live>.
- Tarde, Gabriel. 1898. "Les Deux Éléments de La Sociologie." *Études de Psychologie Sociale*. Paris: Giard et Brière.
- Tarde, Gabriel. 1902. "Psychologie Économique." Paris: Félix Alcan.
- Tarde, Gabriel. 1890. "Les Lois de l'imitation." Paris: Félix Alcan.
- Terranova, Tiziana. 2012. "Attention, Economy and the Brain." *Culture Machine* 13: 1–19.
- Tuchman, Gaye. 1978. *Making News: A Study in the Construction of Reality*. New York: The Free Press.
- Tynan, Dan. 2016. "How Facebook Powers Money Machines for Obscure Political 'news' Sites." *The Guardian*, August. <https://www.theguardian.com/technology/2016/aug/24/facebook-clickbait-political-news-sites-us-election-trump>.
- Vaccari, Cristian, and Augusto Valeriani. 2015. "Follow the Leader! Direct and Indirect Flows of Political Communication during the 2013 Italian General Election Campaign." *New Media and Society* 17 (7): 1025–42. doi:10.1177/1461444813511038.
- Venturini, Tommaso. 2018. "Sur l'étude Des Sujets Populaires Ou Les Confessions d'un Spécialiste Des Fausses Nouvelles." In *Les Fausses Nouvelles : Nouveaux Visages, Nouveaux Défis*, edited by Pierre Trudel. Montreal: Presses de l'Université Laval.
- Venturini, Tommaso, Mathieu Jacomy, Axel Meunier, and Bruno Latour. 2017. "An Unexpected Journey: A Few Lessons from Sciences Po Médialab's Experience." *Big Data & Society* 4 (2): 205395171772094. doi:10.1177/2053951717720949.
- Venturini, Tommaso, and Richard Rogers. 2018. "The Cambridge Analytica Affair, the Crisis of API-Based Research and How This May Be a Good Thing," no. forthcoming.
- Wardle, Claire, and Hossein Derakhshan. 2017. "Information Disorder: Toward an Interdisciplinary Framework for Research and Policymaking (Report to the Council of Europe)."
- Woolley, Samuel C. 2016. "Automating Power: Social Bot Interference in Global Politics." *First Monday* 21 (4): 1–11. doi:10.5210/fm.v21i4.6161.
- Youyou, Wu, Michal Kosinski, and David Stillwell. 2015. "Computer-Based Personality Judgments Are More Accurate than Those Made by Humans." *Proceedings of the National Academy of Sciences* 112 (4): 1036–40. doi:10.1073/pnas.1418680112.
- Zannettou, Savvas, Tristan Caulfield, Emiliano De Cristofaro, Nicolas Kourtellis, Ilias Leontiadis, Michael Sirivianos, Gianluca Stringhini, and Jeremy Blackburn. 2017. "The Web Centipede: Understanding How Web Communities Influence Each Other Through the Lens of Mainstream and Alternative News Sources." doi:10.1145/3131365.3131390.
- Zuckerman, Ethan. 2017. "Stop Saying 'Fake News'. It's Not Helping." <http://www.EthanZuckerman.Com/Blog/2017/01/30/Stop-Saying-Fake-News-Its-Not-Helping/>, January.

