



Article

Autopsy of a metaphor: The origins, use and blind spots of the ‘infodemic’

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Abstract

In 2020, the term ‘infodemic’ rose from relative obscurity to becoming a popular catch-all metaphor, representing the perils of fast, wide-spreading (false) information about the coronavirus pandemic. It featured in thousands of academic publications and received widespread attention from policymakers and the media. In this article, we trace the origins and use of the ‘infodemic’ metaphor and examine the blind spots inherent in this seemingly intuitive term. Drawing from literature in the cognitive sciences and communication studies, we show why information does not spread like a virus and point out how the ‘infodemic’ metaphor can be misleading, as it conflates multiple forms of social behaviour, oversimplifies a complex situation and helps constitute a phenomenon for which concrete evidence remains patchy. We point out the existing tension between the usefulness of the widespread use of the term ‘infodemic’ and its uncritical adoption, which we argue can do more harm than good, potentially diluting the quality of academic work, public discourse and contributing to state overreach in policymaking.

Keywords

COVID-19, digital media, infodemic, journalism, metaphor, misinformation, news, pandemic, policymaking, science, WHO

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Introduction

Sometimes, sentences can unexpectedly take on a life of their own. Under the heading ‘Managing the 2019-nCoV “infodemic”’, the World Health Organization (WHO, 2020c) wrote in a situation report on 2 February 2020: ‘The 2019-nCoV outbreak and response has been accompanied by a massive “infodemic” – an over-abundance of information – some accurate and some not – that makes it hard for people to find trustworthy sources and reliable guidance when they need it’. WHO Director-General Tedros Adhanom Ghebreyesus re-iterated the sentiment 2 weeks later, saying, ‘We are not just fighting an epidemic; we’re fighting an infodemic. Fake news spreads faster and more easily than this virus, and is just as dangerous’ (Ghebreyesus, 2020).

A metaphor was born.¹ In the following months, journalistic accounts and scientific works referencing or addressing the concept of an ‘infodemic’ flourished and finally culminated – for the time being – in a conference hosted by the WHO (2020a) in July 2020, which aimed to advance and ‘defin[e] the scientific discipline of infodemiology and establish a community of practice and research’ around ‘infodemics’, while the UK parliament’s Digital, Culture, Media and Sport Committee (2020) published a report on ‘Misinformation in the COVID-19 “Infodemic”’ with recommendations for how the UK government should respond.

More than a year has passed since the ‘infodemic’ entered the public consciousness. This presents a good opportunity to take stock. We argue that what has been missing to date is a critical reflection on the term, concept and metaphor ‘infodemic’, its associated understandings and uses, as well as the potential wider implications of both. This article seeks to address this gap. We analyse the origins and the recent use of the term ‘infodemic’ in an effort to understand its meaning and popularity. Drawing on literature from metaphor studies, communication and cognitive science, we then critically interrogate its use in academic, media and policy circles, arguing that journalistic and academic uses and responses to the ‘infodemic’ have contributed to a narrative that posits ‘infodemics’ as a powerful concept, disregarding conceptual flaws and constituting a phenomenon as true, despite evidence to the contrary.² We provide arguments for the reasons behind this and explain the trade-off between the usefulness of a concept that sounds intuitive to multiple audiences and the drawbacks of the uncritical adoption of the same term. Finally, we conclude with a reflection on some potential wider implications of this recent development for science and policy which, as we argue, ties into long-standing discourses and ‘moral panics’ around the existence and effect of mis- and disinformation.

The rise and use of ‘infodemic’

Public health emergencies have long been accompanied by rumours and a deluge of information of varying quality about their origins and spread as well as interventions against them (Stalcup, 2020). Medical misinformation, particularly in these contexts, is known for having multiple short- and long-term consequences, and both its presence and its correction can often have systemic effects (Southwell et al., 2018, 2019). The term – or more specifically, the metaphor – ‘infodemic’ to describe some of these, however, was not coined until 2003 when political analyst David J Rothkopf (2003) first used it in a

commentary for the *Washington Post* in the context of the severe acute respiratory syndrome (SARS) outbreak. Yet, the term did not see widespread uptake in the following years. According to Google Trends, search interest for ‘infodemic’ was mostly absent in the period from 2004 to 2020, but rapidly rose after the WHO adopted it in February 2020.³ Running a MediaCloud search for all mentions of the term in international news media produced similar results.⁴ In the period 2010–2020, we found 61 stories referencing ‘infodemic’, while the same search for 2020–2021 resulted in 14,301 published stories. This recent spike in use is also evidenced by a cursory search for ‘infodemic’ on the websites of various leading international publications. In the period from 1 January 2020 to 1 January 2021, the British newspaper *The Guardian*, for instance, ran approximately 65 stories referring in some form to ‘infodemic’. During the same period, *BBC News Online* ran 73, *Mail Online* 64, the *New York Times* 30 and the *Financial Times* 26 stories. All these publications did not seem to have run a single story referencing the term in the period from 1 January 2000 to 1 January 2020, with the exception of the *New York Times* for which we found one story during this time.

A similar trend has been visible in academic publishing. Until the end of 2019, the total number of articles on Google Scholar containing the term ‘infodemic’ amounted to 54. As of 1 January 2021, this had risen to more than 4500, including articles in fields as diverse as data science, media and communication, education, human geography, immunology and cardiovascular medicine. While these numbers cannot claim to be representative, they provide some indication of the general salience of the term and its use in academia as well as in (elite national) media publications, which still somewhat influence the agenda of other media (Golan, 2006; Lim, 2006), thus ultimately also shaping the wider public arena and public discourse (Schroeder, 2018).

Given the scope of this article, we cannot provide a comprehensive account or analysis of the use and evolution of the term in journalistic and academic accounts. Instead, we present key examples that speak to its use in recent years and, in particular, over the course of 2020. Eysenbach (2002) is generally credited with creating the term ‘infodemiology’ to describe the study of ‘the determinants and distribution of health information and misinformation’ (p. 763) and later, attempts at digital disease detection (Brownstein et al., 2009; Eysenbach, 2006). The linguistic relative ‘infodemic’, however, is generally ascribed to Rothkopf (2003) who initially used it to denote a situation where ‘a few facts, mixed with fear, speculation and rumor, amplified and relayed swiftly worldwide by modern information technologies’ affect economies, politics and security. While Rothkopf (2003) coined the portmanteau in the context of the SARS outbreak, he also saw the term as having wider applicability, for instance, in the ‘response to terrorism [events] and even to relatively minor occurrences such as shark sightings’. Yet, despite its prominent ‘birthplace’ in the *Washington Post*, ‘infodemic’ was only used sporadically in journalistic accounts between its coinage and its current rise to prominence, mostly to describe situations around major public health crises such as the swine flu and Ebola, in which concerns about a rapid surge in (false) information, the circulation of such information, as well the effects of both were plenty (Merriam-Webster: Infodemic, 2020). This is mirrored by the modicum of academic publications featuring the term before 2019 (Erni, 2008; Roth and Brönnimann, 2013).

More recent journalistic accounts (post-2019), however, seem to ignore the term's original meaning and instead loosely adhere to the definition of an 'infodemic' as set out by the WHO in February 2020: an over-abundance of information, in particular mis- and disinformation that 'spreads faster and more easily than this virus, and is just as dangerous' (Ghebreyesus, 2020). Consequently, in these news articles, 'infodemic' was often used to describe coronavirus-related mis- and disinformation, its spread and possible effects (e.g. Coleman, 2020; Hollowood and Mostrous, 2020) and to frame the responses of technology companies or various other stakeholders including civil society to the same (e.g. Ahmed, 2020; Wong, 2020). However, with a few notable exceptions (e.g. Venkataramakrishnan, 2020), journalists seem to have treated the existence of an 'infodemic' as a given, refraining from questioning the term's applicability or usefulness or any in-depth discussion of its merits. Instead, the 'infodemic' predominantly seems to have been used as a hook, point of reference or to frame the pieces in question. To give some examples, Julia Carrie Wong (2020) writing in the *Guardian* in April 2020 about the struggle of technology companies in dealing with false coronavirus claims remarked that 'Silicon Valley has responded to the "infodemic" with aggressive intervention'. In the *Financial Times*, Andrew Jack and Darren Dodd (2020) used the term to describe a deluge of data around Covid that have 'contributed to an "infodemic" of distorted analysis, fuelling misleading information and a politicisation of prevention measures'. Similarly, writing for *BBC News*, Carl Miller (2020) employed the term to frame far-right attempts of spreading COVID-19 falsehoods on Facebook, writing that 'many of us by now will have seen something of the "infodemic" the World Health Organization (WHO) warned is swirling across society'. Meanwhile, Jonathan Chadwick (2020) writing for the *Daily Mail* reported that 'AI could help tackle an "infodemic" in scientific literature that's making it difficult to separate fact from misinformation'. Other examples include Philippine news outlet *Rappler*, which used the term to frame the country's problem with widely distributed falsehoods (both in relation to COVID-19 and the pandemic, and other issues) and the effect of the same in the 'creation of fear, confusion, and distrust in authorities' (Macaraeg, 2020) and the Brazilian newspaper *Folha de São Paulo*, where the term – along with its variation 'disinfodemic' – was used to draw analogies between the panic driven by the disease and the panic related to President Jair Bolsonaro's measures (Dias, 2020). As final and most recent examples, 'infodemic' has been used in the context of vaccination campaigns. India's *The Wire* referred to the 'infodemic' to help explain vaccine hesitancy, which has been partially furthered by 'social media [which] has been used to spread all manner of fears about the vaccine and doubts about the disease itself' (Kumar, 2021). Similarly, South African *Daily Maverick* employed the term to discuss the country's problems with vaccine hesitancy and false information surrounding vaccines (Benjamin, 2021).

Not unlike the media coverage, a large number of grey literature and recent academic publications analysed for this article seemed to treat the existence of an 'infodemic' as a given too, again often using the term as a framing device or shorthand. A recent WHO whitepaper, for example, identified issues and potential solutions to the 'infodemic' but did little in terms of defining or questioning the term itself (WHO, 2020b), using it mostly as a framing device, something that can also be observed in a 2020 policy report on responses to the 'infodemic' by the international Forum on Information and Democracy

(Ressa et al., 2020). Similarly, a Royal Society and British Academy joint report published in October 2020 employed the term to warn about potential challenges to COVID-19 vaccine deployments, however, without questioning its applicability (Mills et al., 2020). Similarly, two editorials published in *The Lancet* in February and July 2020 spelt out how the ‘infodemic’ should be fought and how scientific publishers should adapt to the ‘infodemic’, yet both withheld any nuanced discussion of the term’s meaning (*The Lancet Infectious Diseases*, 2020; Zarocostas, 2020). Other scholars employed the term to frame their research on the diffusion of COVID-19-related information on social media (Cinelli et al., 2020), online search behaviour related to the COVID-19 pandemic (Rovetta and Bhagavathula, 2020), or the circulation of misinformation on Twitter (Pulido et al., 2020). Gazendam et al. (2020) speak of an ‘infodemic’ around a ‘disproportionate number of commentaries and opinion pieces [published] in high-impact-factor [scientific] journals’, which potentially make it difficult for clinicians ‘to discern opinion from evidence and data-driven facts from expert conjecture’, and while some authors restrict the term ‘infodemic’ to ‘the perils of excessive volume of information in relation to COVID-19’ (Erku et al., 2021), others equate the term with the general spread of disinformation (Bechmann, 2020), as well as the ‘rapid spread of information of all kinds’, including unreliable information, rumours, gossip and conspiracy theories during the pandemic (Datta et al., 2020; El Kihal et al., 2019; Rathore and Farooq, 2020).

In summary, in the months since the original WHO report and the WHO Director General’s statement, interest in and use of ‘infodemic’ as a term and concept has grown strongly, with different actors (e.g. journalists, activists, academics) and scientific disciplines (e.g. computer science, public health management, communication) using the term, mostly to frame research and to tie their work to what is clearly seen as a salient topic. As a concept, it clearly resonates well with multiple audiences, evidenced by how it has quickly been adopted by stakeholders from multiple fields. And it would be hard to argue that this development has not been useful, even if just to bring a global community of experts together and to prime them to think of solutions to rein in the spread of (medical) mis- and disinformation and ensure the circulation of accurate information during the pandemic’s early days. Yet, we argue that the drawbacks of the indiscriminate use of this term cannot be ignored. The speedy uptake of the idea and term ‘infodemic’, as well as the lack of scrutiny around its use, raises questions of which two stand out. The first concerns the usefulness and explanatory power of the term: How well does the term explain the phenomena it claims to describe, especially since those phenomena seem to be so diverse? The second question focuses on the reasons and implications of using the term: Why are people using it and what might be the ramifications? In the following, we will critically interrogate both, before concluding with a reflection on some potential wider implications.

Dissecting the ‘infodemic’

Despite the use of ‘infodemic’ to anchor and frame research from a multitude of disciplinary backgrounds, the term ‘infodemic’ has mainly been used to (1) describe the spread and assumed effect of (mis)information around the coronavirus pandemic and (2) to describe the wealth and strong growth of available information around the pandemic and

related topics. Below, we discuss and critique each in turn. As a key aim of this article is a critical reflection of the ‘infodemic’ metaphor, its use and meaning and the potential implications of either, some background on metaphors is needed.

The study of metaphors has a long and rich history spanning diverse fields such as philosophy, linguistics and cognitive science. Their impact and use around diseases has been studied by various scholars, for example, on cancer and AIDS (Sontag, 1978, 1989), or more recently on swine flu and Zika (Nerlich and Koteyko, 2012; Ribeiro et al., 2018).⁵ Following Lakoff and Johnson (1980), Slupska (2020) argues that metaphors are central to human cognition and have a causal role in partially ‘determining an agent’s judgements or choice behaviour’ (p. 3) – the agents in this case being, for example, journalists or policymakers. As descriptive figures of speech, metaphors ‘generate mental models that carry over associations from one domain to another’ but other than analogies, which compare two objects, concepts or phenomena, metaphors go further by asserting that *A* is *B* (Slupska, 2020: 5). Given its widespread use, ‘infodemic’ would likely fall into what Slupska (2020) terms strong metaphors: ‘commonly in use, rich in background implication and strong in the sense that they create a more powerful link than mere comparison’. (p. 3). These strong metaphors are constitutive, creating mental models for what they describe: in this case, for example, that (mis-/dis)-information is and spreads like a virus, and infects and affects people like a disease.

Various authors have highlighted the uses of metaphors. Lakoff (1993), for instance, emphasises that ‘metaphors [are] the main mechanism through which we comprehend abstract concepts and perform abstract reasoning’ (p. 244), thus allowing us, for example, to solidify ‘ambiguous dangers into tangible threats’ and to ‘focus attention on particular issues and frame those issues in ways that demand specific solutions’ (Draper, 2020: 7, also Schön, 1993). Paraphrasing Young (2001), Draper (2020) further argues that metaphors also afford the opportunity to ‘make chaotic situations feel controllable’ (p. 8) – all aspects that arguably apply here. Having briefly contextualised metaphors and their uses, in the next section we will look at the ‘infodemic’ metaphor in more detail, first interrogating its explanatory power before turning to the implications of its use.

‘Infodemic’ as a flawed concept and metaphor

A first critique is that the epidemiology metaphor when it comes to the existence and spread of (false) information might be intuitive but is also misleading. Such metaphors are not a new phenomenon. As described above, it is natural to look for convenient metaphors to describe what is still not well understood – a tendency that we will discuss later in this article. As Mercier (2020) notes, comparisons to epidemiology in talking about information and communicative phenomena have a long history, as evidenced by French polymath Gustave Le Bon⁶ who wrote in 1897 that ‘ideas [. . .] and beliefs possess a power of contagion as intense as that of microbes’ (p. 96). More recent examples include Rushkoff’s (1996) idea of ‘viral media’ with the talk of contagion and viruses having become ubiquitous in recent years to describe the effects of social media (Mercier, 2020: 96).

A first problem with the assertion that information spreads like a virus (Andrews, 2019; Holland, 2020; Holzwarth, 2020) concerns the objects that are spreading: what exactly counts as the virus in the analogy? Is every claim about COVID-19 like a

separate viral strain, or are different versions of a story like different lineages of the same virus? What about ‘true stories’, those not labelled as false or misleading? Should they also be seen as a virus? A key flaw of this epidemiological comparison is that from a biological point of view real epidemics have a single, well-defined cause – a virus whose strains can be sequenced, identified and traced back to their origins. The spread of information, on the contrary, often involves independent sources, unclear origins of ideas and information, varied content quality, fuzzy boundaries and plenty of context-dependent interpretation.

A second problem revolves around the idea of information being infectious. From the beginning, the use of epidemiological language to describe communication and information was linked to the irrational, with a susceptible public getting ‘infected’ with information, turning into (unknowing) hosts who not only succumb to it but also unwittingly carry it across to others. One explanation for such comparisons might be the etymological link between communication and communicable diseases (illnesses caused by viruses or bacteria that people or animals spread to one another), with the origin of both terms in the Latin *communicare* (to share). And indeed, both information and diseases can be and are being shared among people and propagated. It is, therefore, to some extent reasonable that people would employ communication metaphors to describe disease transmission and vice versa. Yet, while this indicates a context in which the infodemic metaphor may be accurate and apt, it ignores the aspect of intent. Diseases are usually not shared intentionally whereas information sharing (in other words, communicating) is usually intentional. For instance, the key distinction between dis- and misinformation (Southwell et al., 2018; Vraga and Bode, 2020) is on the type of intent (disinformation being shared with the intent and knowledge that it causes harm, with misinformation lacking this feature and being shared for other, diverse reasons). However, both share the intent, which is generally not the case for germs, virus and the diseases they cause.

In addition, such epidemiological models of information consumption and communication often posit passive audiences becoming ‘*infected with information*’ against their will (Jenkins et al., 2013: 19), thus not only ignoring cognitive mechanisms of information uptake and sharing which counter such claims, but a large body of research that demonstrates audience’s active decision-making in what to consume, what to believe and whom to share it with (Mercier, 2020: 17; Phillips and Milner, 2017).⁷ Notably, this discussion is also behind the notion of complex contagion, which describes how the spread of behaviour differs from a simple contagion process, in that multiple sources of exposure to a new behaviour are usually required before an individual adopts a change of behaviour (Centola and Macy, 2007). More recently, information spread, too, has been described as complex contagion (Guilbeault et al., 2018; Törnberg, 2018), including some evidence that true and false headlines spread differently (Aral, 2020; Vosoughi et al., 2018). This difference seems to be explained by the psychological tradition of dual-process theories of reasoning, which describe human cognition as split between autonomous intuitive processes, such as taking news at face value, and slower analytical processes, such as consciously deliberating whether a news headline is true or not (Bago et al., 2020; Pennycook and Rand, 2019).

A third problem concerns the distribution dynamics of digital content in online social networks, which have often been described in epidemiological terms. Nowadays,

countless tools allow users to track the online diffusion of content and to measure its 'virality'. This is certainly a useful analogy when speaking of a message that is forwarded from a person to another, spreading widely over a social network. Yet, these tools also allow us to see that the analogy is misleading, as some pieces of content spread more in broadcast-like fashion, while others diffuse slowly, over multiple users posting and re-posting it (Goel et al., 2015).⁸ For instance, while sharing a funny cat video is an almost effortless task, recording a video of pouring a bucket of ice on one's head and then nominating close friends to do the same involves a higher individual effort, as well as a potential social cost for those who do not respond to the nomination (Cheng et al., 2018; Cialdini, 1993; Granovetter, 1978). In an online environment, these social rules directly affect how different pieces of information spread (Cheng et al., 2018), dynamics which differ markedly from how germs or viruses disseminate. In other words, fast and wide do not imply viral. These differences between real viruses and information become even starker in the presence of coordinated information operations, which selectively amplify or propagate content, often for the purposes of propaganda, thus pushing the spread of information further away from spontaneously emerging spread (Acerbi, 2019; Aral, 2020).

An over-abundance of information?

A second critique of the 'infodemic' concerns the over-abundance of information – identified as a key problem by those using the term 'infodemic' – which 'makes it hard for people to find trustworthy sources and reliable guidance' (WHO, 2020c). Yet, early evidence and prior research seem to suggest that this claim, too, should be taken with caution.

Despite popular arguments which treat information, or news overload as a given with far-reaching, problematic consequences, the literature on the subject is more nuanced and often contradicts such simplistic fears (Bawden and Robinson, 2020). Instead, over-abundance is a common feature in modern high-choice digital media environments (Van Aelst et al., 2017), where traditional media are now competing with a multitude of other digital information sources, such as social networking sites or digital-born news outlets (Bennett and Pfetsch, 2018). An extensive discussion of this literature goes beyond the scope, but we can say the following: despite many people saying that they perceive information overload, many seem to cope well with the abundance of information they are exposed to and consume on a day-to-day basis (Hargittai et al., 2012; Neuman, 2016). Audiences have evolved skills in engaging in a sophisticated mix of attention and inattention (Graber, 1988) in responding to 'too much news'. We are largely not overwhelmed because we are good at being inattentive or selectively attentive (Neuman, 2016: 117, 124), having developed numerous cognitive strategies to deal with too much information over time (Mercier, 2020).

These findings seem to be borne out by preliminary studies conducted at the height of the pandemic in the spring of 2020, which suggest that many people had a fairly good idea of where to look for reliable information around COVID-19. Respondents in various countries stated that the news media have helped them understand the crisis and expressed consistently high levels of trust in (health) experts, scientists and health organisations

(Nielsen et al., 2020) as reliable sources of coronavirus information. Other research showed that the coronavirus crisis had substantially increased news consumption for mainstream media during the first peak of the crisis (Fletcher et al., 2020; Mitchell et al., 2020; Newman et al., 2020; Shearer, 2020), which contradicts claims that a majority of people found it hard to identify trustworthy sources during the first wave of the pandemic in the spring and summer of 2020. More recent international surveys conducted in early 2021 (Newman et al., 2021; Nielsen et al., 2021) seem to corroborate these findings, indicating that on average the use of and trust in news as a reliable source had grown over the course of 2020, with highly trusted public service media doing particularly well. At the same time, concerns about misinformation have not seen a significant increase (Newman et al., 2021: 22).⁹ For COVID-related information specifically, a follow-up study by Nielsen et al. (2021) demonstrated not only that news organisations were central sources of information about the pandemic, but also that trust in independent experts, scientists and health organisations stayed high, with belief in COVID-19 misinformation remaining low.

Often grievances about information overload or abundance turn out to concern the quality of information or normative ideals of how citizens should inform themselves about current issues. Of course, this should not be taken to mean that we should not be concerned about multifaceted information inequalities and knowledge gaps, which can ‘pose serious problems for individuals and society’ (Reisdorf et al., 2021: 29; Fletcher et al., 2020). And while more research will be necessary to fully understand the scale and shape of the information environment during the pandemic, preliminary and past findings make some of the strongest claims around the ‘infodemic’ at least questionable. From this point of view, assertions that, first, there is an oversupply of information during the current pandemic that differs markedly from ‘normal’ times and, second, that people are not able to navigate any oversupply, should be taken with a pinch of salt.

Adopting the ‘infodemic’: reasons and implications

So far, we have argued that the term (or metaphor) ‘infodemic’, while intuitive, is under-theorised and exhibits several conceptual weaknesses that make its widespread use – and if only as a label or point of reference – problematic. In this section, we will briefly discuss potential reasons and implications of the widespread use of the term.

Buzzwords and the bandwagon effect

The use of metaphors, buzzwords and ‘loose concepts’ has a long history in academia and beyond. As such, the adoption of ‘infodemic’ follows previous developments around other loose concepts, for example, ‘fake news’ (Edson et al., 2018; Farkas and Schou, 2018; Nielsen and Graves, 2017), ‘big data’ or ‘AI’ (Boden, 2018; boyd and Crawford, 2012). Among the reasons that these become widely used once established is that as ‘linguistic technologies’ (Bensaude Vincent, 2014), these terms and their associated concepts are easy to digest, ‘generate matters of concern’ and ‘set attractive goals and agendas’ (p. 238). As outlined in the beginning, metaphors are also employed to make sense of abstract threats and concepts, to focus attention and demand solutions.

We can apply all this to ‘infodemic’, too. The term is easy to grasp because its metaphorical character transmits meaning from an area most people intuitively understand from their own lived experience (the spread of contagious, communicable diseases) to an area that is for many more abstract (information and communication). Its simplicity and promotion by the WHO helped to generate a matter of concern, which is evidenced by the uptake of the term as demonstrated by our analysis. As such, ‘infodemic’ possesses a specific allure, because it helped to create a ‘trading zone’ (Bensaude Vincent, 2014: 250) that allowed different stakeholders to communicate with each other – in this case, academics, journalists, funders, policymakers and the public. For academics, in particular, the use of the term seems to have held the hope of greater attention from the press, policymakers and the public for their work, which in turn promises to positively affect one’s chances in the fight for funding and reputation (Simon, 2020).

However, whatever the individual reasons for the use of the term ‘infodemic’, such ‘jumping on the bandwagon’ poses risks, as Claude Shannon (1956) observed in his 1956 editorial ‘The Bandwagon’ where he pleaded for academics to stop using the mathematics and the theory of information outside of communications and radio engineering. Shannon argued that information theory was no panacea, even for communication engineers, and that although it could prove useful to other fields, establishing such applications had to go through the ‘rather tedious process of hypothesis and experimental validation’. He also reminded researchers of the importance of rigour in scientific publications, asking colleagues to prioritise quality over quantity. Over 60 years later, the idea of ‘infodemics’ faces a similar challenge: scholars and journalists have a (seemingly) simple and easily digestible concept at hand that is widely recognised, and it is tempting to apply it without much critical thought. One risk inherent in this dynamic is that it might drown out serious, rigorous work in a flood of what Shannon (1956) would have called ‘poorly conceived or half finished’ research papers, forsaking clarity and depth of insight for attention in the race for eyeballs and funding.

The dangers of metaphors

While a dilution of scientific quality is one possible outcome of the rallying around ‘infodemics’, the uncritical use of the term could also have political implications, and if only by entrenching unhelpful imaginaries, which end up shaping policy with work based on questionable premises. One example is provided by recent discussions around cybersecurity (Slupska, 2020) where, for example, online conflicts between countries have been described by different actors in terms of ‘viral warfare’ (Koblentz and Mazanec, 2013), ‘cyber ecosystems’ or ‘cyber architecture’, with each of these metaphors forming the basis for various policy decisions (Schön, 1993; Shimko, 1994; Slupska, 2020). During the current pandemic, metaphors abound, too: The United Nations Educational, Scientific and Cultural Organization (UNESCO, 2020) has labelled the communicative phenomena around the pandemic a ‘disinformation epidemic’. Others have asked if people can be ‘vaccinated against fake news’ (University of Cambridge, 2019) or variously described the situation as ‘an ecosystem out of balance’ (Kouloulis et al., 2018; Schudson and Zelizer, 2017), or phrased it in terms of an (information) ‘war’ (Cornwall, 2020; Roose, 2020).

Yet, paraphrasing Slupska (2020), no single metaphor will fully capture the nuances of the spread and impact of information and mis- and disinformation. On the contrary, playing fast and loose with metaphors can also have potentially negative consequences. While ‘infodemic’ might capture the scale of (bad) information around the current pandemic, it risks mischaracterising the nature, origin and effects. As Brennen et al. (2020) write, ‘unlike the pandemic itself, there is no single root cause behind the spread of [mis] information’ – an observation that echoes and acknowledges that people’s behaviour, especially online, is diverse and ambivalent (Phillips and Milner, 2017) and that information is produced, distributed and consumed for a variety of reasons (Jenkins et al., 2013: 13) – properties not captured by the term ‘infodemic’. In that sense, the term is reminiscent of what sociologist Philippe Corcuff has termed ‘bulldozer concepts’: concepts that are so all-encompassing that they flatten out and homogenise all complexity of our life-worlds (Illouz, 2009: 14).

Instead of providing more clarity, metaphors also often bring with them various implicit associations, deficiencies and omissions: for example, biological metaphors suggesting that information can spread on its own, much like a virus, also suggest that the same can be kept under control with something akin to public health measures. Using the metaphor of ‘the infodemic’ for a complex communicative situation also all too easily implies that there could be a single solution – or a couple of easy solutions – for a structural and multifaceted problem such as the spread of COVID-19 misinformation. And while people can learn how to identify sensationalist headlines (Roozenbeek and van der Linden, 2019), or even be warned about specific falsehoods they might encounter on social media (Lewandowsky and van der Linden, 2021), there is likely no such cure nor inoculation against misinformation itself.

Another instructive illustration for this ‘flattening’ of nuance becomes apparent when we briefly zoom out and consider the use of metaphors in other crisis situations (or those perceived as such). One example here are the discourses around so-called ‘fake news’ (Farkas and Schou, 2020) following Brexit and the US election in 2016, which have often been framed and conceptualised in metaphorical terms, with metaphors of combat and conflict (e.g. the so-called ‘war against disinformation’) among the most prominent (Hwang, 2020). A similar trend has also been evident during earlier epidemics and the coronavirus pandemic at large where metaphors, especially those evoking a noting of conflict (‘the battle against Covid’, ‘fighting the virus’, ‘war on Covid-19’) have frequently been used to frame society’s response.¹⁰ While the reasons behind this are understandable and might even have positive effects – as Hwang (2020) explains, such a framing is common for other issues (e.g. the ‘war against poverty’), with conflict narratives evoking the urgency of an issue, thus allowing to marshal resources – it can be unhelpful in other ways. These examples also illustrate the importance of the language in audience construction (Southwell, 2000): framing the virus as a nefarious, intentional agent who has to be ‘battled’ not only narrows the focus too much – it can also help to shift the emphasis away from structural issues and contextual factors (Southwell et al., 2019), as well as the failures of other involved actors (e.g. governments) to respond adequately.¹¹

Finally, crisis and emergency metaphors can not only obfuscate the complexity of a situation, they can also create an atmosphere of ‘moral panic’ (Jungherr and Schroeder,

2021), which potentially provides further cover for political leaders keen to exploit a situation. Looking specifically at the regulation of speech and information, various international leaders and governments have used the pandemic and the alleged flood of misinformation as an excuse to pass laws that on their face often claim to address a crisis of mis- and disinformation but instead are often about curtailing fundamental human rights, such as the freedom of speech or press freedom (Novak, 2020; O'Boyle, 2020) – moves that mirror earlier actions around the term 'fake news', which allowed various political leaders to exploit it for smearing critical media coverage as 'fake news' or toughen existing laws (FT Editorial, 2019; Posetti et al., 2019).

To provide some recent examples: In Hungary, the so-called Anti-Coronavirus Act effectively gave Prime Minister Viktor Orbán the right to issue decrees without parliamentary approval, and to arrest people on charges of disseminating false information for a period during the pandemic (Novak, 2020). This state of emergency briefly ended in June 2020 but was reimposed in November 2020 and continues at the time of writing. In Russia, new legislation introduced in March 2020 places potentially hefty fines of up to US\$140,000, or even time in jail, on media outlets found guilty of deliberately spreading 'false' information about matters of public safety, including COVID-19. South Africa, too, introduced temporary legislation in March 2020, which, among other things, makes publishing falsehoods about the virus and the disease punishable by law with fines or jail time (*The Economist*, 2021). As Radu (2020) has shown, to date 18 governments around the world have added countermeasures in response to 'the infodemic' via decrees and emergency legislation, some of them with the potential to act as a tool to stifle media freedom, criticism of authorities and the healthiness of the public arena. Often, specific actions build on 'existing disinformation counter-measures, many of which have not proven their effectiveness' (Radu, 2020: 2), with the risk of such legislation staying in place for longer than originally announced or intended.

Admittedly, it is difficult to attribute these actions to the term 'infodemic' itself. Instead, they are arguably more a product of a mixture of opportunism on one hand, and a larger discourse around falsehoods and mis- and disinformation on the other, which gained renewed momentum with the onset of the pandemic and in the wake of which the term 'infodemic' emerged, only to accelerate it further. Nevertheless, these examples highlight the risk for state overreach in crisis situations, legitimised or enabled by an easily digestible, salient and seemingly scientific concept.

Conclusion

The problem with 'infodemic' as a concept is that it is journalistically powerful, intuitively satisfying, and in strong resonance with personal experiences and intuition (Neuman, 2016: 98). However, that does not make its core assumptions any truer. Describing the complex communicative phenomena around a public health crisis as an 'infodemic' is merely giving a new name to something we have other names for, without any additional explanatory power. In response, one might argue that the use of the term 'infodemic' is less concerned with making fixed claims about the nature of the underlying process so much as it is a territorial claim for those who want to apply their skills, a

signal to others that they are working in this area, or a framing device to tie one's work to larger debates – something indicated by the available literature. As Löwy (1992) has argued, the use of loose concepts such as 'infodemic' can help in the construction of 'efficient inter-group alliances in science, and in disciplinary growth' (p. 371). Interestingly, seen from this vantage point, it is perhaps understandable why the WHO felt it necessary to introduce and promote the concept of an 'infodemic' and why various actors employed it in their work. Faced with a rapidly developing situation and clear instances of harmful content with the potential to undermine public health messaging around the novel coronavirus, adopting the term seems to have allowed the WHO to bring together a broad coalition of actors to take up medical mis- and disinformation as a serious issue and search for countermeasures and solutions. Contrary to the problems identified earlier, there is an argument to be made here that the 'infodemic' was a useful interdisciplinary concept inasmuch as it acted as a 'rallying cry', which helped to focus minds and create action.

Notwithstanding this, we argue that such an approach always entails risks and also did so in this particular instance: apart from the issue of merely 'filling old wine into new bottles' and lack of engagement with scholars who have studied such questions in the past, there is a real risk of creating unhelpful and exaggerated public imaginaries as happened in earlier debates in other domains, such as digital campaigning (Karpf, 2019; Simon, 2019). The result can be solutions that ignore the real problems and structural origins of problems such as COVID-19 mis- and disinformation resulting in ineffective policies at best and harmful policies at worst. One concerning example of such 'infodemic-based' policies are the ones proposed in the Royal Society and British Academy joint report published in October 2020 mentioned at the beginning, where the authors explicitly suggest the enforcement of criminal prosecutions for spreading misinformation, citing examples from China, Singapore and South Korea as potential inspiration (Mills et al., 2020). Undeniably, low-quality information or dis- and misinformation around health events are real and can have real consequences (Starbird et al., 2020), for example, 'leading people to hold misperceptions (or false beliefs) [. . .] that may have downstream consequences for health, social harmony and political life' (Southwell et al., 2018) – even though the scale of such effects is contested. This makes these phenomena an important and legitimate subject of study and attention. But any theorising – and especially theorising that seeks to influence policy – must start with a clarification of the concepts and terminology in use. As Slupska (2020) argues, 'metaphors do not just suggest a general approach [. . .], they can prescribe specific policies' (p. 6). Hence, it is pivotal that academics and journalists are mindful of the (unintended) consequences and risks of new and old metaphors alike, cautiously weighing explanatory power and definitional sharpness against general intelligibility and 'catchiness'. New theoretical concepts should not be introduced and used on a whim or out of fashion, but only where there are good reasons to do so because existing theories and concepts fail to adequately explain a phenomenon.

As convenient as it might be to use the language of public health and epidemiology to explain communicative phenomena, an 'infodemic crisis' validated by scientists and the media could very much be the justification for a further encroachment on

human rights or moral panics, which can contribute to a delegitimisation of democratic processes and institutions (Jungherr and Schroeder, 2021). With that in mind, echoing Claude Shannon's plea in 1956, scholars, journalists and policymakers should not only embrace caution and rigour in the language and metaphors they generally choose to adopt, but also retire the term 'infodemic' in favour of more specific and accurate existing terminology. Admittedly, doing so will not be easy. Metaphors such as 'infodemic' are so appealing precisely because they are intuitive and reduce complexity.¹² Both these traits – simplification and accessibility – can make metaphors powerful and attractive tools for journalists, scholars and policymakers to convey threats and influence public attitudes and behaviour in contexts where attention is a sparse resource and every piece of information competes with many others in the public arena (Schroeder, 2018).

So what alternatives might there be that master the delicate trade-off between generating attention, but without incurring the risks we have described? We cannot claim to have all the answers, but one option would be disentangling the phenomena that are usually lumped together under 'infodemic' and variously speaking, for example, of 'mis- and disinformation', with especially the former increasingly used as an inclusive umbrella term that comprises both malicious efforts as well as innocuous and unintended noise (Southwell et al., 2018). Other options, depending on the issue in question, could be to use 'false information', 'propaganda' or 'conspiracy theory' – terms that are well-recognised, empirically founded and reasonably precise. A headline such as 'Scientists Concerned About Increasing Misinformation Around COVID-19' does not necessarily forsake much impact, while being still more precise than 'Scientists Warn of COVID-19 "Infodemic"'. Ultimately, however, we also need to acknowledge that some costs will have to be incurred, although we would argue that the benefits of greater precision outweigh the downsides of slightly reduced appeal. Abandoning metaphors such as 'infodemic' might make for less catchy headlines and articles, but so we argue, ultimately for a clearer understanding, and thus better responses and solutions.

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Notes

1. Although it should be noted that the term predates these events, so it would be more accurate to say that the term was re-born.
2. It should be noted here that we are not denying that individual issues are lumped together under the term ‘infodemic’ – such as the potential dangers posed by health-related mis- or disinformation – do exist.
3. Google Trends search for ‘Infodemic’, all countries, 1 January 2004 to 1 January 2020. Please note that Google Trends was not available before January 2004.
4. MediaCloud is a media analysis tool created by MIT (<https://mediacloud.org/>). Data are only available from 2009 onwards and have been gradually expanded over time. To date, it includes data from 25,000 media sources, in 20 languages, from over 200 countries.
5. For an overview of the use of metaphors around the coronavirus, see the study by Nerlich (2020).
6. We should also point out that, like many European scholars of his time, Le Bon was unfortunately a supporter of ideas such as biological determinism and the racist belief that certain ethnicities had superior brains and cultures.
7. It is perhaps worth noting here that the ‘infodemic’ metaphor seems to resonate less well outside of the media-effects tradition (Anderson, 2021), for instance, in culturally grounded approaches to understanding the influence of (mis)information (see, for example, discussions in Marwick (2018) and Kreiss (2018)). This is not to say anything about the relative merits of different research traditions in communications, only to note that the ‘infodemic’ metaphor seems to be more strongly tied to one of those traditions.
8. Perhaps ironically, COVID-19 seems to show some signs of that behaviour as well, given the role of so-called ‘superspreaders’. In this case, both COVID-19 and information seem to deviate from most traditional models of viral spread.
9. Although these numbers vary by country and differ especially for countries in the Global South.
10. Which has, indeed, sometimes been reminiscent of war-style tactics and measures in its efforts to rein in the pandemic.
11. Apart from the fact that, as we explained earlier, such a framing does not make much sense as viruses do not have intent.
12. The attentive reader will have noticed that we have, in fact, also used a metaphor in the very title of this article for some of the same reasons.

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