INFORMATION POLLUTION AS SOCIAL HARM

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Over the past two decades, digital technologies have come to permeate ever more aspects of contemporary life. This trend looks to continue and has profound implications for the social sciences, particularly criminology, with technology-facilitated offences now arguably constituting the most dynamic and rapidly growing area of contemporary crime. Despite this development, the discipline of criminology has been slow to embrace the critical study of technology-facilitated offences and social harms, with most research conducted in this area still informed by a relatively narrow range of cybersecurity and applied criminological perspectives.

Emerald Studies in Digital Crime, Technology and Social Harms is part of a new movement within criminology and related disciplines to broaden this narrow focus and engage critically with new trends in technology-facilitated offending and victimisation. The book series uses a combination of critical criminological, socio-legal, and sociological perspectives to consider a wide range of technology-facilitated offences and harmful social practices, ranging from digital surveillance, cyberbullying and image-based sexual abuse through to global darknet drug trading.

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Investigating the Digital Drift of Medical Misinformation in a Time of Crisis

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INVESTOR IN PEOPLE

To G. and L., for being the best company I could wish for in this strange year.

"Our new device of doubt delighted the great public, which snatched the telescope from our hands and turned it on its tormentors"

—Bertolt Brecht, *Life of Galileo*

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A special thanks to AIRIcerca (the Association of Italian Researchers in the world), *AIRInforma* (its science popularization journal), and *Il Post* among the Italian online daily newspapers for helping me stay the course when trying to navigate a sea of polluted information.

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1

SOCIAL HARMS IN PANDEMIC TIMES

1.1. INTRODUCTION

In early 2020, the world found itself facing a new challenge, with the outbreak of a novel coronavirus disease – COVID-19, as it was first identified in December 2019 in the Hubei province of China – spreading across countries, to the point that the outbreak was recognized as a pandemic by the World Health Organization (WHO) on March 11, 2020. The virus can cause, among other things, a severe acute respiratory syndrome. The mortality rate directly linked to this virus is estimated to be relatively low, but the impact on public health during the pandemic is considered extremely serious, with some people suffering long term consequences, and because of the progressive breakdown of many healthcare systems due to the number of patients likely to require critical care.

In Italy, the country at the core of the study reported in this book, the virus was first confirmed to be present on January 31, 2020; up to this date, national media reported news of the so-called (at that time) "Chinese coronavirus," and the possibility of facing a pandemic was not part of public debates. In February, with a sharp increase in contagions and deaths, first only some municipalities in northern Italy and then the Lombardia region and whole provinces were placed under quarantine. During the second and third weeks of March, through a series of decrees, the quarantine was extended throughout the country, further limitations restricting the movement of people were imposed, and nearly all commercial activities except for essential businesses and industries were prohibited. In these first stages, the Italian case has been important in framing public health discussions in other countries and, especially in Europe, highlighting a number of concerns around the speed of the virus and potential issues with hospitalization and intensive care if services

become overstretched in certain localities (Brown, 2020). Over the Summer, when the situation eased in the country, many restrictions were lifted, and then reinstated, depending on the progression of local outbreaks. At the time of writing, the situation is still very dynamic: after a "second wave" in Autumn and fears of a new rise in numbers linked to the Winter holidays and a new virus variant, new restrictions and (partial) lockdowns in Italy, as well as in other European countries, are starting, are still under development, or are threatened.

The "coronavirus pandemic" struck the world in a very distinctive way: experience from past pandemics or from more recent outbreaks could give us only a limited understanding of how the situation was likely to unfold, as this was the first time that a health crisis – an actual *krisis*, considering how the pandemic led to an unstable and uncertain situation, affecting individuals, communities, and many societies alike (Shaluf et al., 2003) – of this proportion occurred in a world extremely integrated, grounding to a halt economic activities in both wealthy nations and in major emerging market economies and with the fear of a dreadful impact on more vulnerable countries. Social distancing (or, to be more precise, physical distancing) was suggested or imposed in many places as a fundamental factor to mitigate the pandemic and slow its spread – an approach leading to major changes in behavioral patterns and routines of many, as well as impacting mental health and wellbeing.

It is not hard to imagine how this (at least temporary) socio-economic revolution had major effects as regards crime and deviance, challenging criminologists and, more in general, social scientist to study and interpret an evolving context, offering some guidance to "learn" from it and possibly to mitigate some of its most negative outcomes. In this scenario, it is of the upmost importance not only to better conceptualize certain forms of crime (in line with Pemberton, 2007) but also to broaden and deepen criminological knowledge by challenging the very restricted view of "what crime is" to shift attention to other forms of behaviors capable to impact negatively both individuals and society at large. These behaviors might otherwise be overlooked because they are not always and unambiguously against the law. At times, they are not even against social norms, and therefore they might not even be "deviant" by definition. Nonetheless, they might be inherently "bad" (*mala in se*), or lead to a potentially bad outcome.

This book wants to shed light on some of these social practices, and specifically on those that we can group under the umbrella term of health-related "information pollution" (Wardle and Derakhshan, 2017). More in detail, we will look at online medical misinformation and germane practices, conceptualizing them in the broader context of technology-facilitated social harms,

with a specific focus on the narratives and conversations taking place in self-identifying alternative lifestyle and counterinformation Italian-speaking online communities.

The remaining part of this first, introductory chapter will provide a more complete presentation of the main concepts and ideas behind this book – that is, *what* are information pollution and medical misinformation, and the added value of using a social harm approach to investigate them through criminological lenses.

1.2. THE POLLUTION OF MEDICAL INFORMATION

In the unfolding of the pandemic, a flurry of (at times conflicting) information has been published and widely disseminated, building up a pile of relevant knowledge alongside equivocal or deceiving news, with the potential of increasing confusion and anxiety – to the point that the term "infodemic" started to be used consistently since mid-February 2020 (Adhanom Ghebreyesus, 2020; Zarocostas, 2020). The infodemic narrative, however, is not sufficiently precise to describe the heterogeneous nature of the information disseminated and shared online, and it can become problematic as it compares the spread of "bad" (or simply confusing, or excessive) information in the current mediascape as a virulent, uncontrolled contagion. As we will see, receivers of information do not simply have a passive role as infected objects of an external agent: in contemporary times and especially in and through cyberspace many receivers are a productive audience, and some even become co-producers of information (Aupers 2020; Stano, 2020).

For these reasons, I prefer to use in this book the notion of *information pollution*, a broader umbrella term that encompasses misinformation (when false information is shared, but no harm is meant), dis-information (when false information is knowingly shared to cause harm), and mal-information (when genuine information is shared to cause harm) (Wardle and Derakhshan, 2017). In proposing this terminology, Wardle and Derakhshan (2017) were detaching themselves from the "fake news" narrative, noticing that it was inadequate to describe the complexity of information misuse (for political purposes, in the cases addressed originally by these authors): in a narrower sense, indeed, "fake news" describes only those news that are verifiably false and that purposely try to mislead their audience. Consistently with the health-related cases of polluted information that we will encounter, also in political misinformation the malicious intent is difficult, if not impossible, to prove, or might genuinely be missing; nonetheless, the consequences can be very problematic.

As anticipated, the phenomenon of information pollution started to receive attention as a distinguishing feature of political life in cyberspace, and more specifically as a variant of information warfare, with the manipulation of information used to obtain a competitive advantage over an adversary. From this perspective, information pollution is nothing new in historical terms. However, the scale of it and its potential impact is revolutionary, as nowadays polluted information can be propagated via countless platforms (Szafranski, 1995; Wall, 2007; Wardle and Derakhshan, 2017), which makes contemporary information pollution particularly subtle and difficult to eradicate (Lavorgna, 2020). Overall, this body of research reported that, among other things, polluted information makes people less knowledgeable, sharpens existing socio-cultural divisions, makes people more skeptical toward legitimate news producers, and also reduces the incentives to invest in accurate reporting (Allcott and Gentzkow, 2017).

Health-related information pollution is a comparable phenomenon that, conversely, has not been addressed yet as a unitary phenomenon; however, there are several studies stemming from medicine, health psychology, health sociology, criminology, and more recently also data science that are useful to provide some background to this work. The subset of fraudulent medical and therapeutic practices has received increasing attention by debunkers and activists over the years, even if only mixed attention in academia: we know that these phenomena are not new, and that despite the consensus in the medical discipline that certain approaches lack scientific evidence, have no biological plausibility or may even be dangerous, the promotion and selling of fake cures and wellbeing approaches advertised as safe and effective has long plagued healthcare systems, often preying on those more vulnerable (Lerner, 1984; Herbert, 1986; Offit, 2013). These practices, however, have boomed in recent years: cyberspace and social media in particular have played a fundamental role in the creation of like-minded virtual networks and in the rise of false experts or fraudulent health specialists exploiting the (badly placed) trust of those looking for hope or for an alternative, easier way to solve their problems (Lavorgna and Di Ronco, 2017; Rojek, 2017; Broniatowski et al., 2018; Klawitter and Hargittai, 2018; Lavorgna and Sugiura, 2019).

In a recent book (Lavorgna and Di Ronco, 2019), these practices – often described as pseudoscience (D'Amato, 2019), quackeries (Lerner, 1984), Complementary and Alternative Medicine (CAM)-adjacent health scams (Lavorgna and Bishop, 2019) or simply frauds (Konnikova, 2016) – were more broadly described as *non-science-based* (or *alternative*) *medical misinformation*. This possibly byzantine label was used with the intent to avoid potentially judgmental designations while being able to comprise a

variety of health-related approaches or treatments that were developed in disregard of, or not in full compliance with, scientific standards of modern medicine (Cloatre, 2019). Some of these practices might be seriously dangerous and harmful to people, or carried out with malicious intent, but others may be relatively effectless, have a placebo effect, or simply stem from socio-cultural and epistemological contexts quite removed from western societies.

To understand health-related information pollution and its subset of non-science-based medical misinformation, we need to put them into the broader context of some important changes in medicine occurring in late modernity, as well as in the individual patient–doctor relationship. Trust in medicine has been challenged from two strands: on the one side, the legitimacy of the medical community and its collective expertise has been questioned by some by advancing doubts on the legitimacy of the medical science on which modern medicine depends; on the other side, the individual trust that should be proper of each doctor–patient relationship has been made more complex by the increasing corporatization of medicine (Baron and Berinsky, 2019).

The commercialization of the internet has also profoundly changed health services, with cyberspace being increasingly used to support decision making and to market health products. Alongside opening the way to fascinating developments in healthcare improvements, these changes have the potential for dangerous exploitations. From the one side, patients can now connect more easily among themselves, and with medical practitioners, for instance, with the establishment of self-help communities that have a great potential to provide important information and emotional support, as well as to give patients a sense of empowerment (Ferguson, 1997; Chung, 2014; Fullwood et al., 2019; Zhu et al., 2020). More in general, communication around illness changed especially with and through social media, being transformed from a largely private experience to (at times) a semipublic one (Conrad et al., 2016). On the other side, information accessed via "Dr Google" can be used to self-diagnose a medical condition, to get information on the pros and cons of potential treatments (in a sort of peer-to-peer healthcare, as described by Mackey and Liang, 2017), and even to buy medical products.

Taken together, these aspects are at the basis of the use of the internet as a vector to disseminate medical misinformation and, in some cases, even to carry out frauds, giving individuals a platform to peddle dubious remedies and forms of self-help as better or "alternative" ways of healing than the knowledge and practice of medical expert (Rojek, 2017; Lavorgna and Sugiura, 2019). Through social media networks, questionable messages are easily spread. This form of information pollution can be very difficult to counter, especially because problematic messages distributed via social media are often

accessed through the mediation of a friend, a relative, or more generally someone we trust; furthermore, health-related messages broadly distributed via social media tend to contain a mixture of accurate and spurious and unverified information, and hence they look plausible.

In this context, the case that has undoubtedly received most research attention in recent year is the vaccinations one and the rise of the so-called antivax movement, leading to a general decline in global vaccination rates in the last few years, and outbreaks of controllable diseases such as measles and mumps in several countries (Poland and Jacobson, 2011; Hotez, 2019; Ratzan et al., 2019). Indeed, especially in wealthier countries where access to important vaccines is not problematic, rising clusters of unvaccinated people have been linked to the spread of antivaccine misinformation suggesting that vaccinations, especially during early childhood, can cause severe reactions and even conditions such as autism. These unfounded safety concerns, boosted by the well-known Wakefield's scientific fraud (Godlee, 2011), have gained traction over the past few years, especially due to worried parents, fake experts, and cynical public figures trying to please their audiences (Lavorgna and Di Ronco, 2019; Siani, 2019).

In very recent years, a number of studies grounded in data science are playing a prominent role in shedding light on behavioral and communicative patterns in cyberspace. Some have looked at the online diatribe surrounding vaccinations and especially the social networks characterizing antivax online communication, confirming the polarized nature of these debates (Di Ronco and Allen-Robertson, 2019) and suggesting – among other things – that, even if antivax clusters tend to have a smaller average cluster size, they overall provide a larger number of sites for engagement than the pro-vaccination population, hence offering a variety of narratives covering topics such as safety concerns, conspiracy theories, and alternative medicine, being able to attract the interest of a diverse population of individuals (Johnson et al., 2020). Furthermore, antivax clusters are heavily entangled with clusters of undecided individuals, while the pro-vaccination users, being more "isolated," might end up getting the wrong impression that they are dominating the discussion (Johnson et al., 2020).

Data and computer sciences are also increasingly used in efforts to intervene on the "offer" side of polluted information, for instance, trying to use filtering software to improve automatization in detecting mis- and dis-information, or to develop better technologies for automatically detecting fake accounts and bots spreading it, and for deprioritizing updates from sources consistently posting clickbait headlines. On the one hand, the solutions offered by these approaches, while important, are not yet satisfactory – and in fact systems

currently employed by social media companies are still very ineffective. On the one hand, technological sophistication makes these tasks more difficult by the day, creating a sort of vicious circle of technological arm race (O'Connor and Weatherall, 2019). It should be kept in mind that not only individuals naively pollute information moved by political or ideological motivations, but there are also polluter information enterprises moved by profit (as viral news create traffic toward certain websites drawing advertising revenue) and major political actors involved, which can resort to very sophisticated *modus operandi*. Moreover, the encrypted nature of many online conversations – which is a plus for other forms of security – makes misinformation extremely difficult to police or somehow moderate. On the contrary, these big data-driven approaches tend to neglect socio-cultural factors in their methodologies of choice: for instance, both traditional filtering (based, for instance, on keywords) and natural language processing do not work well with mis- or polluted information, as what can be considered "mis-" or "polluted" is influenced by cultural and discursive contexts – in a way that closely resembles the issues in using filtering approaches in detecting hate speech, when software for the automatic recognition cannot understand the nuances of certain content, with the consequence that the human intervention is still irreplaceable (Schmidt and Wiegand, 2017; Lavorgna, 2020).

Unfortunately, also existing regulatory frameworks are not very fit for purpose to address information pollution, even if at the moment of writing there are increased attempts (pushed by regulatory institutions, and more or less reluctantly accepted by social media companies and other online intermediaries, which still tend to downplay the influence of their platforms) to intervene to counter and mitigate the effects of at least the more serious forms of dis- and misinformation, in the effort to make our societies more resilient toward cyberharms (Donovan, 2020; Lavorgna, 2020).

It would be of the upmost importance to intervene also on the "demand" side of information pollution but this is an equally daunting task. Indeed, among the reasons behind the success of polluted information are the facts that it is cheap to obtain, difficult to identify, and enjoyable: it is more pleasant for consumers to read a partisan news in line with their system of beliefs, rather than something questioning them (Allcott and Gentzkow, 2017), and – reportedly – social media can easily function as echo chambers where all participants are ideologically aligned. Furthermore, many people might not have the cultural instruments to distinguish what is "polluted" from what is not, and in any case the whole issue touches upon the very delicate equilibria needed to promote and protect the right to freedom of opinion and expression.

While this work focuses on social media, before concluding this section it is important to stress that also traditional media (such as printed or online newspapers and television news) have a big deal of responsibility in promoting, and spreading, polluted information. Even if social media have increasingly become a relevant source of information, traditional forms of media are still the most popular way for people to access news (when combining them with newspaper websites and apps), with the exception of post-Millennials (Gentilviso and Aikat, 2019; Kennedy and Prat, 2019). As such, traditional media still have a major societal role in shaping our perceptions of what is a "problem" and in influencing the solutions that are taken to counter it. Previous research on media representation of medical misinformation showed how printed news (including in Italy), for instance, over time failed to report important issues related to risk and safety of alternative medicine (Weeks and Strudsholm, 2008), and failed to provide a useful distinction between harmful and non-harmful (or even fraudulent) treatments, as they never fully recognized the negative implications brought about by them (Lavorgna and Di Ronco, 2018; Lavorgna and Bishop, 2019). The very same issues were easily observed during the pandemic in Italian newspapers, and it is at least very likely that the confusion generated by many news outlet – especially in their coverage of scientific information – had an impact toward the general public, for instance, influencing the willingness to oblige to protective behaviors (such as wearing masks and maintaining physical distancing). This issue, of course, has not affected only Italy; in many countries official information sources were perceived as untrustworthy, setting the climate for a perfect storm for polluted information, with potential life-saving information (at times emerging information, in a context where it was difficult to clearly identify meaningful information in a clear-cut way) being lost in a tornado of rumors, doubts, and unfounded speculations. This resulted in a very complicated landscape, which showed clearly that the challenge to be met goes beyond debunking a piece of bad information; rather, this has to do with trust, fear, and dissent (Larson, 2020).

1.3. WHY LOOKING AT SOCIAL HARMS?

With very few exceptions (see Section 2.2), criminologists have mostly overlooked (potentially) dangerous non-science-based health practices as a topic of investigation, both as regards some unquestionably illegal practices (see, for instance, the health frauds discussed in Lavorgna and Di Ronco, 2017) and, more in general, the potentially negative impact of these practices on