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Commentary

Epistemic responsibilities in the COVID-19 pandemic: Is a digital infosphere a friend or a foe?

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ABSTRACT

Digital technologies have a significant role in collecting, filtering and disseminating information, allowing for social, healthcare and economic activities even in the context of highly restrictive public health measures in the current COVID-19 pandemic. As personal contact is greatly reduced, they also create a shared informational landscape, allowing for a shared threat response. This is a difficult task, since truthfulness of content that leads to actionable knowledge is impossible to consistently validate. So, not only that curation of information is rarely congruent with pressing health issues, but digital spaces may also become fertile ground for misinformation and disinformation, contributing to the devastating effects of an infodemic.

Digital intermediaries are useful exactly because their representation of reality is not a true construct, but a result of purposely curated information. However, they are active, dynamic epistemological agents with their own logic and aim. In dealing with a pandemic, we should reconsider the ways how our digital informational landscapes are created and sustained. This urges us to consider ethical governance of digital data curation and dissemination, alongside forms of control of the truthfulness and reach of its content.

Some of the most fundamental issues in dealing with the COVID-19 pandemic, including the newly available vaccines are reliant on digital information and data sharing among experts, and the role of informing the general public. The need to create a reproducible, valid and truthful informational landscape is paramount, while allowing for free and rational, behavioral individual choices oriented toward preserving and promoting healthy behavior. These are issues at the heart of dealing with any pandemic, as well as a well-organized health care policy.

Commentary

Individuals in contemporary society are immersed in a digitally mediated infosphere, an informational bubble, containing all available digital information on a certain subject. Digital intermediaries allow information to lose their traditional temporal and spatial boundaries, and enter the infosphere, while greatly expanding the ability to create, transmit, store and retrieve information [1]. Any conduit of accessing digital information, such as social networks, Internet search engines, online news portals and forums, evidence repositories, shared databases, or any others that are available in digital format and may be used to gain information on the pandemic is a digital intermediary.

In the present COVID-19 pandemic, we are facing a novel infectious threat with limited capability for an adequate response. The importance of a digital infosphere and adjoining societal dependence are further emphasized [2,3]. Digital technologies greatly contribute to preserving a functional society and its constituents by allowing continuation of social, healthcare and economic activities even in the context of highly restrictive public health measures [3,4]. Accessing, storing and retrieving data on the COVID-19 pandemic is almost exclusively performed through digital intermediaries. They play a key role in rapid sharing of data, but they also greatly advance our pandemic response capabilities, by providing us tools for analyzing available data as well as fine-tuning our responses, as witnessed by an unprecedented number of COVID-19 related scientific papers, outcome analyses, predictions and strategies for its containment [4,5]. For example, data-sets that are

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routinely gathered by Internet search engines, such as Google, or Google Trends seem to have significant predictive power on various pandemic outcome, such as suspected and confirmed COVID-19 cases and COVID-19 related deaths [4]. Here, it is also important to note that informational intermediaries may be used to access several hierarchical dimensions of information; data (factual information such as numbers, percentages, and statistic), and evidence (data that is relevant and supports a conclusion), since they are simultaneously used in acquiring, analyzing and disseminating information.

Digital intermediaries also greatly contribute to creating a COVID-19 informational landscape, allowing a shared threat response. This is an inherently difficult task as the rapidly changing pandemic informational setting is characterized by extreme uncertainty limiting timely assessment of vital information [3,6]. Vital information needs to allow for shared awareness and lead to critical attitudinal and behavioral change. Such a change is essential in every public health intervention and is a necessary precondition for success. In the early pandemic stages, data on a possible infectious threat may seem vital, but unverified [7]. The question of what should be considered as most valuable information at any given point is also highly variable [8]. Some of the highly visible misinformation originated from presumably reliable scientific sources such as published manuscripts and manuscripts placed in prepublication databases [9].

The provision of timely, accurate, truthful and valid information through various digital intermediaries such as media, the Internet or social networks is currently a matter of collective survival, both physical and psychological. The underlying mechanisms of some highly influential digital intermediaries like Internet search engines, social media and most mainstream media are not oriented toward ensuring truthfulness of content that leads to actionable knowledge, but rather on user attention [1,3,10]. Public health agencies, and most scientific publishers indeed uphold the scientific principles of rigor, reproducibility and validity, but have also begun to employ various other information intermediaries such as social media as disseminators of scientific evidence, further competing for the user's attention with other, non-scientific information. Informational content curation tools serve the commercial interests of a select number of globally relevant companies, whose primary interest is commercial success. Nonetheless, they also have an enormous impact on individuals, groups and whole societies seeking presumably valid and truthful information [11,12]. So, in order to be able to fulfill a fundamental right to access truthful information regarding the COVID-19 pandemic, digital intermediaries needed to account for the principles of validity and integrity in their functioning and underlying principles.

Efficient prediction engines behind digital intermediaries responsible for data curation, such as Internet search engines and social media advertising and content recommendation are useful exactly because their representation of reality is not a true reconstruction of complex underlying systems. They prioritize informational content according to prediction of user needs, their societal and geographical context and digital footprint [10–12]. They use the user's attention as commodity, shaping every digital engagement by filtering and prioritizing information, and thus enabling perpetual self-fulfilling feedback loops (prophecies) [1]. Importantly, users have no control and power over those processes, creating a significant epistemic imbalance and inequity. The process of data curation changes both sides of the equation: the availability of information (by changing their salient features or their context) and the users' dispositions [1].

So, not only that curation of information is rarely congruent with pressing health or any other generally relevant requirements, but digital spaces may also become fertile ground for misinformation and disinformation, contributing to the devastating effects of an infodemic. Digital intermediaries also greatly contribute to general unpreparedness and vulnerability to shared threats, by fragmenting social structures and supporting hyper-individualization [6,13,14].

As we live in epistemological landscapes that greatly surpass our ability to comprehend them, we are condemned to rely on information that has already been externally filtered by various informational gatekeepers and intermediaries. Digital intermediaries are useful exactly because their representation of reality is not a true reconstruction, but a result of purposely constructed complex systems. However, they are active, dynamic epistemological tool or agents with their own logic and purpose and one has to be aware of their contradictory functions. On the one hand, they allow extending our agency above and beyond what is inherently reachable. On the other hand, they provide a data-driven, extremely personalized experience, without the control of the user and thus have a tendency to undermine our agency [1,10,12].

Paradoxically, the technology initially allowing a great expansion of our informational capabilities, has also become instrumental in downgrading our capacity for complex analysis, self-determination, self-control and construction of shared agendas, simultaneously undermining traditional verification mechanisms [1,3,12,14].

Collaborative efforts are underway in order to provide reliable and truthful information, while limiting the spread of misinformation and disinformation, such as unprecedented scientific information sharing between private and public institutions developing vaccines. International transparency and coordinated strategy in dealing with the pandemic have also been put under increasing focus by the scientific and public alike. An unprecedented shift of social structure into digital spaces soon become inevitable alongside other (supposedly) temporary restrictive public health measures [6,13]. Digital spaces have been recognized as important social determinants of health, while digital spaces are an inevitable component of any comprehensive public health strategy [2].

We should reconsider how our contemporary epistemic landscapes are created and sustained. This urges us to consider ethical governance of digital intermediaries, such that will be able to incorporate some form of control by individuals and society [3,12,14]. It is easy to prioritize when faced with a single significant threat urging for a shared response. Priorities may diverge in a complex crisis with multiple threats, as different individuals may identify different threats [15].

A system of grading information trustworthiness might be helpful when accessing information, especially important scientific data and evidence through a non-scientific intermediary.

Some of the fundamental issues in dealing with the COVID-19 pandemic, including the newly available vaccine production and introduction are reliant on digital information and data sharing among experts, and the role of informing the general public. The need to create a reproducible, valid and truthful informational landscape is paramount, while allowing for free and rational, behavioral individual choices oriented toward preserving and promoting healthy behavior. Otherwise, the users of digital intermediaries will remain only possible objects of morality, rather than its true agents. Societies will be trapped within the impossibility to raise morality above the level of a preconditioned infosphere [16].

Digital information has traditionally been free of comprehensive curation and left to the consumers (or followers) to assess for quality and integrity of content. However, in a pandemic scenario, this absence of mechanisms to ensure minimal validity and integrity of information raises many ethical, legal and social issues. Digital subjugation is an increasing threat if we do not consider ethical governance of digital data curation and dissemination, alongside forms of control of the truthfulness of its content. The irony of our argument is that we cannot let Internet search engines and social media let us know only those things we wish to hear, even though we use them for precisely that reason.

CRediT authorship contribution statement

Ćurković Marko: Conceptualization, Data curation, Formal analysis, Funding acquisition, Investigation, Methodology, Project administration, Resources, Software, Supervision, Validation, Visualization, Writing - original draft, Writing - review & editing. **Košec Andro:**

Conceptualization, Data curation, Formal analysis, Funding acquisition, Investigation, Methodology, Project administration, Resources, Software, Supervision, Validation, Visualization, Writing - original draft, Writing - review & editing. **Bedeković Roje Marina:** Conceptualization, Investigation, Methodology, Project administration, Resources, Supervision, Validation, Visualization, Writing - original draft, Writing - review & editing. **Bedeković Vladimir:** Conceptualization, Investigation, Methodology, Project administration, Resources, Supervision, Validation, Visualization, Writing - original draft, Writing - review & editing.

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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