Ethical Issues in Control by Algorithms: The User is the Content

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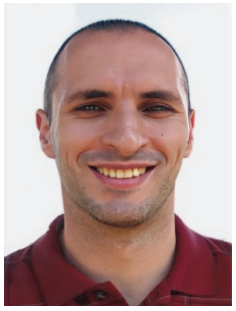

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Abstract : In this paper we discuss some ethical issues and challenges of the use of algorithms on the web from the perspective of knowledge organization. We review some of the problems that these algorithms and the filter bubbles pose for the users. We contextualize these issues within the user-based approaches to knowledge organization in a larger sense. We review some of the technologies that have been developed to counter these problems as well as initiatives from the knowledge organization field. We conclude with the necessity of adopting a critical and ethical stance towards the use of algorithms on the web and the need for an education in knowledge organization that addresses these issues.

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1.0 Introduction

Knowledge organization is about "describing, representing, filing and organizing documents, document representations, subjects and concepts both by humans and by computer programs" (Hjørland 2016, 475) or, in other words, "by computer algorithms" (Hjørland 2008, 86). For these purposes, rules and standards are developed (knowledge organization systems). These standards condition the availability and structure of the knowledge base on the web and thus the contents and relationships used as sources by those computer algorithms and artificial intelligence. This aspect

is especially sensitive and relevant for knowledge organization in the case of personal information (Guimarães et al. 2019). While in the past the use and involvement of computer algorithms were considered part of the "physical paradigm" or "system-driven paradigm" of knowledge organization (Hjørland 2008) in a more monolithic way in which the decisions of the system designers determined the organization of knowledge, the input of users' evaluations first, in a more traditional way, and the collection of metadata produced by conscious or unconscious behaviors on the social web today has moved them to the side of the "user-oriented" paradigm. The customization and personalization practices reported by Eli Pariser in the filter bubbles (Pariser 2011a) have been considered as part of the "user-based trends" in the knowledge organization literature (Hjørland 2013). In this essay, we present and discuss some aspects related to ethical issues in control by algorithms for this context of knowledge organization. After selecting some sources on the topic, we used critical hermeneutics as a method to discuss the ideology, power relations, and consequences of these technologies for society and knowledge organization.

2.0 User-based approaches to feed algorithms on the web: the user is the content

We could say that the year 2009 was the beginning of the era of personalization with the development of personalization algorithms and filter bubbles. This was a turning point and a true revolution for the business model on the web as the internet user became its content with the use of personalized algorithms and search engines based on their behavior that, in a customized way, conducted adapted searches and returned personalized results. This situation was only possible with the development of technologies during that decade in relation to a greater participation of the users, now also called prosumers (Ritzer and Jurgenson 2010), on the so-called Web 2.0 (O'Reilly 2005), that also allowed collaborative practices in knowledge organization such as social tagging (Martínez-Ávila 2015) and crowdsourcing approaches (Zhitomirsky-Geffet et al. 2016; Martínez-Ávila and San Segundo 2020). As for 2023, one of the most cited articles published by the journal "Knowledge Organization" in 2009 was about the "Web 2.0 and the Semantic Web in research from a historical perspective" (Van den Heuvel 2009).

In this new scenario, users did not have to strive to retrieve contents, as there was a delude of information, but search engines filtered or ranked the information without our knowledge and online searches returned a completely individualized list of hits which depends on what has been previously searched and retrieved from the web, the device being used, the browser, the location, their language, and many other variables aimed at profiling users. All these variables, whose related data are collected for the companies by search engines and programs, effectively form a limited web of information. In 2011, Eli Pariser, in his famous TED talk titled "Beware Online "Filter Bubbles"" (Pariser 2011b), made a huge social impact on the web with the disclosure of the use of these personalization algorithms and information filters or information bubbles. Search engines, private companies that operate on the web, social networking services, organizations, institutions, and other actors with commercial interests pursue an optimal personalization of contents using personal and direct marketing techniques that makes them profit from the users' preferences and behaviors.

In practice, this personalization of knowledge is semantically articulated through filters on the web, in such a way that its design enables the relationship between any type of information, things, people, and web pages communicating with semantic web technologies. This connectivity, which articulates the semantic web, is being used to create more powerful applications than those existing on the previous web. This web technology is used by search engines in a much more extensive and accurate way than before and it is expected to continue growing with the help of artificial intelligence. Algorithms already explore a significant number of variables, which can easily be more than 50 and 100, that generate more satisfactory results based on the deduction of the profiles of the users and many different aspects, some of them very sensitive such as their gender, age, language, financial behaviors, and individual interests. Moreover, it collects information based on several biases that can be ideological and of other types. Thus, the filter bubbles provide a lot of information about each user which can negatively affect them and make them the object of many prejudices without their knowledge. What we do affects what we are exposed to on the internet, but in the difference, it also affects the perception others have of what they are not exposed to outside the bubble, creating prejudices and conflicts between different groups in society.

German philosopher of Korean origin Byung-Chul Han makes it clear when he says that people and their data are put at the service of the Internet, they think they are reading contents, but actually it is the contents who read them. In his work about Infocracy (Han 2022), he says that the infocracy does not want you to think or communicate, it only wants you to generate data.

The web collects information and knowledge from the users and, in a multiple and individualized way, becomes a reflection of their interests, constantly creating and redefining who they are in the digital world and what they want to do or consume next. Algorithms also gradually select everything we see and are interested in from the different websites we visit (or from the applications that we use or download for "free"). These algorithms, little by little, transit from learning and reflecting our preferences and behavior to dic-

tate our preferences and behavior and shaping ourselves, as they are of course not stagnated and try to predict or induce with more or less success our next want. They end up organizing our lives and defining what we should be interested in or what we should consume. This aspect is very dangerous for politics, but even just for leisure this logic applied to human behavior can be harmful for the psychological growth of people since our best moments are often the most unpredictable ones. As human beings, it is not worthy to live a totally predictable existence without having a solid foundation exempt from consumerism and alienation. All this algorithmic induction can lead us to a kind of informational determinism in which if we do not delete our browser history, we might be doomed to repeat it (Pariser 2011a).

The continuous waiver of data and information by the users sinks them into an endless spiral of exposition in which privacy and other moral rights are harder and harder to recover. Our exercise of personal decisions is increasingly limited. While companies that operate on the web strive to adapt their services and search results to the created demands and personal preferences of the users, these in turn can get trapped in a filter bubble that hinders the access to the knowledge that could broaden their decisions in the world. The consequences of this process also go the other way: people see and retrieve what they want to find (or more often what they have been induced to believe they want) instead of what they should find. This is not a pragmatist feature at all as that process of fixation of beliefs by no means follows what Peirce calls the scientific method (Peirce 1877). This can have consequences for research and the organization of scientific knowledge since different queries can produce completely opposite scientific results not necessarily depending on theoretical assumptions but on commercial interests. Indeed, it has also been argued that filter bubbles and their selection bias might negatively affect the transparency, reproducibility, and rigor of science when using search engines for systematic literature reviews (Ćurković and Košec 2018; Ćurković 2019). Even if the criteria were potentially more positive for academic purposes, such as pertaining to a country, language, or school of thought, the mere isolation from competing arguments and theoretical challenges would not be desirable from a domain-analytic approach in the research process. Once our behavior has informed the algorithm about something, it is hard to escape the censorship their developers and private companies establish around it.

In short, the control that these algorithms exert over our lives is detrimental to our knowledge and exercise of citizenship. In this process of retrieval of information, standardized information following knowledge organization principles and epistemic criteria is not provided. Personalized content algorithms and personalized search results just follow statistical models driven by big data and user-based behavior analyses. Pariser (2011a) states that this also poses a political problem since the filter bubbles make a discussion with all the needs of public knowledge impossible. Although this continuous waiver of personal data is done voluntarily, it is nevertheless a sinkhole in which personal sovereignty is lost (Zuboff 2019). It is a voluntary and extreme form of personal colonization induced not only by algorithms but also by pervasive cognitive manipulation techniques.

This progressive individualization of the web can hinder our access to knowledge and therefore our vision of the world. It can harm our ways of being, our social relationships, our coexistence, and finally the democratic system. Jungherr (2023) lists four areas in which artificial intelligence can impact democracy: at the individual level, group level, institutional level, and system level. At the individual level, Jungherr states that artificial intelligence impacts the conditions of self-rule and people's opportunities to exercise it, that is, the capacity of people to make informed decisions for themselves and their communities. This aspect also depends on the information environment of the individuals (Jungherr and Schroeder, 2022). Democracy requires an informed citizenship that perceives the points of view of others. However, as Pariser (2011a) points out, in this age of the internet truth can be manipulated and this manipulation can be done through different processes. In this system, forbidding opposing opinions is not necessary, but control is rather exerted through second-order censorship. The manipulation, management, and organization of the flow of information and knowledge give rise to the paradox that the web rather than decentralizing knowledge and power, as it had been predicted and hoped by its original creators, is concentrating it in a fistful of private companies and individuals that operate or act only for profit.

All this personalization, which is leading us to a determinism of information and knowledge, raises several ethical questions because the filter bubbles are invisible, we do not choose to enter them, and once we are inside, we find ourselves quite defenseless. This increasing individualization of knowledge on the web harms people, democracy, and coexistence. With this algorithmic system of selection, which is not designed to include a diversity of ideas or people or to introduce us to new cultures, we can lose part of the mental flexibility and open attitude that is required for coexistence in society, as well as we are missing the necessary contact that the difference produces for knowledge organization. In short, the waiver and articulation of personal data can become more discriminatory than inclusive (Pariser 2011b).

3.0 Ways of seeing and patching the problem

John Berger (1972) showed us a new "way of seeing" through diverse ways of seeing that avoid a single perspective. He expanded the old way of seeing insofar image, today

more than ever, invades our lives while producers do not want us to notice it. Berger taught us that we should have the opportunity to rethink the way we are seen and the way we see. In the same vein, the digital world is riddled with an immeasurable organizational infrastructure that we must learn to see, so it is necessary to demand greater transparency in the algorithms to know the rules and factors that articulate their organization of knowledge. Pariser (2011a) points out that our society is increasingly algorithmic in all aspects, so we must learn to recognize that the social values about justice, freedom, and opportunity we are exposed to are inherent to how the algorithm's code is designed and what those instructions solve. He adds that once we understand this, we will be able to understand the variables that interest us, and how we could propose a different establishment.

In addition, open mechanisms must be made possible so we can decide what is of interest on the web and what is not in an informed way. This is the only way we can ethically approach the development of an organized web. Pariser (2011a) insists that, under all the data, there are patterns of immeasurable extension that if taken advantage of and organized, would feed a degree of filtering precision difficult to imagine, while all our experience, information, and knowledge could be quantified, captured, and used to shape our digital environment. For this reason, new forms of organization should be formulated for these enormous flows of binary digits, so they are ethically adequate and not at the service of spurious interest.

In the meantime, against the current systematic collection of personal data and abuse that companies exert, some hackings have been proposed based on different technologies. The first one would be blocking search engines from tracking us before conducting any search. Blocking cookies before conducting searches is important to ensure that they are not conditioned by the collection of our information. Measures such as rejecting cookies (if possible but also being aware of the tricky and treacherous nature of some of the forms that websites provide for doing that), deleting the browser data as often as possible, and never logging in to any account when conducting a search on a different program are of vital importance. Cell phone technologies and apps are not our friends in relation to privacy and that is why companies tend to push for their use. As a rule, it is always better to use the browser to access the web version of a program than using an app in which we will be locked and have less control over our data.

In addition, some technologies have been developed in the past and others will continue to appear in the near future to help us to protect our privacy. Some of them are attacked by those companies that commercialize our data, such as in the case of Disconnect (https://disconnect.me/opensource), which was banned by Google Play just five days after it was released (Quintin and Gillula 2014). Disconnect helps to conduct information searches privately in any search engine. Since the tracking of information depends on different factors such as the IP address and the device we use, Disconnect uses a VPN to hide our personal IP and connect to the target servers through their servers, so our queries look as if they were Disconnect's queries and our privacy stays relatively safe. Service providers are stopped from stealing our data while Disconnect itself claims they do not store anything. Searches are a bit slower because they must be routed through their servers, but it is a safer way to protect our data.

Other options such as the Do Not Track feature that most browsers have do not slow the processes, but they do not seem to be very efficient either, as they depend on the websites' good will (that is usually low) to comply. The Do Not Track feature is included in most popular web browsers to just send websites the message that we do not want to be tracked (but it does not block cookies on our side). However, since our request of not being tracked is not legally binding, most websites opt to ignore it plainly, giving us users a false sense of safety that can be more harmful than positive. For a web browser, the best option for privacy is still Tor -The Onion Router- (https://www.torproject.org/) that blocks trackers and cleans history, makes all users look alike blurring their fingerprint, and uses multilayered encryption. As a default search engine, Tor uses DuckDuckGo (also available on the web at https://duckduckgo.com/), a search engine that does not track data and blocks website trackers. Another option is Starpage (https://www.startpage.com/), and previously Ixquick, which provides Google results without being tracked. Other browsers such as Brave, Epic or even Firefox offer solutions for privacy infringement, with more or less success, as they have seen this feature as an asset in their business model. The purpose of these technologies is to prevent third parties from commercializing and profiting from our information and behavior, so they will not be indexed in a database created to extract our profiles, activities, and interests. In fact, the use of VPNs in libraries to protect their patrons is something that has been discussed in the literature (Massis 2017).

Moreover, the problem is not only placed in the huge amount of data that we generate when we search and browse the internet, but also because there are numerous interfaces of all kinds that allow accessing, relating, and processing recorded information. The numerous cameras placed in many public and private environments make it possible to locate and monitor the movements of a person through the urban space and that can be connected to our personal devices. This increasing interconnection of information in which the hyperfocus displaces general knowledge establishes and curtails knowledge on the web. The new web is immersed in the era of personalization, where their wealth is no longer connected to general knowl-

edge and is generated by our own data in a capitalism not of information but of surveillance.

Orwell's own idea of communism in 1984 is nothing compared to the new reality of capitalism. Morozov, in his work "Capitalism's New Clothes" (2019), points out that when we provide our data for relatively trivial services, these data are used to personalize and organize our world in a way that is neither transparent nor desirable, making us waive our personal sovereignty. Pariser (2011a) stated that when personalization occurs, there is always some exchange, one surrenders their privacy and control in exchange for the advantages that they think this brings them. Nevertheless, as the value of the data exponentially grows the exchange is more and more unfair, while the behavioral data market does not seem to be subject to any control in a truly libertarian fashion.

Thus, it is important to get governments and authorities in action to regulate the market and protect users from abuse by companies and individuals. It is necessary to exercise our citizenship, which implies knowledge and making informed decisions. As educators, we must educate responsible citizens in this regard and participate in the awareness of how algorithms should work in a new level of algorithm literacy for citizenship. If knowledge organization is often referred to as "the other side of the coin" of information retrieval, it is important to highlight what aspects of the results that users retrieve are related to the knowledge organization systems, what aspects are related to the characteristics of the algorithms, and what aspects of the algorithms can be influenced by the knowledge organization processes. In addition, as part of a societal and contextual system, ethical decisions regarding the development and use of knowledge organization systems and processes should be considered inherent to our professional responsibility to individuals. Pariser (2011a) talks about speaking up about the programmed systems that affect the entire environment of our lives, both public and private, and if one lacks sufficient fluency to read and understand the code and basic concepts, it is necessary to proceed to a literacy of the functioning of the algorithms to make decisions about them.

In short, in relation to the personalization and filtering of data that are inserted in a bubble articulated in the interconnections of the semantic web, we must work on the design of knowledge organization systems and even algorithms themselves to promote ethical alternatives that are not at the service of curtailing knowledge, but to expand it. Knowledge organization systems reflect worldviews and theoretical assumptions that are not value-free. By exposing those assumptions and making explicit the different choices that classificationists and classifiers might take, we increase the chances of developing systems that are educational and inclusive for all members of society. In this sense, for instance, Zhitomirsky-Geffet (2022) has proposed the use of multi-viewpoint knowledge organization systems (Zhitomirsky-Geffet 2019) as a basis for the implementation of multi-perspective search and recommendation systems that could be a good alternative drawing on knowledge organization theory. Other alternatives such as complex operators, pluralist, and dialectic strategies in knowledge organization (García Gutiérrez 2004; 2007; 2011a; 2011b; 2014; García Gutiérrez and Martínez-Ávila 2014), drawing on critical and paraconsistent logic, can be used as feasible devices for making knowledge organization processes explicit and to inform in an ethical way not only users but also the knowledge base that feeds artificial intelligence agents.

4.0 Conclusion

The use of algorithms to control and profit from people on the web is based on cognitive and user-based approaches. In the context of knowledge organization, these practices follow a tradition that began in the 1980s with the popularization of computers and the belief in the universal mind (in this case the universal algorithm that can learn from everybody and tailor its outcomes). Hjørland (2013, 12) already stated that "very few people have questioned these user-based trends and discussed their overall ideological perspective. Such a discussion is much needed, however. It is not without problems to make educational institutions, libraries, scientific journals, databases, etc. driven by commercial criteria and user demands rather than by scholarly principles and criteria of quality (or, in the case of public libraries, by cultural policies). One hypothesis is, therefore, that the user-based approaches to LIS and KO are part of a larger trend, but that this has not been explicitly considered." With our study, we hoped to have contributed to the body of knowledge on the topic and the discussion of user-based approaches to knowledge organization in this broader trend. We conclude with the necessity of favoring ethical and social stances over technological and uncritical technophile positions in the organization of the web that must be supported by deep knowledge and awareness of the theories in the field. The names of the applications and companies reviewed here will surely change or disappear in time however, the underlying principles and problems for the organization and retrieval of contents will remain as well as the approaches that must be studied and proposed from the knowledge organization field.

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