JOURNALISM AT THE CROSSROADS OF THE ALGORITHMIC TURN

O Jornalismo na encruzilhada do 'algorithmic turn'

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Abstract

At the beginning of the digital age new and complex problems for media system, in particular for journalism, are setting up. Online platforms – the new digital intermediaries - are introducing automated systems for distributing content and information through technologies that control access to online news via search engines, news aggregators and social networks. These are new algorithmic systems of information and news management that become authentic "gatekeepers" of the news. This "algorithmic turn" is a great challenge for the future of journalism whose problems and consequences we address in more detail in this paper.

Keywords

Journalism; Pluralism; Digital platforms; Algorithms

Resumo

Neste início da era digital estão a emergir novos e complexos problemas para o sistema de media, e muito em particular para o jornalismo. As plataformas *on-line* - os novos intermediários digitais - estão a introduzir sistemas automatizados para distribuição de conteúdo e informação através de tecnologias que controlam o acesso às notícias *on-line*, através de motores de busca, agregadores de notícias e redes sociais. Estes são novos sistemas algorítmicos de gestão de informação que se tornam também autênticos "gatekeepers" de notícias. Este "algorithmic turn" é assim um grande desafio para o futuro do jornalismo cujos problemas e consequências abordamos mais detalhadamente neste artigo.

Palavras-chave

Jornalismo; Pluralismo; Plataformas digitais; Algoritmos

Introdução

At the beginning of the 21st century, the media in general and journalism in particular are going through a period of great turbulence that derives first and foremost from the transformations generated by new digital environments. We are dealing with issues of great complexity, primarily in the domain of artificial intelligence, determined to a large extent by the technological acceleration introduced into the current media system by information and communication technologies during the last decade.

The new post-media landscape has been profoundly altered in three main domains: the business and organizational model of the traditional press industry; traditional journalism practices; and, above all, the relationship between news content and its "old" platforms with its own readers and / or audiences. In this paper we will try to show this, explaining the end of the newspaper era, the complex transitions to digital and its asymmetric journalistic practices, and the problematic relations of journalism with the new intermediaries and what we can call the algorithmic turn introduced by the digital media industry. This forms our analysis of the current crossroads of journalism.

In the beginning, the word was 'convergence'. It was the time of the so-called post-television era, when the global network, the Internet, began to take shape. The transition toward the new era of participatory culture was being built. We can say now that with the accomplishment of a new utopia, the convergence culture in the digital era was expected to be fostered by a large mobilization and assertiveness. This means the rise of interactive networks (Rheingold, 1993), peer production, (Benkler, 2006) transmedia (Jenkins, 2006), 'produsers' (Bruns, 2008), and also a better relationship between interactivity and democratic participation (Chadwick, 2007; Bimber, 2012). The interactive model was stressed in the 1980s by UNESCO in the MacBride Report (1980) and the need to apply the principle of reciprocity in communication was recognized. As Kittler (1996) states, in digital systems real information processing and encoding reciprocity function as an alphabet, although on a digital basis. Today, however, we ask whether the announced interactive communication process is leading us to so-called 'direct democracy', or even to a shared new world without barriers, or is it merely another recurring myth of 'remediation'? (Bolter and Grusin, 2000; Hindman, 2009).

Throughout this analysis we will try to understand the role and positioning of journalism in this emergent and complex context of the global communication crisis and to discuss the challenges to journalism in relation to:

1) the end of the newspaper era and the start of the next journalism or the new context of journalism in transition—intermediations, interactions, convergences, and new problems with gatekeeping', audiences and participatory journalism practices (Starr, 2009; Hunter, 2011; Jarvis, 2011);
2) new media literacies, participatory culture and online politics, collaborative new media and the production of media content through new platforms (Jenkins, 2006; Prior, 2007; Bimber, 2012); and
3) journalism and the algorithmic turn—the new ways to access media news through social networks, digital platforms, search engines, apps, aggrega-

tors, and many other new intermediaries (Pariser, 2011; Foster, 2012; Morozov, 2012; Napoli, 2014).

This brave new world needs an in-depth analysis of these new media production avenues in order to 'save' the old journalism or to build an alternative to complement the traditional system (i.e., new participatory practices and literacies to implement new interactive content in digital media). This paper aims to discuss the current state of journalism at a time when it is at a crossroads or an inflection point, and will consider complex systems, such as big data and algorithms, which are conditioning pluralism, access to information, and freedom of expression.

The end of the newspaper era

Paul Starr is an author who represents those who fear the grave implications of the end of the newspaper era:

> If we take seriously the notion of newspapers as a fourth estate, . . . the end of the age of newspapers implies a change in our political system itself. Newspapers have helped to control corrupt tendencies in both government and business. If we are to avoid a new era of corruption, we are going to have to summon that power in other ways. Our new technologies do not retire our old responsibilities (Starr, 2009: 35).

The question for Starr is, does the decline of newspapers go along with the decline of democracy itself, since one of their main strengths was 'to stand up against pressure from politicians and industries to suppress unfavorable stories' (2009: 29). Since the press is considered to be the fourth estate and has gradually become economically strong—and because a financially compromised press is more likely to be ethically compromised—it has been able to better lead the scrutiny of public affairs and to sustain the values of journalism.

The direct consequence of the new context remains the danger of a deterioration in the quality of journalism, or even worse, more self-censorship, censorship, and corruption in journalism itself (Moreira, 2008; Rampton, 2007; Greenwald, 2014). In view of this, what is the answer for the digital age? Starr does is not very optimistic, because the hope that newspapers 'as we have known them can make the transition to a world of hybrid print-online publication' has vanished (Starr, 2009: 30). The old media were unable to update their strategies either by adapting their practices to the full potential of interactive technologies or by integrating the new dynamics of news content in social networks and web platforms. For Starr, 'the result is that newspapers are shrinking not just physically or in labor power, but in the most important dimension of all—their editorial mission' (2009: 30).

The question is whether the Internet can integrate, within its technical-discursive system, the editorial mission of journalism in its full dimension, in issues of independence, research and rigorous scrutiny of public interest, almost returning to Walter Lippmann's (1919) Utopia, where newspapers are the 'Bible of democracy'. Paul Starr's perception represents, in a certain way, the perspective of the journalists. Yochai Benkler proposes an alternative that is probably more suited to these times:

> Perhaps, as Starr proposes, there is room to enlist philanthropic support for local reporting. I would suspect, however, that doing so would achieve more if it created state-level online muckraking organizations with a generation of young journalists who have grown on the Net than by propping up older establishments that still depend on much higher ratios of organizational, financial, and physical capital to talent than the new, lighter, networked models permit. (Benkler, 2009).

In fact, the media experience in this new century is not reassuring. We have noticed a continuous crash (Otte, 2010) of media scrutiny, in parallel with global crises such as the dot.com collapse, the Iraq invasion, the subprime scandal, and financial toxic products, among others. According to Otte, the media system has been captured by multiple powers and interest groups (political, economic, and financial), which have led to the emergence of a society of misinformation, low transparency, and doubtful accountability. The media has also contributed to a model of 'democratainment', as described by Mario Perniola (2005). And as Glenn Greenwald (2014: 85) points out, 'From the beginning . . . the documents [disclosed by Edward Snowden] constituted an opportunity to bring to light not only the secret NSA spying, but the dynamic system of journalism corruption'.

It is crucial to develop new alternatives to overtake the main barriers in the system and to adopt new solutions and new experiences of open and strong interactive journalism that take advantage of the users' ability to participate in the co-creation, transformation, and dissemination of digital content. This is a vital moment concerning an inevitable rupture in the field of media and new media. Although this is an issue not yet fully understood, it is evident that there is a straitjacket in the field of media communication in its transition to digital. We believe that the new system will integrate a critical dimension within the context of the legitimacy of democratic experience when the new paradigm is based on the power of new communication flows and social networks. This new post-media system integrates a new immersive, collaborative, and participatory experience, which is a determining factor in allowing us to better understand the digital age as decisive in the relegitimation of the democratic experience on a progressively deliberative base.

Journalism in transition

At the beginning of the migration to digital, it was believed that the days were numbered for the old mediation process and the number of intermediaries. In the mid-90s, authors such as Rheingold (1993), Castells (1993), and Negroponte (1995) created the idea that the Internet had not only reduced the influence of traditional intermediaries, but would also strengthen the power of citizens through participatory and collaborative action. However, there is now an increasing inversion of the principle of disintermediation. As Morozov (2012: para.13) states, 'Digitization will increase the number of intermediaries in our public life. There is nothing inherently evil about intermediaries once we remember to keep them in check'. The new gatekeepers—or the current guardians of the news—are not journalists, but the algorithms that comprise the informational basis of those platforms.

There are significant issues that face journalism in the new digital context concerning the emergence of new web environments and the new convergences and interactions between journalists, audiences, and produsers. Several researchers point to the interactive or the intermediation issue (Oblak, 2005; Chung, 2007; Morozov, 2012), while others focus on aspects such as the renaissance of investigative journalism in digital media, which would depend, in this case, on whether or not journalists adopt 'profound shifts' in their work. Mark Hunter notes a 'rebirth' of investigative journalism punctuated by two grand themes—transparency and ubiquity: 'Objectivity will be increasingly displaced by transparency as an ethical basis for journalism. On the commercial side, ubiquity will have greater value than exclusivity' (Hunter, 2011: 2). Hunter also says that journalism should be thought of as a service rather than a product, noting that 'the core journalistic service is becoming the provision of solutions to audiences' and 'critical aggregation and the customizing of investigative content for specific audiences within wider networks are two emerging features of this emerging business model' (2011: 2).

There should be no doubt that digital technology is a vital piece of this remix of journalistic practices that converge and interact with their audiences and public opinion. We are now in a post-mediatic stage where one of the first moments of the transition to the digital era should have deepened the dimension of interactivity and transparency and the openness of data bases and public archives, as well as leading to a whole new participatory culture, better integrating civil associations in the present ecosystem, or non-governmental agencies, media stakeholders, etc., while also developing Internet forums, and, above all, creating interactive platforms with those new produsers. Despite the media convergence, interactive networks, and mobile communication, journalism is still, in a general way, reactive to the new interactive paradigm and to the peer and network culture.

The 'right to participate' is a decisive issue today, implying a radical overhaul of the traditional practices of journalism, or even a re-engineering in harmony with the new participatory culture. In this new paradigm, journalism's best practices can only be achieved through a genuine integration in the digital culture and a better convergence and interaction among journalists, produsers, and audiences. It is obvious that the smartphone is pushing the Internet into a more personal space and extending the access points for news and information. For instance, in the United States, Japan, and some European countries, more than a third of online news users (39%) use two or more digital devices each week for news. On average, a fifth (20%) of all users of digital devices say that the smartphone is now their main way of accessing online news, over a third (37%) access news from a smartphone each week, and one in five (20%) use a tablet (Levy and Newman, 2014). In this new framework, journalists have a role to play in the future and, freed from the restrictions of impression, they possess new instruments to reunite and share information. Jeff Jarvis gives the example of Andy Carvin (@acarvin), the National Public Radio social strategist who was tweeting and retweeting news from the Arab Spring up to 1,300 times a day. Journalistic value is increased by 'finding witnesses who are on the ground and tapping into their networks; vetting facts and debunking rumors; assigning users to translate videos; adding context—but writing no articles' (Jarvis, 2011: para.2). Other fundamental aspects deal with the fact that increasingly more cases appear where the majority of traffic goes not to the traditional article but to researched data bases or hyperlinks to archives that are constantly being updated. Jarvis advocates the idea that digital means that the Internet must drive all decisions, and that journalists must be prepared for this new convergence paradigm and to share their work with their public: 'They may share what they know before their knowledge is complete so the public can help fill in the blanks' (2011).

New digital literacies and collaborative platforms

As discussed during the European High Level Conference 'Education in the Digital Era' (Brussels, 12/2014), education needs to be fit for the digital era in a constantly changing and increasingly digitally connected world. Education institutions must quickly adapt to actively support innovation and competiveness in a society where technology pervades all walks of life. It is time to discuss the opportunities and challenges of adapting contemporary education systems to the increasing use of Information and Communication Technologies (ICT) in our digital society and to involve a wide range of high-level stakeholders and experts in the field of digital communication. The Internet is a 'big documentary' and a university of life, or an open-source learning school with all the strengths and weaknesses of the real world. Because of this, which methods and types of digital platform and contents will be most appropriate to digital literacy in these new times? Henry Jenkins, in a famous white paper on media education in the twenty-first century, is very clear about the challenges in education:

> How do we guarantee that the rich opportunities afforded by the expanding media landscape are available to all? What can we do through schools, afterschool programs, and the home to give our youngest children a head start and allow our more mature youth the chance to develop and grow as effective participants and ethical communicators? This is the challenge that faces education at all levels at the dawn of a new era of participatory culture (Jenkins et al, 2006: 61).

The methods of delivery of continuing knowledge can include traditional types of interaction and relationships, as well as other types of access, including networks, online/Internet delivery, and online interactive platforms. We must provide digital literacy training on a wide variety of computer and technology topics ranging from Internet safety and security to new platforms more suitable to specific purposes, such as digital storytelling. The CDS (Center for Digital Storytelling) has developed partnerships in organizations to cultivate projects and programs to support individuals in rediscovering how to listen to one another and share first person stories. The center processes the first person stories that emerge and serve as effective tools for change in a world of mainstream media.

Many people blame themselves for their lack of technological savvy, instead of recognizing the complexity of the tools and acknowledging that access and training are often in short supply. However, new media and digital video technologies will not in and of themselves make a better world. Developing thoughtful, participatory approaches to how and why these technologies are being used is essential. There are several online platforms for the publication of creative work with media content or that is experimental in nature, such as MediaStorm, Medium, Stories From, Silk, and Mozilla Popcorn. There are also crowdfunding platforms for journalists such as Newspryng, Contributoria, and Uncoverage, as well as citizen journalism platforms, including Global Voices, Public Insight Network, iReport, GuardianWitness, and Allvoices. The different platforms, from journalism and non-fiction to transmedia storytelling, represent a process where the old narrative elements of a story or news system may disperse and recover systematically through multiple channels or digital platforms with strong interaction with its audiences and produsers. This new media ecosystem permits the expansion of a diversity of voices, the emergence of participatory media, and even locative media and the new skills of bottom-up 'produsage'. The new communication model is focused on identifying strategies for innovative ways of consuming content, from those which are merely adaptations of broadcast journalism to those already formatted in digital interfaces and prepared for multiple extensions and platforms of the new communication model. New audiences are now more micro- and hyper-targeted in their options and profiles. Each network and service, carrier, and terminal has its own complex experience, reorganizing and participating in different networks, but also increasingly unaware of the support through which their data are distributed.

According to Manovich (2011: 14), the new produsers must 'be able to use data analysis and visualization software, so they can combine quantitative and qualitative approaches in all their work'. How to make this happen is one of the key questions, Manovich says. The challenge focuses on the potential of new digital creation tools, from locative media to collaborative publishing platforms, making use of new open source tools, georeferenced data from sources based on a framework of location, augmented reality, and live data and/or data mining; integrating collaborative media, the production and distribution of digital storytelling interactive narratives, and optimizing the full web collaborative archive and all social media networking. This transitional ecosystem begins with traditional audiovisual languages to achieve a reconceptualization of the exploratory practices and methods introduced by digital platforms and the web. The new publishing platforms facilitate the level of participation, the audience experience, and the making of a more emotional, innovative, and participatory experience between the produser, the transmedia system, and the 'audience'. New solutions concerning collaborative digital media development and hypermedia languages gain absolute relevance, meaning that the world of possibilities that the web and open-source devices are introducing in interactive systems are crucial to these kinds of technological platforms.

This should be complemented by the new open-source tools that expand and recreate discursive competences, from non-fiction narratives to transmedia storytelling. The final goal is to enable the user to collaborate online with produsers or journalists, newsrooms, and other users in order to establish contributive new 'channels' and interfaces that create final digital media products based on a strong interactivity within the community.

The need to think about mobile and 'nomadic' communities is also a new issue. This includes mapping the urban routes of the user, linking cultural information flows, and adding digital information on maps through geotags, integrating social media, news feeds, data visualization, and other content or other notes to be accessed via mobile devices, which suggests a new dimension both of ownership of information and of the 'local'. Local participatory journalism, implemented as a mobile network and based on the potential of interaction between journalists, technologies, and citizens, is becoming increasingly sustained by the emergence of new web generations with the 'critical mass' to participate and reorganize the information available in the network. As Bruce Bimber says (2012: 120): "differentiating among digital media forms suggests that new social media tools may be implicated in younger and newer participants' engagement in politics. This topic, in the light of mobile devices, emphasizes the limits of traditional journalism but it also enables the emergence of new collaborative and 'locative' environments of production, re-aggregation, and distribution of information and knowledge, creating new frontiers of locative media and open journalism applied to the local/hyperlocal with mobile components, e. g., creating a new public space of interactive and augmented information. Accordingly, Lessig (2008) considers emerging technologies and their handling as a vernacular of the new generations.

We are in a complex and strange time of blurring boundaries, where 'elite-directed' or 'duty-based' politics is shifting to an engagement-oriented participatory level, as referred to by Bimber (2012). In his view, digital media have expanded the repertoire of political acts. 'The act of producing political messages (for example, on YouTube, Flickr, Wikipedia, or blogs) to be distributed to medium-scale or even large audiences differs fundamentally from 'going online' and 'seeing political information'' (2012: 120). Bimber believes that political messages within the context of social networks differ theoretically from those produced by the elite: 'When news media make choices . . . theories of gatekeeping or agenda-setting can help us make sense; when citizens decide to watch a YouTube video of that speech, the theoretical problems shift' (Bimber, 2012: 120). User-generated journalism has been 'strongly and positively associated with higher levels of online and offline participation', which means that 'trust in user-generated news amplified the link between citizen journalism and online participation' (Kaufhold et al., 2010: 515).

Prior (2007) has discussed the importance of the Internet to mobilize citizens in the electoral process and to enhance political knowledge. It appears that the greater the interest of citizens in entertainment, the smaller the online political participation. Politics has not yet sufficiently recognized the new digital Agora, or even the Ideagora that Tapscott (2007) speaks of as a networking meritocracy from the social sphere to economics. Public opinion was clearly against the Iraq war, with the media as one of the main supports of a decision based on improperly scrutinized lies or based on a model that is normally characterized by discursive regularities that are alien to political, cultural, and geographic pluralism, coming closer to what we may call 'a web of one' (Pariser, 2011) than to an open, pluralistic, and participatory system.

If the old politics does not change from the inside, it will certainly be forced to do so from the outside, with the pressure of social movements and a 'virtual' public opinion more influential than the 'real' opinion, sometimes expressing itself in violent street demonstrations. Everything is easier now, but not for the old politics. The new digital skills are fracturing. There are open writings, anonymous, cooperatives, a kind of civil war for digital identity, and multiple censorship. There is the problem of data 'converted' and exposed to search engines and their dangers, but digital media, ultimately, establish the competence of the popular use of the technique, causing what Doueihi (2007) calls the 'general convertibility' of the human, its representations, collective identity and, of course, politics. With digital culture, politics must imagine a new ethic and a new way of doing things, more appropriate to the emerging sociability than to the new social and collaborative culture model, based on open platforms, ensuring the empowerment of the social production phenomenon and a new political economy of the 'commons' (Benkler, 2006). Collaborative production develops a true political economy of networks and, in terms of knowledge, sets up a true 'peer culture'. The new rhizomatic digital ecosystem calls for a new kind of highly collaborative and asymmetric journalism among sources, journalists, and produsers, but whose hybridity must necessarily reject the compromise that has shackled the media, marking a return to the social experience, to the folksonomies of network culture and to the emerging ways of producing and editing information and knowledge.

The new intermediaries

The consolidation of powerful web platforms (Google, Facebook, etc.) as digital intermediaries is leading to troubling effects on pluralism and freedom of expression, particularly in access to online news. These intermediaries and their algorithms introduce automatic systems of diffusion of news and knowledge on a basis of 72% of all online access (Foster, 2012). They also generate intelligent agents as gatekeepers, i.e., algorithms, bots, and filter bubbles (Pariser, 2009). As Morozov (2012) states, 'Instead of celebrating the mythical nirvana of disintermediation, we should peer inside the blackboxes of spam algorithms and propaganda bots'. This new logic is contrary, in large part, to the ethical principles of journalism, which are based on the plurality of sources and voices and on open access to news content. Robin Foster states that if digital intermediaries can play a positive role in facilitating access to media content, 'they could equally constrain or control access to news. . . The scale and scope of their activities could have wider consequences for society as a whole' (Foster, 2012: 5). More specifically, most access to online news is done through search engines, news aggregators, and social media, distributed as follows: 30% of online news users choose search engines as one of the main ways to be informed, 22% use news aggregators, and 20% use social media (Foster, 2012: 6). These are, obviously, new problems for journalism in the digital age, when access to online news is controlled and diverted.

Another unsolved issue is the conflict surrounding the aggregation of news by those platforms. It began when European publishers questioned the legitimacy of Google to use the online content of traditional media in Google News and on the platform. Search engines and aggregators are part of the 'googlearchy' model, as Matthew Hindman (2009) has named it. In general, Facebook, Google, and other Internet giants are improving their algorithms to personalize the user's experience, filtering the contents following the web-analytical principle of 'winner takes all' (Hindman, 2009). This shows that the algorithmic system chooses what we can see rather than offering up the world of possibilities we might want.

Any news structure subjected to the logic of the audience, number of clicks, views, and likes (Kosinski et al., 2013) does not encompass diversity of access and/or qualitatively differentiated content. This observation is based on a clash/disruptive model in the transition to digital, i.e., the opposition between intermediation systems of access to online news and websites with traditional media, as well as between interconnected economies and traditional systems of intellectual property. Peer production can alter the producer/consumer relationship with regard to culture, entertainment, and information, and introduce informal networks that reproduce the new information flows of interconnected economy. As Yochai Benkler states: 'We are seeing the emergence of the user as a new category of relationship to information production and exchange. Users are individuals who are sometimes consumers and sometimes producers. They are substantially more engaged participants' (2006: 138). In this new economy, based on participatory culture and social interaction between produsers (Bruns, 2008), the concept of authorship is diluted or acquires the status of collective authorship. This is also the opinion of Henry Jenkins when he states:

> Media producers will only find their way through their current problems by renegotiating their relationship with their consumers. Audiences, empowered by these new technologies, occupying a space at the intersection between old and new media, are demanding the right to participate within the culture. (Jenkins, 2006: 24).

Journalism and the algorithmic turn

Expanding the potential of Internet interactivity, its openness to the global village, and the conquest of networks and platforms by the universe of produsers, information technologies are now increasing challenges for the news industries. The rationale of collective or collaborative intelligence is spreading throughout the system. Artificial intelligence, which adds robots, big data and data mining, is producing stories without a byline, or rather, without a human byline—stories written and published by automated systems.

William Uricchio's paper published in *Visual Studies* (2011) gave one of the first references to the algorithmic turn in the context of the technical communication device, suggesting a reconfiguration of subject-object relations and a new dynamic for the generation of meaning in terms of algorithmic intermediation. Conversely, Napoli (2014: 34) says, 'one of the most visible and potentially significant transformations currently affecting media industries is the increasingly prominent role that algorithms play in the production of media content'. At the same time, we have seen the consolidation of new network architectures of information in terms of data management. In these new systems, one of the most troubling issues is the privacy and protection of personal data in view of the complex logic of intelligent analysis of information, specifically the new big data and data mining systems. These analytical data devices respond to algorithmic logics of information management intended to answer a need of commercial or instrumental order (e. g., politics). In that sense, they structure all complex operations in order to identify types of relationships, correlations, or patterns of use in the data they manage, either on their own platforms or giving data to relational databases that operationalize the intelligent treatment of the information.

Big data is the object of a study by Viktor Mayer-Schönberger and Kenneth Cukier (2013). These authors discuss the impact it is having on the economy, politics, and society in general. A critical analysis of large collections of diverse information will certainly change the way we think about the world in general, politics, culture, and innovation, especially as we adapt to this new reality as a new level of knowledge. With predictive analytics, it is clear that big data systems are increasingly the 'magma' that moves the surface world, whether in politics, finance, health, distribution, or any other sector. For several years, predictive analytics has used certain informational strategies, such as persuasion modeling, with the main objective of producing influences from data that complement the microtargeting methodologies used, for example, in the political arena.

Another significant topic is the interrelationship between intelligence and information, as seen in the use by the National Security Agency (NSA) of predictive analytics and big data not only to anticipate the phenomena of social turmoil, terrorism, and bombings, but to monitor and record virtually all digital communications networks, whether over IP, satellite, or mobile. It even has the ability to recover data from contact lists to written communications, users' locations, and more. Today, even anonymity on the Internet gives the users no guarantee.

What are the consequences of the algorithmic turn for contemporary society in the context of digital consolidation? The consequences rest first in the realm of organization, economics, knowledge, and interaction itself, and also in the control of the Internet, and in the exposure and surveillance of citizens by highly sophisticated systems. Today, data are prime raw materials in the wider economy and are considered equivalent to capital and labor. Algorithms are created to produce news information for the media, for example. These are clearly changing times for journalism and for freedom of expression. A side effect of these surveillance technologies, as Snowden believes, is that the work of journalism has become 'immeasurably harder' than it ever has been in the past:

> Journalists have to be particularly conscious about any sort of network signaling, any sort of connection, any sort of license plate reading device that they pass on their way to a meeting point, any place they use their credit card, any place they take their phone, any email contact they have with the source because that very first contact, before encrypted communications are established, is enough to give it all away (Rusbridger and MacAskill, 2014).

The issue is that complex systems of the Web 3.0 environment, with semantic specifications, are increasingly present on the Internet, ensuring the control of all types of content for the owners of sites and platforms, from spam to phishing, blocking indecent language, or even applying automated content moderation to simple comment boxes. It is obvious that in the political arena, particularly in countries that have experienced long litigations with Internet freedom, these control systems have helped to censor dissenting opinions. Additionally, the journalism deficit is becoming worse as the new digital intermediaries redirect more than seventy percent of the traffic, introducing an algorithmic turn in the journalistic field in parallel with artificial intelligence companies.

The confluences of algorithmic models are strange and disturbing rather than worrying. There are already companies that propose to develop scripts and projects, foresee revenues, or anticipate the entire chain of pre-production, production, and marketing of a work, even to writing news as big data. These companies include Epagogix, Narrative Science, Automated Insights, and StatSheet. Kevin Slavin (2011) called this the 'physics of culture,' but we could also call it the beginning of the end of journalism as we know it. As Steven Levy effectively describes Narrative Science's production:

> The articles run on the websites of respected publishers like Forbes, as well as other Internet media powers (many of which are keeping their identities private). Niche news services hire Narrative Science to write updates for their subscribers, be they sports fans, small-cap investors, or fast-food franchise owners' (Levy, 2012: para. 3).

Kristian Hammond, the founder of Narrative Science, predicts that within a decade more than 90 percent of informative material will be produced by automatic content-generation systems and part of a 'robonews' piece, or one of the meta-writers may be awarded a Pulitzer Prize even sooner. In another example, Epagogix quotes Aristotle on its website as a way of legitimizing the project, noting that 'epagoge' is the path that leads from experience to knowledge and from this to the understanding of phenomena's causes, moving from the particular to the universal. Through advanced intelligent systems, eventually in conjunction with the rights holders, Epagogix anticipates, for example, the potential box office earnings of a film script.

Conclusion

This is, in short, the application of artificial intelligence and big data to a narrative structure in order to compile a synthesis of users' profiles—a kind of digital largest common denominator—but doing it from databases results in producing something where we hardly recognize ourselves. What has been called a 'story' or a 'fictional narrative', is now far away from the criteria of storytelling or even from the construction techniques of a script. These have become nothing more than stories without an author, with no intention, and most likely with no soul and no atmosphere. This algorithmic turn announces the 'third catastrophe' referred to by Vilém Flusser (Júnior, 2006). The 'wind of information' is pushing us to a new nomadism, imposing an increasing demand for spaces, or interstices, of freedom. We should open the spaces that remain from an increasingly automated context, a permanent world war between algorithms and resources (Kittler, 2010: 230), and be comforted by the hope that our generation will crack the secret world war of algorithms.

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