

# Challenges for communication research in the culture of convergence

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## Abstract

Communication research faces new challenges when it is clear that information technologies have accelerated and amplified the data flow in an alarming way. This article provides an overview of the challenges to be considered when working in a scenario where quantity exceeds human effort. Therefore, thanks to new techniques, it is possible to face the transformations always hand in hand with an exercise that involves considering a particular process of care by the researchers.

**Keywords:** Communication; Data; Technology; Research.

## 1. Introduction

The dynamics of information production and consumption have changed substantially in recent years as a result of the reduction in the costs of its production, distribution and consumption. In addition, the growth of technology platforms such as Facebook, Twitter or Youtube, to name a few, enables the rapid exchange of information between user communities. Moreover, the Internet gives rise to a multiplicity of voices and actors who previously had no involvement in traditional media. Media companies, for their part, accelerate the flow of content in order to expand markets and strengthen consumer loyalty (Felt, 2016).

This new paradigm of global digital culture that Jenkins & Deuze (2008) call convergence culture, entails important changes for the study of communication as it brings with it phenomena such as the scope of the technological platforms, the algorithmic customization of content, the involvement of nonhuman actors in information flows and data centrality. This culture of convergence implies new ecologies of information and, therefore, new ways of studying the processes of information both media and organizational. This involves addressing new research methodologies and techniques that pose a variety of challenges for social science researchers and for those in the field of communication in particular.

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This paper sets out five central challenges for communication research in the context of the new information ecologies: a) learning new languages and research techniques, b) curatorship and data management, c) the participation of non-human agents, d) the study of information overabundance and e) the understanding of nontechnological neutrality. Each of these challenges is described and supported below.

## 2. Challenges

### 2.1. Learning new research languages and techniques

Within the framework of the culture of convergence, the<sup>2</sup> Big Data is created and strengthened, which is defined by Boyd & Crawford (2012) as a cultural phenomenon, technological and academic referring to the maximization of computational power and algorithmic precision to collect, analyze, compare and establish patterns between large amounts of data. The authors also point out that to these technological and analytical dimensions is added a mythology according to which there is a widespread belief against the Big Data that the “large data sets offer a superior form of intelligence and knowledge that can lead to discoveries that were previously impossible, with an aura of truth, objectivity and precision” (p. 663). This mythological dimension triggers utopian rhetoric because Big Data is not per se a “better” or “more scientific” methodology, but novel and timely to account for some—not all—research problems.

Understanding the nature, use and scope of Big Data requires the communication researcher to have a new understanding of how these technology systems operate. As Meneses (2018) explains, it is essential that social scientists understand these new dynamics of information production and processing so that studies on digital platforms, Artificial intelligence and Big Data are not reduced to a purely technological and enthusiastic discourse. A significant challenge of Big Data research is to know and manage techniques that allow analysis of large amounts of data, either because the researcher is trained in it or because he works in a joint and interdisciplinary way with statisticians, mathematicians and professionals from other areas of knowledge.

For example, in order to study the ideological segregation of Internet users in the United States, Flaxman, Goel & Rao (2016) worked with a sample of 1.9 million articles, which would take years to be classified according to their ideology by human agents. The algorithmic design that allowed researchers to automate this task as well as the way to organize and classify the millions of articles analyzed required researchers to master Bayesian statistics, management of R programming language, mastery of Machine Learning models and theoretical knowledge about social networks.

It is important to clarify that this quantitative shift—the use of new methodologies to understand the scope of Big Data should not imply an abandonment of other classical or

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2 The English terms are used because they are technical categories that are frequently used in English and since they are foreign words that have not been incorporated by the Royal Academy of Language (Meneses, 2018).

contemporary—methodologies useful for the study of the culture of convergence. This is how Small Data proposals that claim qualitative studies in the field of digital humanities and, specifically, cultural analytics, digital ethnography or digital anthropology must be produced (Meneses, 2018).

## 2.2. Curating and data management

The ability of Big Data to have immense amounts of data to analyze phenomena in depth and on a large scale, is not only an opportunity to examine new phenomena from new perspectives, but also constitutes a challenge in terms of curatorship, representativeness, archiving and data apophenia. The curatorship of the data is aimed at the discovery, recovery, quality, preservation and reuse of large quantities of data that in turn involve the use of specific techniques of archiving, retrieving and representation (Chen & Zhang, 2014).

The research cited in the previous section, illustrates the challenges of managing a sample of millions of web articles when there is not an influence of curatorship, archive and search and classification tools made by the researcher. In fact, platforms like Twitter and Facebook have poor archiving and search tools which may explain that many studies based on these platforms analyze phenomena of the present or recent past (Boyd & Crawford, 2012).

Representativeness is also a challenge arising from the curatorship of data in that it requires the investigator to provide a clear basis in the definition of the samples or corpus of his-her studies (Parks, 2014). Although Big Data involves the use of large amounts of data, this does not mean that the whole of the data, that is, the statistical universe, is examined. Thus, even if research is carried out analyzing millions of Twitter users, this network does not represent all users of the network, nor is it representative of the world population. Finally, the use of huge amounts of data can also lead to apophenia, that is, the establishment of patterns in random data that are probably not related to each other and that arise as a consequence of the handling of exaggerated amounts of data showing spurious relationships between them (Boyd & Crawford, 2012).

## 2.3. Participation of non-human agents

Developments in the field of artificial intelligence also pose challenges for communication researchers. Machine Learning is one of the most representative approaches to artificial intelligence aimed at designing algorithms that allow computers to develop or “learn” behaviors based on empirical data in order to make intelligent and autonomous decisions (Chen & Zhang, 2014; Fuentes, New York, 2018). A significant research challenge in the context of Machine Learning concerns the study of non human agents involved in the communication processes.

Researchers should embrace both methodologies and theoretical approaches that enable them to identify and analyze human-machine interactions and the scope of information disseminated by *bots*, that is, by automated or fake accounts present on different social networks (Boyd & Crawford, 2012). Although cyber theory (Wiener, 1997) has already provided some initial insights on this subject; the scope of Machine Learning is an interesting challenge as

systems become agents of the communication process. For example, if a researcher wants to analyze public opinion on a certain topic from the publications of various users on Twitter, he-she must take into account, theoretically and methodologically, that some of these publications may come from *bots* or that the activity itself versus some tweets that may have been programmed algorithmically.

## 2.4. Study on information overabundance

The algorithmic customization of the contents that come with Machine Learning models is another challenge for researchers as computer systems create filter bubbles, which means, personal information ecosystems that operate as bubbles that filter information in such a way that platforms and search engines offer their users information with which they have previously agreed (Flaxman, Goel & Rao, 2016). This phenomenon increases the echo chambers and thus leads users to believe that their opinions are predominant in the social sphere. So, a study that addresses the ideological segregation of Facebook users, for example, should take into account the impact of algorithmic programming on the content offered by this social network to the different users which is aligned in order not to contradict their tastes, political preferences, ideologies, and etc.

Many speeches on the culture of convergence celebrate the possibilities of democratization and participation of today's global digital culture. However, research into this democratization should take into account that, although there is an overabundance of information, this does not necessarily imply diversity of content and ideological postures as algorithmic personalization generates insular patterns of consumption and, therefore, filter bubbles and echo chambers. Although some studies (Haim, Graefe & Brosius, 2018) show that, these filter bubbles can sometimes burst, it is important to consider how algorithms affect the supply and consumption of information in user communities.

## 2.5. Understanding of Technological Non-Neutrality

As Fickers (2014) points out, technology is neither good nor bad, but neither neutral. While developments such as Big Data and Machine Learning create and consolidate new fields of research and action, it is worthwhile to sharpen the critical eye in order not to reproduce techno-optimistic and determinist who have historically accompanied the emergence of new technologies. This challenge involves being aware of the relationship between technology, ideology and the economic field. For example, Parks (2014) explains that much of the Big Data, of interest to communication researchers, is owned by commercial entities such as Facebook, Twitter and Google and that these companies can deny or strictly manage access to data which generates fear of new digital divisions.

Fuchs (2011) directly criticizes techno-optimistic discourse and invites social science researchers to analyze the political economy of the Internet, Google and social networks such as Twitter and Facebook. Based on the critical evaluation of the traditional notions of the political economy of communication (Ferguson & Golding, 1998), Fuchs defines these new media as money making machines that convert users and their data into commodities. Thus, the unpaid

activities of Google prosumers or different social networks, which consist in generating content and consuming advertising. They constitute another field of study and pose methodological challenges insofar as they are dimensions to be taken into account when researching from the data of these large companies.

To this commercialization of information is added another social and ethical problem related to hypervigilance resulting from the use of Internet and social networks and showing Big Brother's face of Big Data related to the invasion of privacy and increased State and private control (Boyd & Crawford, 2012). From these problems, authors of the political economy of communication highlight the need to address –based on Marxist or neo-Marxist approaches– the ideology that underlies entities like Facebook, Twitter and Google in order to understand the modes of capital accumulation in these organizations (Fuchs and Winseck, 2011).

### 3. By way of conclusion

Clearly, new information ecologies pose far more methodological challenges for communication researchers than those briefly described in this short essay. For space issues, for example, challenges related to the redefinition of the communication models that shape these new ecologies have not been addressed (Shah, et. al., 2017), other ethical problems of access and information processing is the use of Big Data and Machine Learning in organizational contexts, among others. Challenges of similar and different nature have confronted research methodologies in social sciences in earlier times. A critical look at the culture of convergence will avoid reductionist discourses, utopian rhetoric and purely technologic approaches to technology platforms, which will enable us to harness the enormous potential of Big Data, Machine Learning and other technological areas that can be used for communication research.

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