The Virtualization of Culture in the Age of Digital Convergence: Networks, Media and Participation in the Network Society

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Abstract

This article investigates the socio-technical transformations caused by the increasing virtualization of human interactions in the context of contemporary digital culture. Based on authors such as Lévy, Castells, Jenkins and Ford, the article analyzes the migration of social, cultural and communication practices to the online environment, driven especially by the Covid-19 pandemic and the evolution of Webs 1.0, 2.0 and 3.0. The article discusses the emergence of the "culture of convergence", in which old and new media coexist, and users stop being mere receivers and become active producers of content. Characteristics such as collective intelligence, hypertextuality, multimodality and the reticular structure of digital communication stand out. The article concludes that virtualization is not just a technical innovation, but a profound process of reorganization of culture, economy and social relations.

Keywords: digital culture, virtualization, media convergence, cyberculture, social networks.

Introduction

For Ford, Green & Jenkins (2013), we are experiencing a transformation from a culture shaped by the logic of open transmission to one aimed at promoting greater popular participation. Over the years, with the emergence of personal computers and various electronic devices that allowed access to the network, the number of users has increased rapidly. "Its open structure makes it a large, dynamic, and constantly developing living organism" (Scolari, 2008, p. 84). The "cloud" emerges, which, as Hui Hu (2015) states, is a singular form that not only condenses a wide multiplicity of network and cloud forms into a single vision that encompasses all networks, but also reflects a universalist vision of the world in the perspective that the cloud would represent a "free" Internet and the "civil liberation of society". The author states that the idea of the "cloud", as opposed to being a new digital technology, arrived in 2010-2011, with the introduction of products such as iCloud or Amazon Cloud Player. In fact, in 1970, engineers used the symbol of a cloud to represent any network compatible with a series of microwave relay stations, whether telephone or Internet, launched by the American Telecommunications Company of the United States of America, in conjunction with the first cross-country television network. Hui Hu (2015) considers that the diagram drawn by Irwin Dorros, director of network planning for the American Telecommunications Company that uses three clouds to describe the network behind AT&T's picturephone service, allows us to understand the genesis of the cloud that functions as a symbol, an icon on a map that allowed the administrator to situate a work network that he had direct knowledge of, within the same epistemic space as something that constantly fluctuates and is impossible to know: the amorphous mixture of the telephone telenetwork, cable network and Internet. Mota, Zanotto & Ruschel (2010) state that the cloud is a representation for the Internet or communication infrastructure between the components of its structure, based on an abstraction that hides the complexity of the infrastructure. Each part of this infrastructure is promoted as a service, usually allocated in data centers, using shared hardware. All computing resources and processing are available on the Internet, so the computer is just a chip connected to the Internet, the great "cloud of computers". In this way, users move their data and applications to the cloud, easily accessible from anywhere.

Development

Taurion (2009) states that the cloud can be seen as a more evolved stage of the concept of virtualization, the virtualization of the data center itself or data processing center. For the author, the cloud is also defined as a set of resources with processing capacity, storage, connectivity, platforms, applications and services made available on the Internet. The Internet as we know it today was only possible with the development of the Web in the early 1990s by British scientist Tim Berners-Lee, who worked at CERN, the European Laboratory for Particle Physics based in Geneva, the WWW (World Wide Web) or simply the Web" (Sanchez, 2003, p. 8). It is the system that allows access to hypermedia content or hypertexts.

> "The simplest approach to hypertext is to describe it, as opposed to a linear text, as a text structured in a network, consisting of nodes (information elements, images, etc.) and links between these nodes indicating the passage from one node to another." (Levy, 1999, p.59).

The Web allows access to hypertexts that reach the browser via the Internet: The Web allows its users to publish texts, images, sounds and other language resources. The environments created with these resources are called multimedia environments and only appeared after the Web was created, because before, the Internet did not support graphic forms, only texts. In order to make the new multimedia environments easily usable, the Mosaic program was created in 1993,

which became known as a “browser”. The browser made it possible to “unite” the Internet and the Web and opened up the network, which until then had been used exclusively by universities and companies. (Sanchez, 2002. P.8) According to Manovich (2002), during the 1990s, the identity of the computer changed. Initially, it was like a simulation of a typewriter, a paintbrush or a drawing ruler, that is, a tool used to produce cultural content, which, once created, would be stored and distributed in appropriate media. However, by the end of the decade, as Internet use became commonplace, the computer was no longer a tool but also a universal media machine, used not only to create but also to store, distribute, and access all media.

Web development

At the beginning of its development, the web, also called Web 1.0, had sites in which only one user could simultaneously write and read. “Although the exact definition is a source of debate, it is believed that it refers to the period when websites were static, not providing interactive content” (Glossary of the Information Society, 2021). The emergence of interactive resources allowed the second generation of development of the World Wide Web 2.0:

> “Web 2.0, a term used to denote several different concepts: sites based on a certain set of technologies, such as AJAX; sites that incorporate a strong social component, involving user profiles, friend links; sites that encourage user-generated content in the form of text, video and photo posting along with comments, tags and ratings; or just sites that have gained popularity in recent years and are subject to feverish speculation about valuations and IPO prospects.” (Cormode, G, 2009, p. 02).

Web 2.0 has developed interactive resources, sharing and collaboration spaces, becoming as alive and real as physical space, with large avenues, streets and alleys.

> “With the transition to Web 2.0, or “Social Web” as it is also called, users began to deal with new digital tools that were based on a new concept, the concept of sharing (“share”), where “read-write” type interactions began to be adopted” (Gil, Henrique, 2014, p.01).

Social networks, blogs and interactive websites emerge with the production of content from many to many, in multidirectional and horizontal communication. According to Di Felice (2017), the Internet has changed our living conditions, disseminating a new type of connective ecology as a reticular architecture, in which each member is, at the same time, composed of the set of information network architectures and a producer of them, according to the emerging principle of “recursive complexity”. Every day, cyberspace becomes busier, with many dissonant voices, growing with each click, with each new link and new node that makes up its structure.

> “Digital technology allowed the packaging of all types of messages, including sound, images and data, creating a network that was capable of communicating its nodes without using control centers.” (Castells, 1998, page 83).

This allows for the deepening and emergence of different forms of interaction, of relating, of producing content, of appropriating spaces, of discussing different aspects of everyday life, such as health, cooking, urban life, entertainment and other fields, such as music, politics and business. Felice (2019) states that with the advent of interactive networks we are witnessing the emergence of a new type of action, no longer performed by the acting subject: “Developed in interactive networks, similar to an “act” (performed technologically, developed in interactions with devices and information circuits) capable of establishing a new form of contractuality, no longer just social and anthropomorphic, but resulting from plural and collaborative dynamics. The reticular dimension of action must therefore be thought of not from the concept of action that refers to a dynamic and transitory action, but from the act, that is, the unpredictable and intense form that develops following connections.” (Felice, 2019, p. 8). Next, we have the transition to the semantic Web or Web 3.0, which consists “essentially of a place where machines can read web pages in the same way as humans, and software agents can better track and find what we are looking for.” (Metz, 2007, p. 01). Thus, the user’s behavior and content are stored and processed by the Internet, which allows for the establishment of a personalized experience. “It is the Web where synchronous communication (“live”) and knowledge will constitute the way of being of its users, always continuing in an environment and context of sharing.” (Gil, 2014, p. 02). The Web has established a new technological paradigm, as it engenders new ways of relating to the social, physical and individual world. “Contemporary society is digital, mediated by mobile devices, computers, image capture, and moving images. This places digital production and virtual space at the center of today’s life. In line with Castells (1999), we consider that society is not determined by technology, nor is it technology that writes the course of technological transformation, since there are many factors, such as creativity and entrepreneurial initiative, that intervene in the process of scientific discovery, so that the final result depends on a complex interactive pattern. Levy (2012) describes collective intelligence as networked knowledge, in which, through virtual communities, it is possible to combine different types of knowledge that cannot be known or done alone, but which can now be done and known collectively.

> “In the process of virtualization, the world changed scale – information was dematerialized, virtual space changed the importance of time and space categories, an immense wealth of information became relatively easily available to users.” (Cvjetièanin, 2008, p. 22).

For Castells (1998), by transforming information processes, new information technologies act on all domains of human activity and enable the establishment of infinite connections in different domains and between the elements and agents of activities. Digital culture becomes part of our practices. Lemos (2009) defines digital culture as "post-mass" and establishes three basic laws or principles to define the information society – which some will call cyberculture, post-industrial society or knowledge society. According to Lemos (2009), there are three basic laws that underlie the cultural process of cyberculture: Liberation of the emission pole, the former "receiver" begins to produce and emit his own information, in a free, multimodal way (various media formats and planetary, the symptom of which is sometimes confused with excess information); The principle of network connection, the use of networks and technologies and information to create local, community and even planetary social bonds; sociocultural reconfiguration based on new productive and recombinatory practices, reconfiguration and remediation of practices and institutions, of the cultural industry, of the productive model. For Lemos (2009), these three basic principles: emission, connection and reconfiguration - allow the understanding of a cultural, artistic, imaginary, subjective, productive, economic and legal reconfiguration in progress.

> "Cyberspace has given rise to two informational devices that are original in relation to previous media: the virtual world and information in flow" (Levy, 1999. P.67).

Levy (1999) states that the virtual world is established on the principle of immersion, in which information is arranged in a continuous space and according to the position of the explorer or his representative within this world. Information in flow designates data in a continuous state of modification, dispersed among memories and interconnected channels that can be traversed, filtered and presented to the cybernaut with their instructions. According to Levy (1999), there are 3 major categories of communication devices in relation to the relationship between the participants in communication: one-all, one-and-all. Unlike television, radio and print, which are communication devices with a one-to-all structure, the telephone is one-to-one. "The Internet is a means of communication that allows, for the first time, communication between many and many, at a chosen time, on a global scale" (Castels, 2013, p. 8).

> "Cyberspace makes available an original communication device, since it allows communities to progressively and cooperatively constitute a common context" (Levy, 1999,p.68).

According to Cazeloto & Tribinho (2009), in the new technological situation in the area of information and communication, computer science, in its dimensions as a producer of hardware and software; telematics, as a computerized telecommunications network, interconnected nationally and internationally; and microelectronics, are integrated, in which numerous and distinct services operate. Numerous and distinct services operate on this technological infrastructure, among them: the Internet, museums, archives, libraries, printed, electronic and virtual editorials, advertising, newspapers, magazines, radio, cinema and TV. Thus, convergence has been eliminating the limits between the media, making them solidary in operational terms, eroding the traditional relationships they maintained between themselves and with their users. The infrastructure of the digital network has allowed the emergence of the culture of convergence.

> "Digital technology has made it possible to use a common language: a film, a telephone call, a letter, a magazine article, any of these can be transformed into digits and distributed by telephone wires, microwaves, satellites or even by a physical recording medium" (Cazeloto & Trivinho, 2009, p.26).

The networked computer acts like a telephone in providing real-time person-to-person communication; like a television in broadcasting movies; like an auditorium in gathering groups for lectures and discussions; like a library in offering a large number of reference texts; like a museum in its orderly presentation of visual information; like a bulletin board, a radio, a game board; and even like a manuscript in reinventing the scrolls of text. "Every major form of representation of the first 5,000 years of human history has now been translated into digital form" (Murray, 2003, p. 41).

THE CONVERGENCE

Second, Jenkins (2009), convergence involves a transformation in both the way of producing and consuming the media. "If the old consumers were isolated individuals, the new consumers are more socially connected. If the work of media consumers was once silent and invisible, the new consumers are now loud and public. Media producers are responding to these newly empowered consumers in contradictory ways, sometimes encouraging change, sometimes resisting what they see as renegade behavior. And consumers, in turn, are perplexed by what they interpret as confusing signals about the amount and type of participation they can enjoy." (Jenkins, 1999, p. 47) A culture of connection has emerged, in which almost 60% of the world's population is connected to the Internet, 43% of whom are connected to social networks. Users are connected, consuming and/or producing content, in a network. Consumers, previously without spaces of their own for participation, resigned to the role of spectator and audience, are reconfiguring their role and taking up spaces of expression and scope in the media.

> "The reticular organization of information and the incorporation of a series of functions that increase the possibility of the user interacting with shared documents begin to materialize the idea of hypertext. The ability to create networks is one of the fundamental components of new forms of communication." (Scolari, 2008).

Through dedicated channels or participatory resources available on various online platforms, the public is encouraged to give their opinions, submit content and participate in the formation of contemporary narratives. Networking allows the boundaries between creators and the public to become less defined, in a reticular and multimodal structure, allowing for a non-hierarchical model. The network enables rapid and previously unimaginable collective intelligence, from the point of view of the enormous amount of content, immediate participation and the capacity for recording.

> "An emerging hybrid model of circulation can be delimited, a mix of top-down and bottom-up forces that determine how material is shared, across and between cultures, in a disorganized and much more participatory way, so that individual decisions about whether to pass on texts or not are reshaping the media landscape." (Ford, Green & Jenkins, 2012).

Understanding convergence also means understanding multimedia, which according to Scolari (2013) is one of the fundamental elements of digital life.

> "This aspect of digitalization has favored the convergence of all types of information on a single support, images, sounds, words, a textual package that embraces all imaginable media and languages" (Scolari, 2013).

Levy (1999) considers that it would be more correct, from a linguistic point of view, to speak of multimodal information or messages, since they bring into play several sensory modalities (vision, hearing, touch, proprioceptive sensations) and refer to the general movement of digitalization, the integration of all media that moves towards interconnection. Levy (1999) gives the example of a film launch that occurs simultaneously with the launch of a video, the showing of a television series, the production of t-shirts and toys, we are identifying a multimedia strategy. Scolari (2013) states that concepts such as multimedia refer to the convergence of media and languages, but not all digital communication products and services are multimedia and hypertextual to the same extent. To better visualize the different practices of interactive digital communication. Convergence also has other meanings when it comes to the distribution of content across different platforms: The first definition of media convergence involves the technological merging of content across different media channels—magazine articles, radio shows, music, TV shows, video games, and movies are now available on the Internet via laptops, tablets, and smartphones. A second definition of media convergence—sometimes called cross-platform by media marketers—describes a business model that involves the consolidation of multiple media holdings, such as cable connections, telephone services, broadcast television, and Internet access, under one corporate umbrella. (Fabos, Martin & Campbell, (Fabos, Martin & Campbell, 2016, p. 53) According to Jenkins (2012), media convergence is more than just a technological change; it alters the relationship between existing technologies, industries, markets, genres and audiences. It refers to a process, not an end point. And it alters the logic by which the media industry operates and by which consumers process news and entertainment. Television, radio, newspapers, and telephone calls are on the Web. The content of one media crosses over to the others, through various platforms and subjects that complement each other and foster interactivity. The audience is simultaneously seduced on different platforms that enable public interaction. Content producers seek followers and active audiences through the network, aiming to have their content shared, commented on and liked. "We are witnessing the erosion of traditional boundaries between fans and activists, between creativity and disruption, between niche and mainstream, between commercial and genuine, between fans and and producers" (Ford, Green & Jenkins, 2013. P.55). Lemos (2009) states that we are living in a recombinant territory, and the novelty is not so much the recombination, since every culture is first and foremost hybrid, but the form, speed and global reach of a culture that recombines, appropriates and mixes elements. Camargo (2016) considers that the new media is glocal (global and local) and that individuals can expand their autonomy through the evolution of the memory function, whose properties are based on scientific discoveries, such as multimedia, interactivity and digital code.

The term new media or new technologies has always given rise to much debate, as it suggests a rupture and separation of the media. In our view, this connotation can be misleading, since media and technologies are not mutually exclusive, but rather coexist and renew themselves. "What we roughly identify as new technologies actually encompasses the multifaceted activity of human groups, a complex process that crystallizes above all around material objects, computer programs and communication devices" (Levy, 1999, p. 30). "Each old medium has been forced to coexist with emerging media, which is why convergence seems more plausible as a way of understanding the last ten years of transformations in the media than the old paradigm of the digital revolution. Thus, the functions and status of the old media have been transformed" (Jenkins, 2009, p. 43). However, Ferreira (2018) considers that the option for the term new media brings together in a single concept several characteristics such as digital, online, network (or internet), databases, virtual reality, which would be effective in translating dynamism and the current change in the reality of the media. According to Jenkins (2009), old media never die or disappear; what dies are the tools we use to access their content, for example, cassette tape, Betacam, CDS, mp3 files. These tools are the distribution technologies (delivery technologies) that become obsolete and are replaced. "Distribution systems are simply technologies; media are also cultural systems." (Jenkis, 2009, p. 43). For Ford, Green & Jenkins (2012), the new platforms and the facilitations of digital media function as catalysts for the reconceptualization of other aspects of culture, requiring that social relations be rethought and that we

imagine cultural and political participation in a different way. For Castells (2003), the Internet has become the technological basis for the organizational form of the Information Age: the network. Castells (2011) calls the use of the Internet and wireless networks as digital communication platforms self-communication, and defines it as mass communication, as it processes messages from many to many, with the potential to connect to an endless number of networks that transmit information around the world. With the production of the message decided autonomously by the sender, the designation of the receiver is self-directed and the retrieval of messages from the communication networks is self-selected. For Lemos (2009), we are in a "recombinant territory", in a "remix cyberculture" that fosters new recombinatory practices in contemporary cities.

Conclusion

The virtualization of social, communicational and cultural practices does not represent only a technological change, but rather a profound reconfiguration of the way we live, interact and produce meaning. Digital culture, characterized by interactivity, active participation and media convergence, expands the potential for action of individuals, integrating local and global elements into a glocal dynamic. The emergence of digital platforms and the development of the Web in its different generations (1.0, 2.0 and 3.0) have established new multimodal, collaborative and networked environments, where knowledge is constructed collectively. As Lévy, Jenkins and Castells state, we are facing a new communicational and cognitive ecology, which requires rethinking concepts such as media, authorship, audience and participation. Media convergence and the culture of connection thus become central elements for understanding contemporary times and their challenges.

Bibliography

Castells, M. (1998). *The network society* (Vol. 1). Peace and Land.

Castells, M. (2003). *The Internet Galaxy: Reflections on the Internet, Business and Society*. Zahar.

Castells, M. (2011). *Communication and power* . Zahar.

Cormode, G. (2009). Web 2.0: *Concepts and technologies* . Foundations and Trends in Web Science.

Cvjetićanin, B. (2008). *Dynamics of communication: New ways and new actors*. Culturelink.

Di Felice, M. (2017). *Net-activism: The new form of political action*. Sulina.

Felice, MD (2019). *Net-activism: New practices of political participation*. Sesc Editions.

Ford, S., Green, J., & Jenkins, H. (2013). *Connection Culture: Creating Value and Meaning through Pervasive Media*. Aleph.

Guimarães, LP (2024). *Interactive narratives: the web documentary as an audiovisual genre* [PhD thesis, Lusófona University of Porto]. Scientific Repository of the Lusófona University. http://hdl.handle.net/10437/15050 recil.ulusofona.pt

Gil, H. (2014). *Changes in communication: from Web 1.0 to Web 3.0*. Digital Communication Journal.

Jenkins, H. (2009). *Convergence Culture*. Aleph.

Jenkins, H. (2012). *Convergence Culture: Where Old and New Media Collide*. Aleph.

Levy, P. (1999). *Cyberculture*. Publisher 34.

Lemos, A. (2009). *Cyberculture: technology and social life in contemporary culture*. Sulina.

Manovich, L. (2002). *The Language of New Media*. MIT Press.

Metz, C. (2007). *Web 3.0: The semantic web*. *Technology* Review.

Mota, FM, Zanotto, AL, & Ruschel, RC (2010). *Cloud computing and its applications*. Information Technology Journal.

Sanchez, M. (2002). *The construction of the Web: history, concept and structure*. Famecos Magazine.

Scolari, C. (2008). *Hypertext and hypermedia*. Perspectives on Digital Communication.

Scolari, C. (2013). *Transmedia Storytelling: When All Media Count*. Sulina.

Taurion, C. (2009). *Cloud Computing: Transforming the world of IT*. Brasport.