pensar
Revista de Ciências Jurídicas
Universidade de Fortaleza
e-ISSN:2317-2150
doi 10.5020/2317-2150.2024.16834

Dynamics of the contemporary information society: analysis of data capture on digital platforms and its sociocultural implications*

Dinâmicas da sociedade informacional contemporânea: análise da captação de dados em plataformas digitais e suas implicações socioculturais

Dinámica de la sociedad informacional contemporánea: análisis de la captación de datos en plataformas digitales y sus implicaciones socioculturales

Jaqueline da Silva Paulichi**
Valeria Silva Galdino Cardin***

Abstract

This study analyzes the dynamics of the contemporary information society, emphasizing data capture and mining on digital platforms. Thus, the impact of digital technologies on social, and cultural relationships and individual identity is investigated. The central focus of this article will be to understand how the practice of data collection by large technological corporations, the so-called Big Techs, affects the behavior, privacy, and autonomy of individuals in the network society. The research reveals the ambivalence of digital technology, in which, on the one hand, digital technologies present democratizing potential, connecting people globally. On the other hand, the massive collection of data by technology companies raises significant concerns about privacy and behavioral influence, posing ethical and legal challenges. In this way, it is clear that the contemporary information society is complex and multidimensional, with data capture on digital platforms having a profound impact on the social structure. The study points to the need for solutions that promote a fairer, more equitable, and transparent society, balancing the benefits of technology with the protection of privacy and individual autonomy. The qualitative method was used in this article, through the bibliographic research technique.

Keywords: informational society; cyberspace; big techs; privacy.

Resumo

O presente estudo analisa a dinâmica da sociedade informacional contemporânea, com ênfase na captação e mineração de dados nas plataformas digitais. Assim, investiga-se o impacto das tecnologias digitais nas relações sociais, culturais e na identidade individual. O foco central deste artigo será o de entender como a prática de coleta de dados por grandes corporações tecnológicas, as chamadas Big Techs, afeta o comportamento, a privacidade e a autonomia dos indivíduos na sociedade em rede. A pesquisa revela a ambivalência da tecnologia digital, em que, por um lado, as tecnologias digitais apresentam potenciais democratizadores, conectando as pessoas globalmente. Por outro, a coleta massiva de dados por empresas tecnológicas levanta preocupações significativas sobre privacidade e influência comportamental, representando desafios éticos e legais. Desse modo, percebe-se que a sociedade informacional contemporânea é complexa e multidimensional, com a captação de dados em plataformas digitais impactando profundamente a estrutura social. O estudo aponta para a necessidade de soluções que promovam uma sociedade mais justa, equitativa e transparente, equilibrando os benefícios da tecnologia com a proteção da privacidade e autonomia individual. Utilizou-se o método qualitativo neste artigo, por meio da técnica de pesquisa bibliográfica.

Palavras-chave: *sociedade informacional; cyberespaço; big techs; privacidade.*

* Artigo traduzido por Inteligência Artificial.

** PhD in Legal Sciences from Unicesumar. Master in Legal Sciences. Specialist in Public Law; Specialist in Civil Law and Civil Procedure. Specialist in Applied Law from EMAP-PR. Postgraduate in active methodologies in higher education. Researcher. Professor of Civil Law and Civil Procedure at the Undergraduate and Graduate levels. Extrajudicial Mediator. Lawyer.

*** Post-Doctorate in Law from the University of Lisbon; PhD and Master in Social Relations Law from the Pontifical Catholic University of São Paulo; Professor at the State University of Maringá and in the Graduate Program of Doctorate and Master's Degree in Legal Sciences at the University of Cesumar; Researcher and ICETI Productivity Fellow; Lawyer in Paraná.

Resumen

El presente estudio analiza la dinámica de la sociedad informacional contemporánea, con énfasis en la captación y minería de datos en las plataformas digitales. Así, se investiga el impacto de las tecnologías digitales en las relaciones sociales, culturales, y en la identidad individual. El enfoque central de este artículo será el de entender cómo la práctica de recogida de datos por grandes corporaciones tecnológicas, las llamadas Big Techs, afecta el comportamiento, la privacidad y la autonomía de los individuos en la sociedad en red. La investigación revela la ambivalencia de la tecnología digitales, en que, por un lado, las tecnologías digitales presentan potenciales democratizadores, conectando las personas globalmente. Por otro, la masiva recogida de datos por empresas tecnológicas levanta preocupaciones significativas sobre privacidad e influencia comportamental, representando retos éticos y legales. De este modo, se nota que la sociedad informacional contemporánea es compleja y multidimensional, con la captación de datos en plataformas digitales impactando profundamente la estructura social. El estudio indica para la necesidad de soluciones que promuevan una sociedad más justa, equitativa y transparente, equilibrando los beneficios de la tecnología con la protección de la privacidad y autonomía individual. Se utilizó el método cualitativo en este artículo, por medio de la técnica de investigación bibliográfica.
Palavras-chave: *sociedad informacional; ciberespacio; big techs; privacidad.*

1 Introduction

The present study aims to investigate the dynamics of the contemporary informational society, with a specific focus on the capture of user data by digital platforms. This theme is explored in light of the contributions of thinkers such as Manuel Castells, Shoshana Zuboff, and Pierre Levy, who provide a theoretical framework for understanding the intersection between technology, society, and culture in the digital age.

The central problem of this research lies in understanding how data collection on digital platforms impacts social relations, culture and individual identity in contemporary society. It seeks to answer the question: how do data collection practices by *Big Techs* influence the behavior, privacy, and autonomy of individuals in the networked society?

The choice of this theme is justified by the growing relevance of digital platforms in everyday life and the transformation that technology imposes on social and individual structures. With the ubiquity of the internet and the rise of surveillance capitalism, it becomes crucial to understand the consequences of this new reality, both for the formulation of public policies and for the development of ethical practices in the technological field. This study will adopt a qualitative approach, drawing on the analysis of pertinent academic literature, including works by sociologists, philosophers, and technology experts. A methodology of bibliographic and documentary research will be employed, with critical analysis of theoretical texts and secondary data on the use of digital technologies and their social implications.

The article is structured in five main sections. After this introduction, the second section presents a theoretical review of the informational society and the role of digital technologies. The third section discusses data collection on digital platforms and its implications. In the fourth section, the social and cultural consequences of this phenomenon are addressed. Finally, the fifth section brings the conclusions, final reflections and suggestions for future research.

2 The informational society in contemporary times and the capture of data from users of digital platforms

The connected society is a manifestation of contemporaneity. Several scholars on the subject evoke terminologies that describe this phenomenon. Manuel Castells (2016) uses the expression "Networked society", Klaus Schwab (2019) evokes the fourth industrial revolution, marked by the acceleration of new communicative technologies, while Pierre Levy (1999) deals with "cyberspace" and "cyberculture".

Donna Haraway (1985) questions the scenario of the relationship between humans and machines in her *Cyborg Manifesto*. Byung-Chul Han speaks from the works *Society of Fatigue* (2015), *Digital Swarm* (2018) and *Infocracy* (2022) to describe contemporary society, marked by acceleration, optimization and productivity promoted by technological facilities. Shoshana Zuboff (2021) analyzes contemporaneity through the lens of surveillance capitalism that is exercised by *Big Techs.* Klay Shirky (2010) analyzes the topology of networks in which usersbecome consumers, in addition to the union between different people to explore their cognitive and creative capacities.

Zygmund Bauman (2001) addresses the theme of the liquidity of social relations in his work *Liquid Modernity*, and consumerism in *Lives for Consumption* (2012). As a whole, the works seek categories of analysis of contemporary society, marked by the acceleration and fluidity of social relationships.

The *Network Society* is a work that brings the theory developed by the Spanish sociologist Manuel Castells (2016) to describe the social structure and dynamics of contemporary society. The expression designates both the connected society and the era of the information society. Jorge Werthein (2000, p. 71) reflects that the expression "information society" began to be used as a substitute for the concept of "post-industrial society", "as a way of transmitting the specific content of the "new technical-economic paradigm".

The network society is a form of social organization that emerges from the convergence of information technology and economic globalization. This new form of society is characterized by an interconnected global network of communication and information, which permeates all aspects of social life, including the economy, politics, culture, and personal relationships. Communication and information technologies, such as the internet, social networks, and mobile devices, are fundamental for the constitution of this network. In this sense, Castells (2016, p. 57) mentions that "new information technologies are integrating the world into global networks of instrumentality". Communication technologies enable the convergence of information. These technologies include "the convergent set of technologies in microelectronics, computing (*software* and *hardware*), telecommunications/broadcasting, and optoelectronics"

(Castells, 2016, p. 66). Castells (2016) also includes in this list "genetic engineering and its growing set of developments and applications". In this sense, technology has expanded "due to its ability to create an interface between technological fields through a common digital language in which information is generated, stored, retrieved, processed, and transmitted" (Castells, 2016, p. 68). As a result, the world has become digital, which allows us to speak of the emergence of the era of digitalization of social relations and life.

Technological advances and flexibility have been fundamental for the processes of deregulation, privatization, and the rupture of the social contract model between capital and labor – characteristics of industrial capitalism – to be carried out quickly and efficiently by organizations. The transition towards the information society, which is already an advanced reality in industrialized countries, is increasingly becoming a dominant trend in other less industrialized economies, defining a new paradigm – information technology – which reflects the current technological transformation in its relations with the economy and society. In this sense, technology is profoundly changing the way organizations and the economy work, becoming increasingly important and opening up new possibilities for the future (Werthein, 2000).

Thus, what characterizes the technology revolution is the application of new knowledge, and its application in information processing and communication devices, which generates a cycle of "cumulative feedback between innovation and its use" (Castells, 2016, p. 69). In this way, new technologies have developed from their own use, in a kind of "learning by doing". Castells (2016, p. 76) also mentions that "in the 1970s, new information technologies spread widely, accelerating their synergistic development and converging in a new paradigm".

Thus, Castells (2016, p. 124) clarifies that the first point to be analyzed for this paradigm shift is information, by stating that technologies act on it and "not just information to act on technology, as was the case with previous technological revolutions". The new paradigm pointed out refers to the performance of each person in society, as access to information has made the subject responsible for himself in the labor market, or even in the network society.

According to the sociocultural paradigm of contemporaneity, knowledge is considered both a means of emancipation of individuals and a powerful form of social regulation. Knowledge of natural and social laws allows for mastery of these aspects of life. The connection between knowledge and power is unprecedented, and both capitalism and the mechanisms of social regulation have incorporated knowledge into their own processes, making them more rational and integrating rationalization into their productive and organizational processes. In this context, the centering of the education process on the individual is, in the final analysis, a kind of condemnation: "when trained to be an individual, individuality becomes the burden of oneself" (Stoer; Magalhães, 2003, p. 1188).

The second reason for the paradigm shift is the penetrability of the effects of new technologies. In this way, "as information is an integral part of all human activity, all the

processes of our individual and collective existence are directly shaped (although certainly not determined) by the new technological medium" (Castells, 2016, p. 124). This second element refers to the possibility of changing the behavior of a given social group based on the use of new technologies. As an example, the increase in the number of aesthetic facial procedures that has occurred in recent years due to the use of social networks that apply beautifying filters to the personal photos of their users (França, 2022).

Regarding the consumer society, Bauman (2012) points out that it is configured as a type of society that encourages a consumerist lifestyle and strategy and rejects all other forms. This consumer society represents a set of existential conditions, in which people embrace a consumerist culture, and obey the precepts of this culture with dedication. Such a society challenges its members in the sole condition of consumers and, therefore, society expects its consumers to obey it faithfully. From this situation, it follows that "the places obtained or allocated in the axis of excellence/ineptitude of consumerist performance become the main factor of stratification and the greatest criterion of inclusion and exclusion, as well as guiding the distribution of appreciation and social stigmas, and also of slices of public attention" (Bauman, 2012, p. 67).

Contemporary society is primarily focused on consumption, which significantly impacts interpersonal relationships and personal identities. Exaggerated consumption and the possession of material goods have become overvalued, generating the search for personal satisfaction to the detriment of the deepening of social ties and collective responsibilities. Digital media and advertising as a whole play a crucial role in creating people's desire to consume, which leads them to believe that "having" goods and possessions is more valuable than "being". This question is also raised in the work of Erich From (1979), in which the author explores the dichotomy that exists in the two forms of existence that shape human nature, "having" and "being". Contemporary culture, influenced by the media, advertising and consumption, idolizes the search for the possession of material goods and the prestige that comes from this possession, to the detriment of personal development and individual fulfillment.

The third point, presented by Castells (2016), is the logic of networks that use new information technologies. The network topology is able to handle the increasing complexity of interactions and unpredictable models in human development. This framework is well adapted to this complexity and can be implemented in all types of processes and organizations thanks to recent information technologies. Communication technologies have made it possible for the costs of reproducing information to become derisory. In this way, ubiquitous computing – (or computational ubiquity) which is characterized by the convergence of mobile devices, such as smartphones, applications, wireless communication and the internet – is reflected in contemporary society as a force for the constitution of innovative forms of interaction and collaboration, which increasingly boosts knowledge (Weiss, 2019).

The fourth point of the information technology paradigm is flexibility. In this sense, the configuration of networks can be implemented in all forms of processes and organizations due to new information technologies. The new technological paradigm has the ability to adapt and reconfigure. This flexibility of adapting the logic of the networks is established both as a means of defining the rules of their operation and as a means of repression, since the rules for their operation can be elaborated both by the platforms themselves and by the State[1] (Castells, 2016).

William Mitchel (2005) mentions that the technological context of the network society is established by a wave of new technologies, as well as the new uses that are made between them. The list invoked by Mitchell (2005, p. 323) is from *Lemelson – MIT (Massachusetts Institute of Technology) from 2005*. The technologies listed are:

> 1. the internet; 2. the mobile phone; 3. the personal computer; 4. Optical fiber; 5. e-mail; 6. GPS commercial; 7. Laptops; 8. Portable memory disks; 9. Family digital cameras; 10. RFID (radio frequency identification); 11. MEMS (Micro-electrical Mechanical Systems); 12. DNA fingerprinting; 13. Air Bags; 14. ATMs; 15. Advanced batteries; 16. Hybrid cars; 17. OLEDs (electronic paper); 18. Monitors; 19. High Definition Television; 20. Space Shuttle; 21. Nanotechnology; 22. Flash memory; 23. Voice-mail (call recorder); 24. Auxiliaries

Already in the year 2023, some technologies can be listed as the most prominent. David Rotman (2023) mentions *ChatGPT,* which promises to revolutionize the way people create content and the economy as a whole. Such technology makes it possible to create texts, in the most diverse formats and on the most different subjects, through commands given by the user. Douglas Heaven (2023) highlights the importance of artificial intelligence systems that create images from commands. Sophia Chen (2023) highlights the *"Risk-V" chip*, whose technology is free to use for any purpose, which allows any person or company to use it, without having to pay for the license to use it. Thus, new technologies become part of people's daily lives, which helps development and the economy.

Castells (2016) argues that the network society presents new challenges and opportunities for politics, economics and culture. The author emphasizes the importance of citizen participation and the construction of a democratic culture for the success of the network society. On the other hand, Castells warns of the risks of inequality and exclusion that may arise as a result of the expansion of information and communication technologies. Thus, the network society is a form of social organization that is characterized by the global interconnection of information and communication technologies, promoting new forms of social

[1] Regarding this issue of the regulation of digital platforms, this thesis will return to the subject in the section that deals with regulated regulation and in the proposal of a lege ferenda with regard to digital inheritance. To do so, see item 5.4 hearing; 25. Short range radio frequency.

coordination and new challenges for politics, economics and culture.

Information technology convergence is a process through which different technologies such as telecommunications, information technology, media, and electronics come together into a single integrated system. This means that the technologies, once distinct, now share resources and interact with each other to provide new services and possibilities for users. Convergence also allows for the creation of new forms of communication and collaboration, such as video conferencing and social media, which allow people to interact in real time, regardless of geographic location. This phenomenon has a significant impact on many sectors, including the economic, cultural and social sectors, creating new opportunities for the development of new businesses, the improvement of efficiency and the expansion of access to information and culture.

Fluid, horizontal social relations are opposed to the hierarchical and vertical social relations that were prevalent in many societies of the past. Fluid and horizontal relationships refer to the fact that the connections between people in the networked society are more dynamic and changeable than in traditional hierarchical societies. This is because information technology allows people to connect and interact with a much larger number of individuals, regardless of geographical and cultural barriers.

People can make and break connections quickly and easily, and this can lead to a greater diversity of viewpoints and experiences in life. In this sense, networks are created to improve communication. Thus, it is possible that the logic of the networks is inverted to adapt to the technological reality. Castells (2016, p. 125) mentions that it is essential to "maintain the distance between the evaluation of the emergence of new forms and social processes, induced and facilitated by new technologies, and the extrapolation of the potential consequences of this advance for society and people".

The fifth characteristic is the growing "convergence of specific technologies into a highly integrated system, in which old trajectories are literally impossible to distinguish separately" (Castells, 2016, p. 125). All technological components of communication have become integrated into information systems. Thus, telecommunications are a form of information processing that is more diversified and integrated in the same network.

Communication technologies have great impacts on society, as they enable the emergence of new content and different forms of communication. Advances in the area of technology have stood out as important factors for the increase of social life, both in its material and immaterial dimensions, including the playful, personal and imaginary dimensions. Virtual communities gather around specific interests or regional and global topics, regardless of their relevance, and create virtual boundaries that transcend geographical boundaries.

Contemporary society as a society that widely uses Information and Communication Technologies (ICT) to communicate and interact. This cybernetic society is

characterized by online interactions between groups, which vary in degrees of anonymity and affective bonds, and who surf the internet daily. This society has grown rapidly and is present everywhere and at any time, engaging in demonstrations, discussions, actions and movements of all kinds, both positive and negative (Weiss, 2019).

Castells (2016, p. 126) mentions that "the development of the internet is inverting the relationship between circuit switching and packet exchange in communication technologies, so that data transmission becomes the predominant and universal form of communication". The last century developed the informational economic era or, to adapt to the terminologies most used today, the information society. Thus, society is informational, because the competitiveness and productivity of units or agents depend on their ability to generate and manage information.

This society is also global, since "the main productive activities, consumption and circulation, as well as its components (capital, labor, raw materials, administration, information, technology and markets) are organized on a global scale, directly or through a network of connections between economic agents" (Castells, 2016, p. 136). Finally, Castells (2016) also mentions the characteristic of the "network", as the productivity generated and competition occur in an interconnected network.

In this sense, digital technologies are acting in order to capture all this information, making it the product of a society marked by the data economy. Thus, "the emergence of a new technological paradigm organized around new, more flexible and powerful information technologies makes it possible for information itself to become the product of the production process" (Castells, 2016, p. 136).

Based on the reflections of Castells (2016), a fundamental transition in communication technologies is observed, marked by the predominance of data transmission over traditional forms of circuit switching. This phenomenon signals the emergence of the information society, an era where the generation and management of information are crucial for competitiveness and productivity.

In this context, contemporary society is characterized not only by its informational nature, but also by its globality and networked interconnectivity. Such characteristics are reflected in the way in which the main productive activities and their components are organized globally, either directly or through a network of connections between economic agents. The relevance of digital technologies, in this panorama, is undeniable, acting as catalysts that capture and transform information into essential products of the data economy. Therefore, the current configuration of society, as outlined by Castells, emphasizes information as the central product of the production process, driven by a new technological paradigm supported by more flexible and powerful information technologies.

3 Data mining by digital platforms and its implications for society

The capture of information from network users is the phenomenon pointed out by Zuboff (2021) by surveillance capitalism. As a result, information has become the most valuable product for large companies operating in the digital environment. In this way, the data collected during the use of digital platforms made the era of "*Big Data*" possible. The term is used to designate a large amount of data, coming from various locations, making it difficult to analyze by human activity. "*Big Data*" has become "the most powerful source for data mining, since it works with large volumes of information and demands faster computers and new analytical techniques to discover hidden and surprising correlations" (Menezes Neto, 2016, p. 164-165). As a result, we have the era of the informational economy, data collection, and the use of people's information as a means of controlling society.

The informational economy is a unique socio-economic system compared to the industrial economy, as it takes advantage of the productivity potential latent in the mature industrial economy, by shifting to a technological paradigm that is based on information technologies. This paradigm has transformed the scope and dynamics of the industrial economy, generating a global economy and driving a new wave of competition between existing economic agents, as well as between them and a host of new competitors. This new competition, led by companies but regulated by the State, has led to important technological transformations in processes and products, making some companies, sectors and areas more productive (Castells, 2016).

Technological transformations have led to the emergence of virtuality. Castells (2016, p. 415) mentions that "[...] Through the powerful influence of the new communication system, mediated by social interests, government policies and business strategies, a new culture is emerging: the culture of real virtuality". This system is one in which "reality itself (that is, the symbolic/material experience of people) is entirely captured, totally immersed in a composition of virtual images in the world of make-believe" (Castells, 2016, p. 459). Virtuality is a means of capturing the user's attention, making him increasingly dependent on digital platforms. Thus, virtuality is a possible phenomenon in the face of digital convergence.

Digital convergence is possible in the face of the phenomenon of the fourth industrial revolution, coined by Klaus Schwab (2019). The economist explains that the fourth industrial revolution is marked by three characteristics: speed, amplitude/depth, and systemic impact. Velocity refers to the pace of growth and innovation, which develop exponentially and non-linearly, which is the result of an interconnected society. The breadth and depth lie in the fact that the fourth industrial revolution uses the digital revolution and the combination of numerous technologies, "leading to unprecedented paradigm shifts in the economy, business,

society, and individuals. The revolution is not only modifying the 'what' and 'how' we do things, but also 'who' we are" (Schwab, 2019, p. 15). Systemic impact refers to the "transformation of entire systems between countries and, within them, in companies, industries, and across society" (Schwab, 2019, p. 15).

In this sense, the fourth industrial revolution provides a society in which physical and virtual systems of manufacturing and creating technologies cooperate globally and flexibly. This cooperation makes it possible to customize products and services, as well as to study and create new operating models. It also has the possibility of merging technologies with the interaction between physical, digital, and biological domains. Digital platforms "bring together people, assets and data, creating entirely new ways of consuming goods and services. They break down barriers for companies and individuals to create wealth, changing personal and professional environments" (Schwab, 2019, p. 35).

As technology becomes more advanced, *Big Techs* need to find new ways to engage users with devices. Customer experience is a serious task for tech companies that provide seamless services through platforms or apps. Simply using these devices can change the way people feel about themselves and potentially motivate them to behave differently. The idea of a networked body working autonomously through datasets is already possible when it comes to new technologies and digital platforms (Fornasier, 2021).

While the press glorifies automation, algorithmic systems, and deep learning, there are also alarms about the opacity and ambiguity of these systems. Media communications about technological possibilities are not only poetic, but reflect the collaboration between the military-industrial complex and the American cultural industries. Wearable self-tracking devices offer new ways to facilitate research, but they also create conflicts between individual and collective interests. It is necessary to recognize the relationship between users and data controllers as a fiduciary relationship to protect users' privacy and ensure collective participation in improving digital health applications (Fornasier, 2021).

Thus, there is the democratization of digital platforms, driven by wide access to the internet, as well as the facilitation of using applications through a *smartphone.* The breadth of the technological revolution is such that it will unfold into economic and social changes. "The disruption that the fourth industrial revolution will cause to current political, economic, and social models will require empowered actors to recognize that they are part of a system of distributed powers that requires more collaborative forms of interaction in order for it to thrive" (Schwab, 2019, p. 45).

The era of the fourth industrial revolution enabled digital communication, which is characterized "by the fact that information is produced, sent, and received without mediation through intermediaries" (Han, 2018, p. 21). People are no longer the "passive recipients and consumers of information, but rather active senders and producers" (Han, 2018, p. 21). In this

sense, users of digital platforms receive and send data and other information at all times, forming an informational and systemic network, which contributes to the formation of *Big Data*[2].

These changes have created the need for companies to adapt, in the face of growing transparency and the impacts on people's consumption and behavior patterns. Thus, companies began to adapt their *design,* advertising and delivery of new products and services. Schwab (2019, p. 73) mentions that the fourth industrial revolution impacted business significantly, "as an inexorable shift from the simple digitalization that characterized the third industrial revolution to a much more complex mode of innovation based on the combination of various technologies in new forms".

In this sense, the fourth industrial revolution made it possible to change social relations, amplifying access to digital communication networks and making them fluid and horizontal, which represents the decentralization of the internet and the democratization of technologies. All this is possible in the face of the breadth of cyberspace and cyberculture, in which social relations are developed within the scope of the internet.

Pierre Levy (1999, p. 16) addresses the issue of cyberspace, calling it "the new means of communication that arises from the worldwide interconnection of computers". The author also uses the term "network" to refer to cyberspace, explaining that the "term specifies not only the material infrastructure of digital communication, but also the oceanic universe of information that it houses, as well as the human beings who navigate and feed this universe". In this way, digital technologies have emerged as a new infrastructure of cyberspace, which is a place of communication, sociability, commercial transactions, and a new market of information and knowledge.

In this scenario, cyberspace comprises both human beings and information, as well as the so-called "strange beings, half texts, half machines, half actors, half scenarios: the programs" (Levy, 1999, p. 41). Thus, Levy (1999) defines that the word "virtual" can be interpreted in three different senses. They are the technical sense, the current sense and the philosophical sense.

In the technical sense, the word has the meaning of informatics. In current usage, what is "virtual" can be used to refer to an unreality, the intangible or the immaterial. In the philosophical sense, what exists only in potency, but not in act, "the field of forces and problems that tends to be resolved in an update" (Levy, 1999, p. 47) will be virtual. Thus, in the philosophical sense, the virtual is a dimension of great relevance of reality. Levy (1999, p. 48) clarifies that "strictly speaking, in philosophy the virtual is not opposed to the real, but to the

---

[2] According to Manyka et al. (2011), the term "*Big Data*" refers to a large number of data stored on a Platform, whose capture, storage, treatment and analysis are only possible through *Software* Smart. According to the aforementioned authors, it should also be noted that "*Big Data refers to datasets whose size is beyond the ability of typical database software tools to capture, store, manage, and analyze*". In free translation into Portuguese: "Big dDta refers to data sets whose size is beyond the capacity of typical tools of *software* database to capture, store, manage, and analyze."

actual: virtuality and actuality are just two different modes of reality".

One of the characteristics of cyberspace is the ubiquity of information, in the presence of interactive documents in the "cloud", the reciprocal and real-time telecommunication that unites people and groups. Thus, in the context of cyberspace there are the characteristics of what is virtualizing and what is deterritorializing, making it an open universe. Cyberspace is the space of communication open to the worldwide connection of computers and their memories. This definition includes the "set of electronic communication systems (including sets of radio and classical telephone networks), insofar as they transmit information from digital sources or destined for digitization" (Levy, 1999, p. 96). The author also mentions digital coding, which conditions the plastic, fluid and calculable character precise in real time, which is the main characteristic of cyberspace.

In the network society, social relations are more fluid and horizontal, contrary to the classic normative structure of society, which is hierarchical and vertical. In this way, social networks replace traditional hierarchical organizations as the main form of social coordination. People connect and communicate in a network, forming virtual communities around shared interests and values, regardless of geographical and cultural barriers. The hyperconnected society (Magrani, 2018) provides this structural change, in which users of digital platforms find themselves in equal situations regarding participation in democratic acts.

Thus, in order for society to remain hyperconnected, the theory of attention economics is used. At this point of the research, the descriptive technique is applied, in which it seeks to describe the phenomenon and, later, through the technique of theoretical and legal-comprehensive research, the relationship of this theory with the surveillance society will be carried out.

The attention economy is a concept that describes the increasing competition for attention in an increasingly connected and distraction-filled world that works as follows: companies and individuals compete for attention in an increasingly information-saturated marketplace. In this market, attention has become a *valuable* and limited commodity, and those who manage to capture and maintain attention are those who succeed in their business (Davenport; Beck, 2001).

Companies and *marketers* try to capture attention with advertisements, relevant content, and social media engagement strategies. At the same time, social media and other digital platforms compete for attention, through features such as notifications and personalized *feeds*. The challenge for consumers is to manage and protect their own attention in an increasingly information-overloaded world. For companies, the challenge is to develop effective strategies to capture the attention of consumers and keep them engaged in their messages and products (Davenport; Beck, 2001).

Tim Wu (2012) mentions that the discovery of the attention market developed after

the popularization of radio and, later, TV in the United States, in which it was necessary to create entertainment so that people could continue to use their televisions. Thus, the attention market continues to be a method for companies operating in the field to develop their products and services in order to capture more and more attention from their users, making them stay longer using the product.

In this sense, digital platforms are of great importance to hold people's attention and, consequently, data capture. Such digital platforms include social networks, *smartphone* applications, *product* and service purchase sites, news portals, *"cloud" file storage sites, among others.*

Human life is undergoing an endless transformation through technoscience and innovations in relation to data capture and other personal information. Social networks are already present in the daily life of anyone who has an email account or *Whatsapp* account. In this way, cyberspace enables virtual and digitized life, in which people are encouraged to increasingly enter their data on digital platforms, as a means of accessing some service or product.

Pierre Levy (1999) analyzes that telecommunications generate a kind of deluge, as they have an exponential, explosive and chaotic nature of growth. As a result, the amount of data multiplies and accelerates in the face of the density of *links* that are sent to users in the midst of the information, which increases the database of *Big Techs*. The same occurs through the use of social networks, which are used as a means of communication, and can be defined as "a platform, based on the internet, for the construction of social networks or social relationships between people who, for example, wish to share interests, activities or real-life connections" (Hirata, 2014, p. 18).

In this sense, social networks are an important tool for communication and dissemination of information, as they enable interaction between individuals, who are no longer limited to a geographical space, and can increase the reach of the information shared (Lemos, 2003). Networks have the ability to accumulate various personal data of users, which provide details of their life and personal preferences, helping in the creation of a digital profile. Thus, it can be seen that social networks have a great influence on human life, since society is converging to the digital environment, which even impacts human behavior.

Raquel Recuero (2009) clarifies that networks are structural metaphors, which are ways of analyzing social groupings and their structure. Thus, the social networks present on the internet also have their own structures and outlines.

Through the use of digital platforms, and especially networks, it is possible to extract user data and transform it into spreadsheets that have deep information about each person's browsing habits. This is the era of *Big Data*, in which *Big Techs* mine this information for the purpose of selling to advertising companies, as well as optimizing their own services.

Bruno Ricardo Bioni (2021, p. 12) mentions that, given "the possibility of organizing such data in a more scalable way (e.g., *Big Data*), a (new) market was created, whose basis of support is its extraction and transformation into *commodities*. There is a "surveillance economy" that tends to position the citizen as a mere spectator of their information" Thus, the data that is extracted from the use of digital platforms is used by *Big Techs* for countless possibilities, turning human activities, during the use of networks, into a kind of "data factory".

By means of a person's browsing record, it is possible to create a portrait of their personal preferences and, with this, personalize advertisements precisely. Thus, the behavioral study of the user of digital platforms makes it possible to know "what he is reading, what types of *websites* he accessed, in short, all that what the person is actually interested in and, ultimately, what they are most likely to consume based on this behavioral profile"[3] (Bioni, 2021, p. 16).

On social networks, the user is mapped and provides essential data for the creation of their virtual identity, through patterns of behavior, purchases, data crossing and others. Through the study of social networks, it is possible to verify some cultural and social impacts, in addition to "[...] verify its use as a source of storage and sharing of information capable of marking a virtual legacy" (Silva et al., 2020).

For the configuration of social networks and internet search engines, *Big Techs* use algorithms. These, in turn, are able to analyze, predict and, in a way, control the behavior of people in cyberspace. From the use of intelligent digital technologies and the classification of users through the use of algorithms, there is a great impact on society's consumption patterns, on the behavior of young people and adolescents, on political opinion, among others.

Shoshana Zuboff (2021, p. 22) analyzes the issue of data capture by *Big Techs* and reflects that "surveillance capitalism unilaterally claims the human experience as free raw material for translation into behavioral data". All data can be captured, so that "the competitive dynamics of these new markets lead surveillance capitalists to acquire increasingly predictive sources of behavioral *surplus*: our voices, personalities, and emotions" (Zuboff, 2021, p. 22).

Considering Shoshana Zuboff's (2021) analyses, the intricate relationship between data capture by *Big Techs* and the emergence of surveillance capitalism stands out. This phenomenon reflects a new dynamic in the market, where data is not only informational management tools, but also *valuable commodities*, exploited to predict and influence human behaviors. Competition in this new market paradigm drives *Big Techs* to seek increasingly sophisticated and predictive sources of data, which increasingly interfere in the subjective aspects of the human being, as previously reported.

[3] On this subject, Bioni (2021, p. 16) explains that "the search engine of the *Google*, in addition to establishing a correlation between the words searched for by the user and the targeted advertising, defines that the consideration will only be due if the potential consumer clicks on the corresponding advertisement (*Google AdWords*)".

Thus, surveillance capitalism, as identified by Zuboff (2021), not only redefines the data economy but also raises critical questions about privacy, autonomy, and the very nature of human consumption and behavior in the digital age. In this way, such a situation reveals an unlimited appropriation carried out by large technology companies, which implies the need for an ethical and moral analysis of the performance of *Big Techs* in contemporary society.

4 Data analysis by algorithms

Algorithms have the ability to present how and when data is used, as well as who is analyzing this information, describing which pages are most relevant. These algorithms can even classify people on a credit list, for example, by analyzing all the information available in a data network (Sangüesa, 2018). On the subject, Sangüesa (2018, author's translation[4]) also points out that

> Data and algorithm transparency (short for algorithmic transparency) involves the ability to know what data is used, how it is used, who uses it, what it is used for, and how the data is used to make decisions that affect the vital sphere of those who claim this transparency. If a person has been rejected in some process (for example, does not receive a scholarship or loan), he must know from what data this decision was made and how his exclusion was decided, which is another thing.

The same occurs in the famous social network *Facebook*, in which there is a list of the user's personal preferences, which is used to target ads for products and services, as well as other pages and friends who have common interests. Such a list can be seen by searching in the application settings, then The user must click on "Ads", then on "Your interests" and, later, on "More". At the bottom of the page, one should click on "lifestyle and culture" (Sumpter, 2019)[5].

The classification of users of the social network *Facebook* is possible by analyzing the algorithms. David Sumpter (2019, p. 44) describes that "each 'like' provides a bit of information about a person and that an accumulation of 'likes' allows its algorithm to make reliable conclusions". The collection of personal information carried out by *Facebook* also occurs on other social networks and search engines. And it's not just based on likes that

[4] In the original, in Spanish: "*La transparencia de datos y de algoritmos (transparencia algorítmica para abreviar) implica la capacidad de saber qué datos se utilizan, cómo se utilizan, quiénes los utilizan, para qué los utilizan y cómo se llega a partir de los datos a tomar las decisiones que afectan a la esfera vital de quien reclama esta transparencia. Si una persona ha sido rechazada en algún proceso (por ejemplo, no recibe una beca o un crédito), debería saber a partir de qué datos se ha tomada esa decisión y cómo se ha decidido excluirla, que es una cosa diferente*".

[5] Considering that there are divergences between the configuration of social network accounts *Facebook* on mobile and desktop and between different countries, the path to pursue to access your ad topics on the *Facebook*, by computer is: settings; Central Accounts; ad preferences; Ad topics; Ad topics that advertisers can use to reach you; View and manage topics. (Information from May 2023).

The user performs throughout the day, but also based on conversations with friends, shared items, among other forms of social interactions.

The use of algorithms in social media is essential as they are written in a digital language and the given task is performed by predefined numbers of individual steps. The system that uses algorithms is programmable to adapt autonomously to new problems and solve new conflicts, and can be the result of computer learning. "Currently, intense work is being done so that these themes continue to write their own programs and are able to develop independently of human programming" (Hoffmann-Riem, 2019, p. 125). AI systems use several metrics to improve their results, through *machine learning*[6], which consists of "machine" learning. With this, there is the construction of algorithms that make predictions and/or decisions based on the data captured.

An AI system with the capability of machine learning is a system that always learns, that changes its structure, program, or data, in such a way that its expected future performance improves. Arthur Samuel (1959, p. 535), a pioneer in artificial intelligence and computer games, defined machine learning in 1959 as the "field of study that gives computers the ability to learn without being explicitly programmed".

Currently, the field of machine learning can be divided into three main categories: supervised, unsupervised, and reinforcement. In supervised learning, the algorithm is provided with training data that includes the correct answer for each example. For example, a set of recorded transactions could be used as input, and for each transaction, the training data would indicate whether it is fraudulent or not. It is important for the system to receive error messages rather than *feedback*, as this helps the system learn and adapt to improve its performance (Turner, 2019, p. 71).

Thus, algorithms are part of a structure of problem solving through programmable logic. They are mathematical formulas capable of defining lists of personal preferences of network users, optimizing the ads of products and services that will be presented to you throughout the day. Safiya Umoja Noble (2021, p. 9) describes that "part of the challenge of understanding algorithmic oppression is realizing that the mathematical formulations that guide automated decisions are made by human beings." In addition to the problems about the invasion of privacy carried out through algorithms, there are the biases that are inserted in its programming, such as sexism and racism denounced by Noble (2021) in his book *Algorithms of Oppression*.

Artificial intelligence systems that use algorithms to make decisions, when they produce an incorrect or unfair result, are representing the choices of their programmers when coding their instructions. Fornasier (2021, p. 69) reflects that "data mining and the information

[6] The expression *machine learning* translates machine learning, that is, it is an artificial intelligence that learns from experience. From according to Russel and Norvig (2016, p. 16), "*machine learning: to adapt to new circumstances and to detect and extrapolate patterns*."

derived from it can reflect and maintain society's generalized prejudices". It should be noted that intelligent systems can generate discrimination due to the programming performed, and also the result of their operations, as these systems learn from data available on the internet. Such data is not always correct or credible (Fornasier, 2021).

In this sense, Fornasier (2021) concludes that discrimination by algorithmic systems can have three main sources of prejudice. The first is the entry of data into the system, which can be biased because it does not include all the necessary information, is unrepresentative, or reflects historical biases. The second source is the training of the algorithm, which can categorize the data with bias or evaluate the output in a way that favors certain outcomes. Finally, the third is the programming of the algorithm, which can be discriminatory from the *original design* to its interaction with human users and the incorporation of new data.

The artificial intelligence existing in networks provides the crossing of user data with their personal preferences, *hobbies*, data and other information that is of business interest. With all this interest on the part of companies *(Big Techs),* intelligent programs emerge, which can maintain a conversation through a "chat" (*chatbot),* in which artificial intelligence can talk to a person, just like a human being.

In this way, it is perceived that surveillance capitalism allows companies to act in an unlimited way in the capture of data and other subjective and intimate information of the human being, with the intention of transforming this informative framework into a numerical complex, profoundly transforming and impacting the behavior of society in cyberspace.

5 Conclusion

Based on the study presented on the contemporary informational society and data capture on digital platforms, it is verified that society goes through the phase of access to information, mining and data capture by *Big Techs*. In this way, the central role that digital technologies play in the configuration of contemporary social and cultural relations becomes undeniable. Digital platforms, as revealed by thinkers such as Shoshana Zuboff and Manuel Castells, are not only facilitators of communication, but also influential actors in shaping behaviors, identities, and ultimately society itself. Data capture, a practice intrinsic to these platforms, has emerged as a critical phenomenon that deserves attention, not least because of its potential to influence and shape the daily lives of individuals around the world. In addition, the survey highlighted the ambivalence of the technology. On the one hand, the democratizing and emancipatory potential of digital technologies is observed, capable of connecting people and ideas in an unprecedented way. On the other hand, large-scale data collection by *Big Tech* presents significant challenges to privacy, autonomy, and even democracy. The ability of these

companies to influence decisions, opinions, and behaviors through the analysis and use of data is a matter of great ethical and legal concern. The analysis of the impacts of the network society also brought to light the issue of digital inequality. While some users benefit enormously from the opportunities offered by the digital age, others are marginalized or exploited within that same system. This reflects a digital divide that goes beyond simple access to the technology, also encompassing the way people are able to understand and navigate the digital world.

Another crucial aspect of this research is the recognition that data collection is not an isolated phenomenon, but part of a broader socioeconomic system. *Big Tech* practices are intrinsically linked to contemporary capitalism, which requires a multidisciplinary approach to fully understand their implications. The convergence between the fields of sociology, technology, economics and ethics is therefore essential to address the challenges presented by the informational society.

The survey also highlighted the importance of the regulatory role of governments and international organizations in moderating data collection practices. The creation of policies and laws that protect the rights of users of digital platforms is essential to ensure a balance between the benefits of technology and the protection of privacy and individual autonomy.

The study revealed the need for greater digital awareness and education among platform users. Understanding how data is collected, used, and monetized is crucial for individuals to be able to make informed choices about their participation in the digital society. Thus, this article illustrates the complexity and multidimensionality of the contemporary informational society. The capture of data on digital platforms is a phenomenon that profoundly impacts the structure of society, exposing both its promises and its dangers. As one advances in the digital age, it becomes increasingly imperative to understand these challenges and seek solutions that promote a more just, equitable, and transparent society.

References

BIONI, Bruno. R. **Protection of personal data:** the role and limits of consent. Rio de January: Forensics, 2021.

CASTELLS, Manuel. **The network society**. São Paulo: Paz e Terra, 2016.

CHEN, Sophia. A chip design that changes everything: 10 Breakthrough Technologies 2023. **MIT Technology Review**, [*s. l.*], 09 Jan. 2023. Available at: https://www.technologyreview.com/2023/01/09/1064876/riscv-computer-chips-10-breakthough-technologies-2023/. Accessed on: May 11, 2023.

FORNASIER, Mateus de Oliveira. **Five fundamental ethical-legal questions about intelligence artificial**. Rio de Janeiro: Lumen Juris Direito, 2021.

FORNASIER, Mateus de Oliveira; KNEBEL, Norberto Milton Paiva. Regulation by design, lex

informática and law as metatechnology for biased results under the recommendation system of intangible cultural assets. **Duc In Altum - Cadernos de Direito**, [*s. l.*], v. 12, n. 28, p. 309-346, set./dez. 2021. DOI: https://doi. org/10.22293/2179-507x.v12i28.1435

FRANÇA, Beatriz. The influence of social media filters and video calls in the search for aesthetic procedures. **Earth,** [*s. l.*], 11 jul. 2022. Available at: https://www.terra.com.br/byte/a-influencia-dos-filtros-de- social-networks-and-video-calls-in-the-search-for-aesthetic-procedures. Accessed on: 15 mar. 2023.

FROMM, Erich. **To have or to be?** Rio de Janeiro: Editora Zahar, 1979.

HARAWAY, Donna J. Cyborg manifesto: science, technology and socialist feminism at the end of the twentieth century. *In*: TADEU, Tomas (ed.). **Anthropology of the cyborg**: the vertigo of posthumanism. Translation: Tomas Tadeu. 2. ed. São Paulo: Autentica, 2010. p. 33-118.

HAN, Byung-Chul. **Society of tiredness**. São Paulo: Vozes, 2015.

HAN, Byung-Chul. **In the swarm**. São Paulo: Vozes, 2018.

HEAVEN, Douglas. AI that makes images: 10 Breakthrough Technologies 2023. **MIT Technology Review**, [*s. l.*], 9 Jan. 2023. Available at: https://www.technologyreview.com/2023/01/09/1064864/image-making-ai-10- breakthrough-technologies-2023/. Accessed on: May 11, 2023.

HOFFMANN-RIEM, Wolfgang. Behavior control through algorithms: a challenge for the Law. Public Law, Brasília, v. 16, Special edition, p. 123-162, dez. 2019. Available at: https://portal.idp. emnuvens.com.br/direitopublico/article/view/3647. Accessed on: 21 Apr. 2021.

LEMOS, A. Cyberculture: some points to understand our time. *In*: LEMOS, A.; CUNHA, P. (ed.).
Perspectives on cyberculture. Porto Alegre: Sulina, 2003. p. 11-23.

LEVY, Pierre. **Cyberculture**. Translation: Carlos Irineu Costa. São Paulo: Ed. 34, 1999.

MAGRANI, Eduardo. **The internet of things**. Rio de Janeiro: FGV, 2018.

MENEZES NETO, Elias Jacob de. **Surveillance, democracy and human rights:** the limits of the state in the era of Big Data. 2016. Thesis (Doctorate in Law) – Graduate Program in Law, Unisinos, São Leopoldo, 2016. Available at: http://www.repositorio.jesuita.org.br/handle/UNISINOS/5530. Accessed on: May 11, 2023.

MITCHELL, William. E-topia: Information and Communication Technologies and the Transformation of Urban Life. *In*: CASTELLS, Manuel; CARDOSO, Gustavo (ed.). **The Network Society: from** knowledge to political action. Lisbon: Imprensa Nacional - Casa da Moeda, 2005. p. 337-343.

NOBLE, Safiya Umoja. **Algorithms of oppression: how search engines reinforce racism**. Translation: Felipe Damorim. São Paulo: Rua do Sabão, 2022.

ROTMAN, David. ChatGPT is about to revolutionize the economy. We need to decide what that looks like. **MIT Technology Review,** [*s. l.*], 25 mar. 2023. Available at: https://www.technologyreview.
com/2023/03/25/1070275/chatgpt-revolutionize-economy-decide-what-looks-like/. Accessed

on: May 11, 2023.

SAMUEL, Arthur L. Some studies in machine learning using the game of checkers. **IBM Journal of Research and Development**, [*s. l.*], v. 3, n. 3, p. 210-229, jul. 1959. Available at: https://www.cs.virginia.edu/~evans/ greatworks/samuel1959.pdf. Accessed on: May 12, 2023.

SILVA, Fabrício Machado da *et al*. **Artificial intelligence**. Technical review: Carine Webber. Porto Alegre: SAGAH, 2019.

SHIRKY, Clay. **Cognitive surplus:** creativy and generosity in a conected age. London: Penguin Books, 2010.

STOER, Stephen R.; MAGALHÃES, António M. Education, knowledge and the network society. **Educ. Soc.**, Campinas, v. 24, n. 85, p. 1179-1202, December 2003. Available at: http://www.cedes.unicamp.br. Access On: 10 May 2023.

SUMPTER, David**. Dominated by numbers:** from Facebook and Google to fake news - the algorithms that control our lives. Translation: Anna Maria Sotero and Macello Neto. Rio de Janeiro: Bertrand Brasil, 2019.

SCHWAB, Klaus. **The fourth industrial revolution**. Translation: Moreira Daniel Miranda. São Paulo: Edipro, 2019.

TAVEIRA JÚNIOR, Fernando Tenorio. **Protection of digital assets from the perspective of personality rights**. 2015. Dissertation (Master's Degree in Civil Law) – Faculty of Law, University of São Paulo, São Paulo, 2015. Available at: https://www.teses.usp.br/teses/disponiveis/2/2131/tde-19112015- 161317/pt-br.php Accessed on: 11 May 2023.

TURNER, Jacob. **Robot rules**: regulating artificial intelligence. London: Palgrave Macmillan, 2019.

WERTHEIN, Jorge. The information society and its challenges. **Ciência da Informação**, Brasília, v. 29, n. 2, p. 71-77, May/Aug. 2000. Available at: https://revista.ibict.br/ciinf/article/view/889. Accessed on: May 10, 2023.

WEISS, Marcos Cesar. Sensorida society: the society of digital transformation. **Estudos Avançados**, [*s. l.*], v. 33, n. 95, p. 203-214, 2019. Available at: https://www.revistas.usp.br/eav/article/view/159485. Access On: 10 May 2023.

WU, Tim. **Empires of communication**: from the telephone to the internet, from AT&T to Google. São Paulo: Zahar, 2012.

ZUBOFF, Shoshana. **The era of surveillance capitalism**. São Paulo: Intrínseca, 2021.

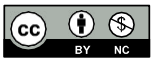
How to cite:

PAULICHI, Jaqueline da Silva; CARDIN, Valeria Silva Galdino. Dynamics of the contemporary informational society: analysis of data collection in digital platforms and its sociocultural implications. **Pensar – Journal of Legal Sciences**, Fortaleza, v. 29, n. 2, p. 1-14, Apr./June 2024. DOI: https://doi.org/10.5020/ 2317-2150.2024.16834

Mailing address:

Jaqueline da Silva Paulichi - E-mail: j.paulichi@hotmail.com

Valeria Silva Galdino Cardin - Email: valeria@galdino.adv.br



Received: 11/25/2023
Accepted on: 04/04/2024