


**NETWORKED DEMOCRACY: THE ROLE OF ALGORITHMS IN FREEDOM OF
EXPRESSION AND POLITICAL PLURALISM** <https://doi.org/10.56238/sevened2024.037-079>**Kennedy da Nobrega Martins¹ and Alexandre Manuel Lopes Rodrigues²****ABSTRACT**

In recent decades, social media algorithms have redefined the digital environment, profoundly influencing freedom of expression and political pluralism. In light of this, this research investigates how these algorithms, by segmenting content according to user behavior, promote the creation of "echo chambers" and "digital bubbles" that reinforce polarization and limit access to divergent perspectives. The methodology adopted was the bibliographic and documentary review, with analysis of academic and legal sources on the impact of algorithms and computational propaganda on the formation of public opinion. The results indicate that, by prioritizing engagement over informational diversity, algorithms favor polarized environments, hindering democratic dialogue and encouraging the dissemination of extremist content. It is concluded that public policies and regulations that promote the transparency of algorithms and encourage informational diversity are essential to preserve the integrity of the digital public sphere.

Keywords: Freedom of Expression. Political Pluralism. Algorithms. Democracy. Social Networks.

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INTRODUCTION

In recent decades, the rapid evolution of digital technologies and the proliferation of social networks have transformed the way information is consumed, shared, and influenced on a global scale. Platforms such as Facebook, Twitter, and Instagram have emerged as new public spaces, playing a central role in reconfiguring the democratic environment by offering a direct, instantaneous, and accessible channel for the expression of ideas and opinions (Silva, 2021). These spaces, which were previously occupied by traditional media, have come to have a direct influence on political and social dynamics, creating a digital public sphere where any individual with access to the internet can participate in public discussions and debate relevant issues.

However, the apparent democratic character of social networks hides complex algorithmic mechanisms that personalize the content displayed to each user, shaping and limiting the information that each individual sees. This personalization, determined by users' preferences and interaction history, generates what Eli Pariser (2012) defines as "digital bubbles" or "filter bubbles," which isolate people in "echo chambers" where only views similar to their own are reiterated. This phenomenon limits contact with divergent perspectives and restricts exposure to a plurality of information, enhancing the creation of politically polarized environments.

The question of how these algorithms impact freedom of expression and political pluralism has become a central topic of academic and social debate, as the logic of maximizing engagement favors content that reinforces users' previous beliefs and values, making it more difficult to access information that may challenge their worldviews (Farias, 2021). In a context where algorithmic logic prioritizes engagement over informational diversity, digital platforms become facilitators of the dissemination of extremist discourse and disinformation, since these contents usually generate intense emotional responses, attracting more interactions and, consequently, more time users stay on the platforms.

The impact of this scenario on the informational autonomy of individuals is substantial, because, as Sunstein (2017) points out, the formation of digital bubbles and echo chambers impairs the ability of citizens to access a diverse range of opinions, which is fundamental for a healthy democracy. Thus, these platforms, by promoting a segmentation of content based on algorithms, end up limiting the informational pluralism necessary for public debate, restricting the full exercise of freedom of expression and favoring an environment prone to ideological polarization.

In addition, these algorithms raise important questions about the responsibility of digital platforms. Algorithmic moderation and the creation of custom filters often end up



promoting a form of "private censorship", where technology companies have the power to influence what information is amplified or suppressed (Doneda, 2021). This control can subtly and indirectly shape public discourse, challenging the ideal of the internet as a free and open space.

In view of this, the question-problem that guides this study is: How do social media algorithms influence freedom of expression and political pluralism by creating digital bubbles and echo chambers that reinforce polarization? In addition, it seeks to understand how computational propaganda and the use of bots can manipulate public opinion, distorting the democratic process.

In addition, this study aims to analyze the impact of social media algorithms on freedom of expression and political pluralism, investigating the mechanisms by which these algorithms contribute to the creation of digital bubbles and echo chambers, as well as examining the role of computational propaganda in the manipulation of public opinion. It also seeks to assess the limitations of current regulations and propose possible approaches for a more plural and democratic digital environment.

METHODOLOGY

The methodology used in the study was a bibliographic and documentary review. This approach involved the analysis of academic literature and legal sources with the aim of understanding the impact of algorithms on the political behavior of social media users, as well as the effects of "echo chambers" and "digital bubbles" on the formation of public opinion.

Relevant databases, such as Scopus, Web of Science, and Google Scholar, were accessed to identify scientific articles, books, and other publications related to the topic. The focus has been on studies that discuss the role of algorithms, computational propaganda, and digital polarization. Additionally, the documentary review included sources that analyze current regulations and digital governance practices, allowing a critical perspective on the limitations of existing regulations and the proposition of solutions for a more democratic and plural digital environment. This methodological approach ensured a comprehensive and reasoned vision to explore the complex relationships between freedom of expression, political pluralism and algorithms on digital platforms.



RESULTS AND DISCUSSIONS

FREEDOM OF EXPRESSION IN THE AGE OF DIGITAL PLATFORMS

The technological advances achieved in recent decades have opened up numerous new perspectives and opportunities (Benkler, 2018). According to Schwab (2021), founder of the World Economic Forum, society is about to experience a Fourth Industrial Revolution, driven by a technological transformation that will radically change the way we live, work, and relate. The Third Industrial Revolution, which began in the mid-twentieth century and continues to this day, was characterized by the development of the electronics industry, large computers, and the transition from analog to digital technology.

In the Fourth Industrial Revolution, the integration of digital technologies into various aspects of daily life is expected to blur the boundaries between the physical, digital, and biological worlds. This revolution differs from previous ones in terms of scale, scope, and complexity: (i) the exponential speed of new discoveries and advances is historically unprecedented; (ii) the technological revolution causes a disruptive impact on practically all industries and countries; and (iii) the depth and scope of these changes have the potential to completely transform production, management, and governance systems (Schwab, 2021).

Digital platforms and social networks represent this environment in constant and profound transformation in an exemplary way (Abboud, 2021). In the nineteenth century, the public space for discussions was established in cafes and squares, where people gathered to debate politics and culture. In the post-war period, this sphere shifted to journalistic organizations, which controlled newspapers, radio, and television channels. Participation in the public debate was conditioned to financial investments and the dispute for scarce means (such as television channels and radio frequencies), being restricted to a few actors with access to this structure (Doneda, 2021).

With the end of the twentieth century and the beginning of the twenty-first, the emergence of the internet fragmented this power. For Abboud (2021), society has moved from a model centered on prints and organizations to a decentralized format, supported by computer networks and digital platforms. With the internet, anyone has gained the possibility of producing and publishing their own or third-party content on a global scale, and relevant political, social, and cultural discussions have also (and perhaps even mainly) taken place in this environment.



Pro-democracy movements, such as the Arab Spring³, have demonstrated the power of the internet to form a global democratic community and enable mobilizations on a global scale against authoritarian and illiberal governments (Pamplona, 2015). From 2016, however, after the events that negatively marked the American elections and the Brexit referendum in the United Kingdom, unrestricted optimism regarding digital platforms gave way to growing concerns about the protection of the democratic process and fundamental rights. Issues such as: (i) mass disinformation campaigns, often involving elected leaders, candidates, or even foreign governments; (ii) micro-targeting of electoral advertisements, with the potential to influence the results of elections; and (iii) anti-democratic attacks, dissemination of hate speech, and proliferation of illicit content (Silva, 2021).

In addition, it was found that the idea of decentralization of the virtual public space did not take into account the private power exercised by a few companies over the public debate, especially through content moderation based on private terms of use. This increase in private control over the circulation of information and opinions, including the possibility of banning accounts or removing posts by elected political agents, has largely challenged the view of the internet as a free and open space (Dutra, 2018). The application of private terms of use on a global scale contrasted with the territorial restrictions of national court decisions. Limited in their jurisdiction, judges and courts have begun to order the blocking and suspension of accounts and/or content worldwide, thus threatening the exercise of freedom of expression (Doneda, 2021).

In the context of the so-called Fake News Inquiry, conducted by the Federal Supreme Court, there are reports about the organization of digital militias that carry out coordinated attacks against opponents and critics of the Federal Government, in addition to disseminating disinformation. At the Federal Court of Auditors, the allocation of federal public funds to websites that promote fake news is investigated (Pires, 2020).

In the Superior Electoral Court, there was an investigation into the winning slate of the 2018 elections, which allegedly benefited from hiring companies to send mass messages through WhatsApp, aiming to attack opponents and promote certain candidates⁴. A report by the CPMI on Fake News identified more than 2 million ads paid for with public

³ The Arab Spring was a series of popular protests and uprisings that began in 2010 and spread to several countries in the Middle East and North Africa, including Tunisia, Egypt, Libya, Syria and Yemen. Motivated by dissatisfaction with authoritarian regimes, corruption, lack of freedom, and socioeconomic inequalities, the movements sought greater democracy and social justice. The internet, especially social media, has played an important role in enabling activists to organize demonstrations, share information, and mobilize international support, highlighting the potential of digital platforms to drive social and political change on a global scale (Pamplona, 2015).

⁴ Cf.: Understand why Facebook's action threatens Bolsonaro in the Judiciary. O Globo, 11 jul.2020. Available at: <https://oglobo.globo.com/brasil/entenda-por-que-acao-do-facebookameaca-bolsonaro-no-judiciario-1-24527697>. Accessed on 07 Nov. 2024.



funds on websites, apps and YouTube channels, broadcasting content considered inappropriate, including anti-democratic attacks and fake news⁵.

At the same time, social networks and digital platforms impose limitations on the speech of their users based on their own terms and conditions, raising concerns about censorship by these technology companies, which operate for their own economic interests. The recent practice of removing publications and blocking or deleting accounts of public figures and elected officials has brought this topic to the center of public debate. For example, former President Jair Bolsonaro proposed a provisional measure, followed by a bill, that sought to prevent social networks from moderating content without a prior court decision, under the pretext of regulating the Civil Rights Framework for the Internet⁶.

As noted, the cases multiply and raise essential questions about the exercise of freedom of expression and the strengthening of democracy in the Digital Age. On a daily basis, platforms such as Facebook, Twitter, and Instagram face the challenge of balancing this fundamental right with other important social values, such as combating illicit content, disinformation, hate speech, and attacks on democracy (Farias, 2021).

These platforms also deal with censorship orders imposed by national governments, while their algorithms seek to maximize users' time, aiming to increase ad profits. According to Ferrari (2018), this results in the amplification of harmful discourses. In this context, there are those who accuse platforms of failing to contain abusive speech and, at the same time, of removing excessive content, acting as arbiters of truth and promoting a form of private censorship (Lessa, 2021).

To face these challenges, big tech companies have been the target of several regulatory proposals and initiatives around the world. In Brazil, there is a growing issuance of court orders that require platforms to (i) reinstate user content removed based on their Terms of Use; or (ii) remove publications or block accounts — including globally — for disseminating fake news or promoting anti-democratic attacks, even without a clear definition of these concepts. This global backlash against tech companies is called *techlash*, a term that combines technology and backlash, and represents growing resistance to big tech companies and public support for policies that seek to limit their power and influence (Atkinson, et al, 2019).

⁵ Cf.: CPMI of Fake News identifies 2 million Secom ads in channels of 'inappropriate content' in just 38 days. O Globo, 02 Jun. 2020. Available at: <https://blogs.oglobo.globo.com/sonar-a-escuta-das-redes/post/cpmi-das-fake-news-identify-2-million-ads-secom-em-canais-de-conteudo-inadequado-em-so-38-dias.html>. Accessed on 07 Nov. 2024.

⁶ Cf.: Bolsonaro edits MP that limits the removal of content from social networks. G1, 06 Sep. 2021. Available at: <https://g1.globo.com/politica/noticia/2021/09/06/bolsonaro-edita-mp-que-limita-remocao-de-conteudos-nas-redes-sociais.ghtml>. Accessed on 07 Nov. 2024



It is undeniable, therefore, that information technology is going through a delicate moment both in Brazil and in the world, in which it seeks to promote freedom of expression and protect democracy, without compromising legitimate business models or compromising the fundamental principles of the internet, such as openness, decentralization and global reach. To achieve this balance, it is necessary to clearly define the roles of both the state and digital platforms, in an arrangement that ensures the harmony of interests without granting excessive power to either party in the regulation of discourse (Przeworski, 2020).

The relevance and urgency of this debate have been highlighted in several democracies. An example of this is the vote of Justice Edson Fachin, in the context of the Fake News Inquiry⁷, in which he highlighted that "the limits to freedom of expression are constantly being shaped and, I think, will still demand reflection from the Legislative and Judiciary Branches and, especially, from this Court, with regard to what is currently called 'fake news'". In the United States, in the judgment of *Packingham v. North Carolina*, the Supreme Court noted that social networks have become, for many, "the main source of access to current discussions, opportunities for employment, to speak and listen in the modern public space, and, more generally, to explore the fertile fields of knowledge and human thought⁸."

In a vote in the case of *Joseph R. Biden, Jr., President of the United States v. Knight First Amendment Institute at Columbia University*, Justice Clarence Thomas pointed out that "applying old doctrines to new digital platforms is rarely a trivial task." He recognized that while these digital platforms are a powerful medium for promoting speech on an unprecedented scale, they also exert equally unprecedented private control over it. Thomas warned that "soon, we will have no alternative but to confront how our legal doctrines apply to such highly concentrated and privately controlled information infrastructures as digital platforms."⁹

In Italy, in the case of *CasaPound v. Facebook*, the Court of Rome ruled that Facebook has an effective power of control over political participation. Thus, in addition to the contractual commitments provided for in the Terms of Use, the platform would be

⁷ Available at: <https://portal.stf.jus.br/noticias/verNoticiaDetalhe.asp?idConteudo=445278&ori=1>. Accessed on Nov. 05. 2024.

⁸ No original: "Social media allows users to gain access to information and communicate with one another on any subject that might come to mind. With one broad stroke, North Carolina bars access to what for many are the principal sources for knowing current events, checking ads for employment, speaking and listening in the modern public square, and otherwise exploring the vast realms of human thought and knowledge. (...) A fundamental principle of the First Amendment is that all persons have access to places where they can speak and listen, and then, after reflection, speak and listen once more". (*Packingham v. North Carolina*, 582 U.S. (2017)).

⁹ No original: "We will soon have no choice but to address how our legal doctrines apply to highly concentrated, privately owned information infrastructure such as digital platforms" (*Joseph R. Biden, Jr., President of the United States, et al v. Knight First Amendment Institute at Columbia University, et al*, 593 U.S. (2021)).



subject to obligations arising from constitutional principles, representing a form of horizontal application of fundamental rights¹⁰.

As noted, there is a global perception that the theory of freedom of expression traditionally defended by democracies is not sufficient to deal with the new challenges imposed by the digital revolution. In Brazil, the situation is similar. The Constitution guarantees the fundamental right to freedom of expression, prohibiting only anonymity, and adopts a clear approach to a posteriori reparation (such as the right of reply and compensation for moral and/or material damages), avoiding any form of prior censorship. However, while these provisions are relevant, they, together with the national jurisprudence developed to date, are not able to fully address the emerging challenges that freedom of expression faces in the digital environment.

A REFLECTION ON THE IMPACT OF THE ALGORITHMIZATION OF SOCIAL NETWORKS ON THE DEMOCRATIC PROCESS

According to Youyou (2015), algorithms that analyze likes on social networks can predict aspects such as substance consumption, political positions, and health status. Probably, the algorithm knows people's political leanings, categorizing them into far-left, left, center, right, or far-right. Its intelligence is developed through the analysis of data collected from users of the social network, such as likes, shares, messages and search history, among others.

When a user consumes certain content, likes or shares certain news, it becomes easy to build a political profile that goes beyond simple left or right classifications. This profile includes their views on a variety of topics, such as global warming, immigration, and equality. This information can then be used to display targeted content created by advertisers, campaign managers, and extremist political groups (Doneda, 2021).

In this sense, Pariser (2012) explains:

The algorithms select what will be displayed to each user based on their personal profile. In this way, each user accesses a specific set of information that is aligned with their political positions. The information shown on social networks tends to reinforce the personal convictions of each individual. Thus, virtual environments similar to digital bubbles are created, which encourage the dissemination of false and hyperpartisan content to attract clicks. This process results in an increasingly politically segregated society, where consensus becomes unlikely due to growing distrust of political figures, the media, and citizens who stand on opposite sides of the political spectrum (Pariser, 2012, p.101-102).

¹⁰ Cf.: Facebook v. CasaPound. Global Freedom of Expression – Columbia University. Available at: <https://globalfreedomofexpression.columbia.edu/cases/caspound-v-facebook/>. Accessed on 07 Nov. 2024



With this, the algorithm predicts which publications the user is likely to click on, using the personal data previously collected. Social networks, then, display content that users want to see, which, most of the time, is information that confirms their already formed opinions. This isolates users from divergent perspectives, separating them into digital bubbles that function as "echo chambers", where personalized content reinforces their convictions and different positions are absent (Silveira, 2010).

For Araújo (2015), a significant part of society seeks to see their beliefs confirmed, wishing to be right in their opinions. Social media algorithms facilitate this desire by offering content that reinforces users' convictions. When faced with information that they identify as "propaganda" from the "other side", users tend to disconnect, dissatisfied. To keep the attention of these users, social networks end up favoring confirmation bias. According to psychologist Plous (2013), this bias refers to the human tendency to prefer information that confirms and strengthens one's convictions and values.

On the other hand, studies indicate that another portion of the population shows interest in knowing perspectives different from their own (Baquero, 2018). Many people are open to considering ideas that don't align with their initial convictions and may change their minds based on new information. They recognize that they may be wrong and have a desire to find the truth. In addition, there are those who, although they prefer opinions compatible with their own, are willing to listen to ideas that challenge their views and reject the idea of living in an "echo chamber". Research published in the Yale Law & Economics Research Paper reveals that scientific curiosity acts as a counterweight to processing politically biased information (Kahan et al., 2016).

However, the ability of digital platforms' algorithms to analyze the data collected and then filter the content presented to each user based on their beliefs is constantly evolving. All users end up trapped in their digital bubbles, regardless of whether they want it or not. Thus, in the age of algorithms, an issue related to individual freedom also arises (Gurumurthy, 2018).

Freedom of choice presupposes the existence of multiple options and the ability to choose between them, which does not occur in social networks. For freedom to be genuine, it is necessary for society to have the possibility of expanding its horizons and accessing the truth of the facts. The most evident way to limit this autonomy is through censorship and authoritarianism (Pariser, 2011). However, when society is divided into communities of homogeneous thought, individual freedom is threatened, as people are confined to bubbles created by the filters of algorithms, which often go beyond the digital environment and impact the real world. For a democracy to be solid, it is essential to have



shared public spaces, both online and offline, that offer a diversity of ideas, rather than echo chambers (Sunstein, 2017).

Every human mind has filters that select which information will be the object of attention. Filtering is an inherent characteristic of the human being; No one is able to see, hear, and read everything. Each individual performs constant filtering to better direct their attention, either deliberately or unconsciously (Kozikoski, 2015). In leisure time, for example, people choose to focus on their families rather than on distant problems, such as the conflicts in the Middle East. When they are driving, they focus on the traffic and not on the cell phone. In this context, Wu (2012) alludes to:

In a system that values individual freedom, people have the autonomy to filter out unwanted content. On a daily basis, they choose which information to access based on personal preferences. Those who like sports opt for ESPN; conservatives may prefer *Gazeta do Povo*, while progressives access *Carta Capital*. The greater the diversity of options, the greater the range of possible choices (Wu, 2012, p.14).

Through newspapers, magazines, and television channels, people have access to content that they would not otherwise choose in advance. Thus, they are exposed to information that they might not have selected if they had full control to include or exclude it, which does not occur on social networks, where the algorithm accurately anticipates their preferences. Information obtained in an unexpected way can arouse interest, influence behaviors or even transform opinions (Carvalho, 2011).

Digital bubbles and echo chambers confine users to "parallel realities," feeding them personalized content. A confusion arises, then, between the reality displayed on the platforms and the concrete truth. So when people from different bubbles meet, they ask, "Don't they see what's going on?" No, that is the central issue. Each one perceives a completely different version of reality within their own bubble (Ferrari, 2011). In this sense, it is important to highlight the criticism made by Castanho (2009):

It is true that digital platforms represent an advance for today's society, connecting people, offering entertainment, information, and various other utilities. Few want to see ads for irrelevant products or information on topics that don't interest them. However, despite the wonders provided by social networks, society has been naïve about their negative effects: they raise serious questions about freedom, free will, and democracy (Castanho, 2009, p. 135).

According to Castanho (2009), for democracy and freedom of expression to function fully, more than just restrictions on government censorship and respect for individual choices are necessary. While these are the primary legal and political concerns of many nations, an effective democratic system must meet additional requirements beyond the simple absence of censorship, which is its greatest threat.



First, according to the author, it is essential for a democratic society that its citizens are exposed to information that would not normally arouse their interest. Unexpected and unplanned encounters are indispensable for democracy, as they help avoid fragmentation, polarization, and extremism—likely consequences in a world where individuals interact only with their fellow human beings.

A full democratic system must be structured in such a way that people often encounter – including in the virtual environment – opinions and topics that, if they could choose, they might not select. In addition, it is necessary for citizens to share a wide range of common experiences. Without shared experiences, a heterogeneous society will face more difficulties in solving its social problems. Collective experiences, such as a major sporting event, make it possible to create social bonds. A communication system that drastically reduces the number of these shared experiences generates a number of problems, especially by increasing social fragmentation (Sunstein, 2017).

These imperatives are especially relevant in a vast and diverse country like Brazil, which already faces the occasional risk of social fragmentation. A system that not only makes it difficult to meet opposing opinions, but also weakens the social bond generated by shared experiences, results in a society where people with different political positions are seen as enemies. As Nietzsche (1969, p. 24) states: "as soon as you feel that you are against me, you will cease to understand my position and, consequently, my arguments!".

According to Peters (2013), a professor at the Graduate School of Public and International Affairs at the University of Pittsburgh, governance is defined as the ability to "direct the economy and society towards collective goals". The echo chambers created by social networks can thus lead to disastrous policies or a drastically reduced capacity to formulate effective policies, as individuals cloistered in their "parallel realities" rarely have a sensible view of the problems of the collectivity.

When citizens see themselves as enemies, a diverse society encounters many more obstacles to solving social problems, since it lacks the willingness to understand others. However, social media often encourages feelings of anger against the "other side." Research conducted by Fan et al. (2014), from Beihang University, indicates that anger is the emotion that spreads faster and reaches the largest number of people on social networks, compared to other emotions. As a result, those who share angry messages inevitably end up exerting greater influence. In other words, anger keeps users connected to social networks, and is therefore encouraged and propagated by the algorithms of digital platforms.



Even when conservatives and progressives agree on certain points, the tendency is for them to like and trust each other less and less (Mason, 2018). When like-minded individuals encourage anger among themselves, the consequences can be severe, leading to exacerbated extremism and even violence. Political extremism is intensified by the division of citizens into groups with similar ideals. The global political landscape is increasingly polarized, and thus there is an alarming increase in partisanship—a form of partisan bigotry that breeds aversion toward people who support opposing parties.

This partisan division affects several areas of society. In the labor market, candidates are favored based on their political convictions, even if they are not the most qualified (Iyengar; Westwood, 2014). In the choice of romantic partners, preference for a particular political party becomes more important than physical or personality characteristics (Alford et al., 2011). Marriages between people who support opposing parties are rare; a survey in the United States revealed that only 9% of marriages consisted of Democrat-Republican pairs (Rosenfeld, 2016).

Since 1980, an increasing number of people have come to manifest more negative emotions than positive ones when thinking about the opposing party's candidate. Until approximately the year 2000, reports indicated only a slight antipathy towards the candidate of another party. However, from 2004 onwards, the negative feelings became more pronounced. In this context, the first two decades of the twenty-first century mark an era of intense polarization, in which mild antipathy has morphed into a deeper form of animosity (Iyengar; 2018).

It is imprudent to say that social networks and the internet, in general, are directly responsible for the evident increase in partisanship. However, it is undeniable that the consumption of information that confirms and reinforces individual beliefs and values, facilitated by social networks, is a significant factor that contributes to the problem. The bubble filter - intellectual isolation created when the algorithm displays only the information the user wants to see - can induce people to believe fake news, making it difficult or impossible to correct it (Rouse, 2018).

It is evident that any system that allows freedom of choice will result in a certain degree of polarization of opinion. Even before the internet, people were making conscious choices when selecting newspapers, radio stations, and television programs. In any period, there is a portion of society that prefers to have its opinions validated rather than challenged. With the rise of social networks, however, this power of personalization has increased significantly, with algorithms that filter information according to users' demographic characteristics and preexisting political convictions (Przeworski, 2020).



In addition, algorithms actively recommend content, pages, and groups of an extremist nature to users who might otherwise never have contact with them. An internal Facebook survey conducted in 2016 found that the platform is not only home to a large number of extremist groups but also promotes them to its users. The results revealed that 64% of all memberships to extremist groups occur due to recommendation tools, mainly through the "Suggestions for You" and "Discover" features (Horwitz, 2020).

Similarly, YouTube's recommendation system directs viewers to extremist content. A study conducted on the platform in 2019, analyzing more than two million recommendations and 72 million comments, showed that users often transition from moderated videos to videos with extremist content. Through simulation experiments, the researchers looked at a comprehensive picture of user radicalization on YouTube (Ribeiro et al., 2020).

In a study conducted by the investigative journalism website Bellingcat, 39 out of 75 fascists surveyed attributed their conversion to the "red pill" movement to social media. This movement is a misogynistic ideology based on the extreme right. The term "red pill" comes from the movie *The Matrix*, in which the protagonist has the choice between a red pill, which reveals reality, and a blue pill, which keeps him in ignorance and safety. Thus, more than 50% of respondents credit social media with discovering and adhering to extremism (Evans, 2018).

The findings provide overwhelming evidence that there has been, and continues to be, radicalization of users, with strong evidence that the recommendation system facilitates the discovery of extremist channels. Content of this nature thrives on social media, since algorithms prioritize engagement, and one of the ways to attract users is to fabricate outrageous news about politicians they have an aversion to. Thus, recommendation systems become part of the problem (Abboud, 2021).

For Carvalho (2011), polarization is part of the business model of the platforms, as it is highly effective in keeping users connected. In other words, displaying inflammatory content, including those that promote hatred, violence, hostility, and discrimination, is an effective strategy to keep people online for longer. Therefore, this content is driven by algorithms, whose ultimate goal is to capture the attention of users.

The promotion and propagation of this type of content is fundamental to the surveillance-based business model of digital platforms. Internal Facebook documents reveal that the company is aware that hate speech, polarizing political speech, and misinformation on Facebook, Instagram, WhatsApp, and Messenger "are affecting society around the world." The company also acknowledges that its "core product mechanics, such



as virality, recommendations, and optimization for engagement, are significant parts of why these types of speech thrive on the platform" (Gurumurthy, 2018).

In addition to these issues, governments and other actors turn social media into weapons of mass manipulation, causing real damage to the offline world. They create fake news and the algorithm disseminates it to the public most likely to believe it. For this, Big Data concepts are used, in addition to political bots and automated profiles on social networks, which are designed to look and act like real people, with the aim of manipulating public opinion (Ratkiewicz et al., 2019).

The article "BIG DATA: the secret behind Trump's election" (Alves, 2017) presents an analysis of the use of Big Data and data-based psychology, highlighting psychometrics — the measurement of psychological characteristics — as the basis of the new electoral strategy. Every action of users, both online and offline, leaves digital traces (such as purchases, searches, interactions, and likes). The central point is how this data is used. In the current context, Big Data plays an important role in political strategies, as smartphones become a kind of psychological questionnaire constantly filled out, whether consciously or unconsciously.

The methodology, in addition to building psychological profiles, allows for the search and manipulation of strategic population segments, such as undecided voters, in order to change their voting intentions. During Trump's campaign, this strategy proved effective in targeting specific voters with content designed to influence their behavior, which highlights the impact of Big Data on contemporary politics and the possibility of manipulation in democratic processes.

Bots, on the other hand, can be used to amplify the dissemination of partisan or false information, increase the number of likes, shares, or comments about an idea or public figure. In this way, they act not only to deceive users, but also to manipulate the algorithms, which can be influenced to promote certain topics or profiles as more popular (Gurumurthy, 2018).

The presence of armies of automated accounts in the political discussion on social networks can generate three main problems: (i) the distribution of influence among suspicious accounts that operate with malicious intentions; (ii) the increase in polarization in the political discussion; and (iii) the amplification of the spread of disinformation and unverified information (Bessi, 2016). Bail et al. (2018) found evidence that exposure to Twitter bots with opposing views increased political polarization among participants in an experimental study.

Nesse ínterim, Arnaudo (2017) argumenta:



Bots are widely used to manipulate public opinion across national borders, in different contexts and languages. They deceive both the algorithms of the platforms and users, promoting the distribution of manipulated information that favors certain candidates and campaigns. In addition, bots create illusory notions of candidates' popularity or specific convictions, through automated inflation of numbers. The practice of manufacturing consensus — which seeks to increase the credibility of candidates and campaigns with artificially high numbers — has Brazil as one of its pioneers (Arnaudo, 2017, p.40).

In summary, it can be seen that the business model of social networks is structured to keep users' attention focused on the screens, ensuring that the ads paid by their customers reach the target audience with maximum effectiveness. To do this, algorithms promote personalized posts that generate greater engagement, regardless of their veracity. In this way, the platforms become spaces that function as echo chambers, intensifying polarization and extremism. In addition, the relentless search for engagement allows for the manipulation of public opinion through the use of bots in computational propaganda campaigns. The business model focused on engagement on social networks often favors divisive and extremist content, since this is the content that the algorithm tends to prioritize.

CONCLUSION

Social networks and their algorithms, by redefining the informational experience of users, not only promote access and connection, but also profoundly shape the contemporary democratic environment. The analysis of the impacts of algorithms on freedom of expression and political pluralism reveals a scenario where the segmentation of content and the creation of digital bubbles weaken democratic dialogue, limiting contact with diverse perspectives. This phenomenon of "echo chambers", widely discussed in the literature, threatens informational pluralism by creating isolated communities, in which only already consolidated opinions and ideas find space, making public debate more fragmented and polarized.

In the context of digital platforms, the informational autonomy of users is gradually replaced by invisible choices, operated by algorithms whose decisions favor engagement over diversity. This personalization model becomes a challenge to the construction of an inclusive democracy, because, by prioritizing interaction and time of use, platforms end up encouraging the proliferation of extremist content and disinformation, which are more effective in capturing and maintaining the attention of users. In this sense, the very commercial dynamics of social networks become an involuntary ally of radicalization and ideological fragmentation.



Another central aspect discussed is the rise of computational propaganda mechanisms and the use of bots, which manipulate public opinion and reduce the authenticity of political discourse. These tools allow certain groups to reinforce their agendas and influence electoral processes, often in a disguised way and with polarizing objectives. The research reveals that the use of bots and digital propaganda strategies not only distorts public perception of political issues, but also amplifies the sense of popular support for extremist positions, creating a false perception of consensus and intensifying radicalization.

The responsibility of platforms in content moderation is therefore a crucial issue. In the midst of this complexity, the role of technology companies as "content curators" stands out, with enough power to decide which discourses will be visible and which will be suppressed. By exercising this influence without transparency or adequate regulation, these companies assume a position of control over the digital public space, establishing a system of private censorship that deviates from the ideal of a free and plural internet.

However, regulating this environment requires a delicate balance. Regulatory proposals that seek to mitigate the spread of extremist and false content face the challenge of respecting freedom of expression while promoting safety and pluralism in public debate. International experience suggests that it is possible to find models that protect democratic values, but regulations need to evolve to keep up with the rapid pace of technological innovations and the unforeseen impacts that these changes entail.

Thus, this study reinforces the urgency of public policies that promote the transparency of algorithms and encourage the diversity of content, aiming to build a healthier digital environment that is less susceptible to informational manipulation. This approach could include, for example, requirements for platforms to make public the criteria for personalizing content and offer users greater control over their informational experiences, reducing the effect of digital bubbles and echo chambers that are currently established.

In addition, a regulatory framework that holds technology companies accountable for curating content and proposing clear guidelines for moderating polarizing and false content is essential. This framework needs to ensure that moderation is done in a transparent and fair manner, so as not to compromise freedom of expression, but also to prevent the digital space from becoming a polarizing ideological battleground. Only in this way will it be possible to move towards a more inclusive digital democracy, where different points of view coexist and can contribute to the construction of a more robust public dialogue.



Finally, it is essential that future research continues to investigate the effects of the interaction between algorithms, user behavior, and power structures on social networks, because only with a deep and broad understanding will it be possible to develop effective solutions to the challenges of the digital age. The creation of digital governance that preserves democratic integrity and respects the autonomy of individuals is an essential objective for the future of connected societies and an imperative for the strengthening of democracies on a global scale.



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