Big Data – Friend or Foe in the Citizens' Agora. Political Campaigns and Public Communication in the Data Era

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Abstract. *The significance of the term Big Data has evolved rapidly over the last decade. Starting with Moore's Law, which emphasizes the constant doubling of computer processing capacity (Crawford, Miltner, and Gray, 2014), the subject of Big Data seems to be very different tomorrow from what it is today. The Big Data economy is developing and is a disruptive (disruptive) force for our world (Maranca, 2020), changing the society in new ways. For example, Harari (2018) underlines the human beings will change more in the next hundred years than they have in all of their previous existence. The combination of biotechnology and artificial intelligence (AI) may enable some people to be digitally enhanced, transforming what being human means. As this happens, concepts of life, consciousness, society, laws, and morality will need to be revised. This can be explained by the fact that Big Data promises to solve any problem just by restricting and interpreting the data.*

Keywords: *Big Data, political communication, public affairs, public relations, political campaigns.*

JEL: C81, C82, D72.

1. Introduction

In the last decades, we've assisted to a multi-dimensional process of evolution and transformation, preponderantly associated with the new technologies' paradigm, that took shape in two, woven, directions: information and communication. Castells and Cardoso (2009) affirm that technology does not influence society, it is the society itself. Technology is directly influenced by economical evolution, societal interests, the needs, and the values of the persons that use it. All this information and trends are nowadays identifiable in the billions of data generated by each digital user. Each action a person enterprise online or while connected to a smart device leaves a digital footprint that can be easily tracked, monitored, stored, modified, or shared for the benefit of an advertising service, a political debate or to gain competitive advantage. Thus, this opportunity to navigate through the users' data provides the possibility to benefit from better services, adapted results to the needs and requests, and better information. Brought together under the umbrella of Big Data, data and their analysis have transcended the boundary of technology, with important reverberations in all areas, including political communication, public affairs, and administration. It is a disruptive way to transform how professionals in this field can access personalized insights of public interest, thus helping organizations become more efficient and provide added value to citizens.

The Big Data economy is developing and is a disruptive (disruptive) force for our world (Maranca, 2020), changing the society in new ways. For example, Harari (2018) underlines the human beings will change more in the next hundred years than they have in all of their previous existence. The combination of biotechnology and artificial intelligence (AI) may enable some people to be digitally enhanced, transforming what being human means. As this happens, concepts of life, consciousness, society, laws, and morality will need to be revised. This can be explained by the fact that Big Data promises to solve any problem just by restricting and interpreting the data.

Big Data become an object of study, contributing to the development of new hardware, software and technological data architecture that allows the storage and usage of immense volumes of structured and unstructured data. The most important thing we can refer when it comes to Big Data is their impact. Big Data has multiple ways of potentials use, from innovation, discoveries or improving the life's quality. The authors aim to identify what is the impact of Big Data in the

field of political communication, how it impacts the social, legal, ethical and public norms and which are its limitation in the context by taking into account the literature and case studies in this field.

Why Big Data?

Recent developments in society, triggered by the increased use of technology and the adoption of data-driven approaches to an organization's defining decisions, have influenced the use of data. Big Data has become an essential component of competitive organizational advantage. Virtually all stages of operations in modern organizations rely on Big Data to advance and ensure efficiency (Mehner, 2020). Observations suggest that implementing communication strategies based on Big Data technology and analysis has direct advantages in aspects related to the real-time evaluation of information and the improvement of uncertainty assessment (Mehner, 2020).

Harari (2016) observed that society is currently at the confluence of two scientific tidal waves. Firstly, biologists are deciphering the mysteries of the human body and, in particular, of the brain and human feelings. Secondly, computer scientists are giving us unprecedented data-processing power. Harari implies that when these two endeavours come together, one can get external systems that can monitor and understand human feelings much better than a person can do. The author underlines that once Big Data systems know a person better than she knows herself, the authority will shift from humans to algorithm, empowering Big Data to potentially become Big Brother.

Big Data are used in psychological, economic, and even political policymaking. The technique involves compiling large volumes of public data and sophisticated models to show specific behaviours and developments in the population. As the use of social media sites has increased over the past two decades, processing data became easier and more accessible as users are expected to provide personal data during the login process. Nevertheless, the authors emphasize that social media platforms have a responsibility to protect their users' private information from being abused or exploited by themselves. (Silverman, 2018).

Many devices, online searches, and installed applications use Big Data to monitor behavior and anticipate trends. When it comes to democratic forums, Big Data has gradually begun to gain a strategic position, according to Lukosius and Hyman (2018). The authors state that the immersion of Big Data in public affairs causes an inevitable change in the way they are organized. The authors propose that this

should help communicators use Big Data to better interpret and maximize the potential of their messages concerning competition and citizens. Whether significant improvements are a revolution or an important step forward in planning, implementing, and evaluating public relations actions through Big Data is a question we want to answer.

Deloitte Tech Trends 2022 points out that there are six verticals in the evolution of technology, all of which are closely related to Big Data: blockchain, digital reality (augmented reality – AR, virtual reality – VR, mixed reality – MR), Internet of Things (IoT) that redefine how people interact with data, technology and with each other, data sharing, cloud, automating at scale cyber, artificial intelligence. Cognitive technologies (machine learning – ML, neural networks, robotic process automation (RPA), bots, natural language processing (NLP), and the broad field of artificial intelligence continue to have a place in the top trends. These cognitive technologies support professionals to understand the increasing volume of data, being able to manage it both in terms of volume and complexity what the human mind and traditional methods have failed to do. Accenture – Tech Trend 2020's annual report highlights the five major trends they prioritized: the experience co-created with consumers, the reimagining of business through collaboration between artificial intelligence (AI) and people, smarter and more interconnected equipment, the widespread introduction of robots, the creation of an eco-business system based on innovation. All these trends are created around data and data capture, decoding, and visualization technologies. According to the data strategy published by the European Commission in early 2020 (A European Strategy for Data), a 530% increase in global data volumes is projected for the period 2018-2025. This is an increase from 33 zettabytes to 175 zettabytes. In terms of the value given to this data, the Commission anticipates that by 2025 in the EU, the data economy would be worth $ 829 billion, up from $ 301 billion in 2018. This upward trend in Big Data could lead to a slowdown in data-driven decision-making and can lead to innovations in all areas.

This is the Big Data era, characterized by Needham (2013) as the ending of computers and technology as the society knew it for the last 70 years. Borkovich and Noch (2014) related to Big Data as a paradigm shift, from the traditional usage of data in the last 30 years, as well as numerical data and texts to the immense pool of data information gathered with the help of the technology, including images and data from social media. Traditional environments could store only structural data, formed by letters and numbers, but in the time of Big

Data increased the capacity to incorporate the unstructured data in the information management. The rite of passage for this new paradigm might be associated with the Internet boom from the mid-90s, and the richness of data that can be collected through online behavior, images, texts, and social media (Noah and Seman, 2012).

EUPRERA's European Communication Report (2017) study Exploring trends in Big Data, stakeholder engagement and strategic communication, conducted in 43 countries, sets interesting premises for the potential development of the field in which we operate. The study reveals that three out of four communication professionals in Europe (72%) truly believe that Big Data will change their profession. Almost a quarter (23.4%) say this is one of the most important issues for communication management in the near future. However, only 59.3% of respondents paid much attention to the Big Data debate. 55.3% of organisations that have implemented Big Data activities in communication use analytics for planning purposes, for example – to inform the future of a campaign. Fewer rely on Big Data to measure communication (45.9%) or to guide day-to-day actions, for example, automating content generation for specific audiences (36.5%).

To serve the purpose of this paper, we have also analysed from this report the reasons for the limited penetration of Big Data in the field of strategic communication. On the one hand, the communication profession lacks the analytical skills to make sense of Big Data and the time to study such data. These limitations were confirmed by almost half of the respondents. Moreover, statistical analyses confirmed that there is a significant correlation between these and Big Data awareness among communication professionals and the Big Data-related activities of their organisations. However, only 54% of practitioners can be classified as aware based on a group analysis of all respondents. They pay attention to Big Data discourse and have a lot of knowledge in the field. On the other hand, 70% are wannabes – they pay attention, but they have no knowledge. The rest (28.2%) are ignorant about Big Data. Ironically, an alarming lack of skills and knowledge prevents public relations and communications professionals – who tend to define themselves as data experts – from taking advantage of the massive amount of structured and unstructured data available for public communication today.

Literature review

The significance of the term Big Data has evolved rapidly over the last decade. Starting with Moore's Law, which emphasizes the constant doubling of computer

processing capacity (Crawford, Miltner, and Gray, 2014), the subject of Big Data seems to be very different tomorrow from what it is today. The commonly used early meaning of Big Data belongs to Doug Laney (2001), who credited Big Data with "the explosive challenges of managing data in three dimensions: Volume, Velocity, and Variety". Laney explained how the use of online marketplaces has broadened the depth of available data, increased the speed limit of interaction, and expanded the variety of unaligned data structures. The author concludes his Big Data assessment by illustrating its core value in finding solutions to specific and growing industry challenges. Two other dimensions are often added to Big Data's characteristics: veracity and variability (Gandomi and Haider, 2015). Veracity is related to credibility, source accuracy, and how appropriate the data is for the proposed use (Elragal, 2014). These vertical questions the credibility of Big Data where sources are external (Addo-Tenkorang and Helo, 2016; Grover and Kar, 2017; Al-Barashdi and Al-Karousi, 2019). Recently, a sixth V was added and it refers to immense value (Elragal, 2014; Chen et al., 2014; Raghupathi and Raghupathi, 2014). A comprehensive definition of Big Data is given by Boyd & Crawford (2014), which explains the concept as a cultural, technological, and academic phenomenon, that took shape as a result of the interference between technology, analysis, and communication. The authors mention that Big Data relies on the computers' power, its analysis determining what models allow a better knowledge and understanding of the information, an activity that would have been impossible before with such an accurate degree. There are several interpretations of Big Data, as following:

Table 1. *Main Big Data Definitions Synthesis*

Laney (2001)	Characterizing Big Data by 3V theory: volume, variety and velocity. Volume: With the generation and collection of masses of data, the scale of the data becomes larger and larger; Velocity: the actuality of Big Data, in particular, data collection and analysis must be done quickly and in a timely manner; Variety: the different types of data, which include semi-structured and unstructured data as well as traditional structured data.
Gantz et al. (2011)	Describes a new generation of technologies and architectures designed to economically extract value from very large volumes of a wide variety of data, enabling high-speed capture, discovery and analysis.
Manyka et al. (2011)	Refers to data sets whose size exceeds the capacity of a typical database software tools to capture, store, manage and analyze.
McAfee et al. (2011)	Big Data, like analytics before it, aims to extract relevant information and translate it into business benefits. There are, however, three differentiators: volume, variety, speed.
Boyd and Crawford (2012)	Big Data is a cultural, technological and academic phenomenon at the intersection of technology, analytics and communication (full definition above).
Schroeck et al. (2012)	Big Data is a combination of volume, variety, velocity and veracity that creates an opportunity for organisations to gain a competitive advantage in the digital environment.

Zykopoulas (2013)	Big Data has four dimensions: volume, variety, velocity and veracity. Veracity: the uncertainty and uncertainty inherent in some data sources.
Kamioka and Tapanainen (2014)	Big Data is large-scale data from different sources and structures that cannot be processed using conventional methods and is intended to solve societal and organisational problems.
Davis (2014)	Big Data consists of exponential collections of data (large volumes) that can be updated frequently and quickly (high speed) and that can have many formats or contents (high variety).
Opresnik and Taisch (2015)	Big Data generally refers to the following types of data: traditional organisational data, machine and sensor generated data and social data.
Constantiou and Kallinikos (2015)	Big Data often represents diverse archives of online crowds. It is often agnostic, in the sense that it is produced for generic purposes, is based on different formats and modes of communication (e.g. text, image, sound), raising issues of semiotic translation and compatibility of meaning. Big Data is frequently used to refer to the large volumes of data generated and available online and through today's digital system.
Akter (2016)	Big Data is defined by 5 Vs: volume, velocity, variety, veracity and value. Volume refers to the amount of Big Data that is growing, velocity to the speed of real-time collection, processing and analysis. Variety refers to the different types of data collected in Big Data environments. Veracity refers to the reliability of data sources. Value refers to the transactional, strategic and informational benefits of Big Data

Big Data – Agenda-setting and computational politics

But the changes are not just in technical areas. On the contrary. In recent years, Big Data has also taken hold in public and political communication. The concept of Big Data in political communication has a complex understanding, depending on the scope of activities and how they intend to use Big Data to achieve their objectives. Organizations are increasingly choosing to make decisions and create communication strategies by defining data, and there is an important correlation between Big Data and the technologies it embraces (Mehner, 2020). Incorporating Big Data, analyzing, and interpreting this data in influencing its strategic approach implies that Big Data analytics plays a fundamental role in self-optimizing communication campaigns.

According to Wiencierz and Röttger (2019), the use of Big Data enables the understanding of social trends and market requirements, critical aspects of achieving competitive advantage. Ideally, social trends and societal changes, triggered by the expanded scope of stakeholder groups' demands, require that communication strategy is based on data and analytics to reduce the possibility of jeopardizing goals. Baldauf et al. (2020) note that modern analytics and reporting systems provide organizations with up-to-date information on market dynamics. The increased integration of Big Data into public relations enables better communication and improves the ability of corporate entities to distinguish

between irrelevant and relevant information. Wiencierz and Röttger (2019) further highlight the contribution of Big Data and the technology on which it is built-in communication by pointing out that it plays a significant role in improving traditional communication models – by increasing the demands and importance of professional communication. The changing nature of corporate organizations, increased competition due to globalization and the need to meet individual customer needs mean that organizations must continually rely on Big Data to engage in stakeholder communication. Elish and Boyd (2018) argue that for creating long-term goals in stakeholder engagement and dialogue, Big Data, based on artificial intelligence technology, must be at the core of public communications.

Weine and Kochbar (2016) point out that communication professionals need to evolve with the transformation that Big Data brings and integrate into their everyday practice with this concept. The authors point out that the importance of Big Data lies not in the vast amount of data available, but in the value, it brings in terms of increased performance, much more accurate understanding of competitors, citizens, employees, media, as well as other audiences. Thus, from their perspective, organizations need to learn and recognize that data simply doesn't answer the *Why* question or provide the insights right away. In most cases, it will require human input, critical thinking to create value and provide meaning to the public relations field from the data we have. The goal of using Big Data is to help organizations achieve their goals and create better and more effective strategies, and new tactics through which assumptions considered are validated before execution.

In their research, authors Neuman, Guggenheim, Mo Jang, and Bae, *The Dynamics of Public Attention: Agenda-setting theory meets Big Data*, discuss the easy way that with a few taps and click any audience member can start a new discussion or respond to an existing one with text or audio, images, and even video. Transmission requires minimal effort, and after digital endowment, involves virtually no cost. But the founding concepts of agenda-setting could benefit from a rethink, according to the authors, from the perspective of Big Data. The authors point out that the fundamental problem could best be characterized as follows: *under what conditions does the digitally connected public respond? When do these responses have a significant impact on the general public and media plans and public issues framework?* Thus, they suggest, in a world of

digital media development and online publishing, the dynamics of plans become more complex. This is important because both traditional and social media are online and equally accessible.

The notion of Big Data seems to attract data and analytics of this general type as a generic label. Early proponents of these new directions, while full of enthusiasm and perhaps with some dose of missionary zeal, are generally aware of many limitations and trends of these methodologies and confirm that these new research opportunities will complement and extend, but not replace, many traditional methods (Bollier, 2010; Boyd and Crawford, 2012). The Big Data phenomenon, considered a technical advance in industry and academia, derives from the dynamic knowledge environment (Wiencierz and Röttger, 2019).

McCombs and Shaw (1972) introduced the notion of agenda setting, drawing on Cohen's (1963) epigram: “The press may not always shape people's opinions, but it is remarkably successful in directing readers' attention to a subject.” They added a new element by focusing on a particular topic – public agenda analysis. Since the birth of this theory to date, over 400 studies on agenda-setting have been published, as McCombs (2004) noted. The authors proposed a theoretical puzzle (modest evidence of media effects) and the basics of a methodology for solving the puzzle (moving from public opinion and policy preference to the “agenda” of important issues and problems). McCombs and Shaw (1972) compared the effects of public agenda setting on groups of voters (e.g., Democrats, Republicans, Independents) and explicitly noted that the purpose of the between-group analysis was to examine individual differences that might have been overlooked had they been included in a single analysis group. Thus, they found a function of agenda-setting due to minimal issue-related variation and different media channels in the voter groups.

According to agenda-setting theory, audience members learn about public issues from the media and, at the same time, infer how much importance they should attach to a topic or issue, based on the importance the media attaches to that topic or issue. (Corbu, Frunzaru, Botan, Schifirnet, 2011). The authors give the following example: when reporting what candidates say during the campaign, the media seems to decide which issues are important. In other words, the media sets the campaign agenda and voters depend on it to spot the 'hot spots' of political debate. This ability to produce cognitive effects is one of the most important aspects of media power.

Subsequent studies have also shown that some audience members are more likely to be influenced by agenda-setting than others. For example, MacKuen (1981) offered two theories in this regard, the attention theory and the cognitive framework theory. Attention theory (attentiveness) states that susceptibility to media agenda-setting is a function of the attention individuals pay to the information they receive and their cognitive ability to process that information. Specifically, MacKuen explains, attentiveness is measured by interest in politics and cognitive ability by years of education. This theory predicts that the higher a person's political interest and/or education level, the more susceptible they are to agenda-setting. On the other hand, in the case of the cognitive framework theory, those with a high level of education and similar political interest have developed a self-defense mechanism against external influence. From this perspective, these people are less susceptible to agenda-setting. A few years later, Iyengar and Kinder (1987) demonstrated that audiences with a high level of political interest and a high level of education are less susceptible to media agenda setting. The two authors point out that the power of television news to set the public agenda depends largely on what the public thinks, and that the topics presented by TV stations are more effective for audiences with limited political resources and skills.

Today's news media, which have moved online, exert a wide influence on public opinion. Thus, with a few taps and clicks, any member of the public can initiate a new discussion or respond to an existing one with text or audio, or perhaps images and even video. Broadcasting requires minimal effort and, once digitally equipped, no cost. Current influences on public agenda setting are highlighted by Shoemaker and Reese's (2014) conceptual model. According to them, the five factors that contribute to media planning including individual journalists, media routines, organizational factors, social institutions, and cultural/ideological considerations. While this model confirms the possibility that individuals, such as government officials or public relations practitioners, can influence media plans and cultural factors can simultaneously influence journalists and audiences, the general public is not identified as a significant influence on the model and the notion of reverse plan setting is not addressed. Another related literature emphasizes the concept of constructing an intermediate plan which refers to the reciprocal effects of institutional media plans (Golan, 2006).

Quoting Neuman et al. (2014), it would be naïve to argue that the power of the public plane has shifted from media elites and founding institutions to the

citizenry. But the founding concepts of media agenda-setting could benefit from a rethink. The fundamental question might best be characterized as follows: under what conditions do digitally connected audiences respond, and when do these responses have a significant impact on the general public and media plans and public affairs frameworks? Prior to the reintroduction of the term by Kim and Lee (2006), the notion of reverse agenda setting simply meant that journalists could respond to actual or perceived public interests and thus the public agenda could be viewed as preceding and influencing the media plan (McCombs, 2004).

Neuman et al. (2014) believe that Big Data analytics should not only be seen as a potential method by which PR managers can improve how they meet the core requirements of their industry, but also as a means of improving their ability to make sense of the speed and volume of information they must consider daily. In this new ecosystem, a new phenomenon is emerging, micro-targeting. Micro-targeting is a communication technique that uses data from people. User details include, among other things, people's likes and dislikes, their connection, exactly where they are, and how they shop. Its communication approach aims to divide these people into accessible categories and access the material effectively (Hussain and Roy, 2016).

The basic causal model supports the correlation between general measures of media coverage, and the measures of oversight of public opinion important at a given time is the evidence of agenda-setting. Subsequent studies have refined the model by examining the correlation of agenda-setting for different issues, different types of media, different types of audiences, and different time lags between media coverage and public response (Dearing and Rogers, 1996; McCombs, 2004; McCombs and Shaw, 1993; McCombs, Shaw, Weaver, 1997; Wanta and Ghanem, 2007). Few in this tradition have approached the difficult prospect of evaluating media plans and public plans over time with a focus on the causal direction aspect (Brosius & Kepplinger, 1990; Burstein, 1985; Cohen, 2008; Fan, 1988; Kellstedt, 2003; Neuman, 1990). However, the number of these analyses was so small that they were removed from a meta-analysis with the notation, “Given that most of the design studies used Pearson correlations, removing these few time-series studies did not significantly reduce the number of studies included in our analysis” (Wanta & Ghanem, 2007). McCombs and Shaw (1972) considered the possibility that those correlations between the media and public plans might be the case in the reverse direction with journalists, in effect, anticipating or predicting public interests but rejected this premise as implausible.

The research in the field of Big Data and politics, specialist have identified the phenomenon called *computational politics*. The concept refers to applying computerized methods and information technology in database obtained through online and offline platforms in order to promote, persuade and activate the target audience in order to win elections, sustain or compete a certain candidate, a public politics or a legislative initiative. Computational politics is derivate from the social and behavioural sciences, being developed through experimental methods, including online experiments, in order to realize user profiling, hyper personalized communication, and to develop persuasion methods, also hyper personalized. Notwithstanding, computational politics represents a set of practices that rely in Big Data and the analysis tools associated with it. The concept is defined by information asymmetry, in the sense that those who own the data have plenty of knowledge regarding the users, but the users don't know what data have these Big Data specialists. (Winston, Finlayson, 2004, Tufekci, 2014; U.S. Federal Trade Commission, 2014; Braud et all, 2019; Haq et all, 2020).

Computational politics contributes to the change of political communication towards personalization, individual interaction, detail analysis and correlation of different online actions realised by the users, increase of the processing capabilities and semantic analysis, increase of the cost efficiency and human resources, increase in the number of persons involved in the online experiments. For example, thorough the Latent Dirichlet Allocation, keywords can be tagged in order to generate ideologic content estimations. (Goldbeck, Hansen, 2011).

In academic articles, concern about the influence of digitization has raised questions: "Can democracy survive on the Internet?" (Persily, 2017) where once there was a relatively brief period of euphoria about the possibility that social media could create a golden age of global democratization (Tucker et al., 2018). Social networks, the data they hold, and the widespread and visible reach they enable have become newsworthy – and an increasingly important area of focus for academic research. This is because, in recent years, we have witnessed many of the phenomenally successful internet businesses set up in the last decade (Facebook, Google, Twitter, etc.) acting somewhat recklessly about the use of the huge amounts of data they have from users and the personal information people are willing to give up to use these free, cleverly developed software applications, but designed to touch so many aspects of our 'connected' lives (Andersson, 2018).

The Big Data Presidents

Online social networks, politics, and Big Data are increasingly in the news about organizations. Today's technology provides extensive organized knowledge about potential stakeholders, suppliers, rivals, and internal operations, practices, and habits, which ensures that Big Data becomes the centre of the organization (Scola, 2013). Political campaigns using advanced behavioral and psychographic targeting, along with geographic micro-marketing (Albright, 2017), designed to bring in or win key voters, may even have affected the outcome of the 2016 US presidential election, a contest that Cambridge Analytica claimed to have "won" for Donald Trump (P. Lewis & Hilder, 2018). The misuse of large amounts of personal data, along with state-sponsored interference in election processes by promoting frequently inflammatory material on popular social media, including Facebook and Twitter (BBC News, 2018), has been widely reported in the media (Cadwalladr & Graham-Harrison, 2018; New York Times, 2018).

Since 2012, Barack Obama, the former United States of America (USA) President has used this approach to carry out his efforts throughout his campaign and presidency. This action has caused much progress and a great transition to how candidates contest votes in America. Hussain and Roy (2017) state that politics in America fundamentally changed during this period. Analyzing the communication tactics in politics, Nickerson (2014) sustains that some of them are obsolete in the advent of Big Data and the use of technology. The author emphasizes though, even in the last year, the voter's data were consistent, and the volunteers and the sympathizers were the ones that gathered the information from the field. Nevertheless, data couldn't be utilized at their true value and technology became the tool that raised the standards and increased the communication and promotions' efficacy in the political field.

Issenber (2012) author indicates that the "Big Data President" name was attributed to Obama after his 2012 campaign, and this owes to the fact that his team managed to utilize the data analysis and experimental methods. Firstly, this approach determined a hijacking of the political advertising supremacy in the USA and, secondly, created leverage for a new type of approach in the political communication, a national campaign similar to a campaign for a city, in which the interests of the voters are known and discussed in the campaign. For the current analysis, I will mention a couple of ways the Obama team used Big Data in his campaign. In the 2012 campaign, a Siemens Enterprise phone system was

installed that allowed up to 1.2 million phone calls a day to create polls regarding the voters' opinions. Moreover, they also acquired Vertica software from Hewlett-Packard that granted data integration of over 180 million voters with the information from the volunteers, donors, and everyone who has interacted with Obama online. By doing this, the campaign team was able to mobilize the 2008 voters, but also to find new ways to bring the voters to the polls. An additional program created by the Obama team, called Narwhal, was the one that collected data from digital platforms and financial data in a single database (Gallagher, et. all 2020). This way, the political campaign started with 10 terabytes of information (Burt, 2013). Hussein and Roy (2017) observe that, by tapping into the Big Data power, Obama's team managed to better organize the information and data, better work with programmed TV communication, better use of statistics, and ways to choose and broadcast news about the campaign.

Hussein and Roy (2017) mention that Nielsen was among the television pioneers who helped in this regard. Television was the best technology used, which allowed the campaign space to generate or raise more funds, and every dollar was used to promote campaign messages and less rivalry. The use of the right data collection and modelling tools allows the task to be simpler and fits the particular concerns and roles of the portfolio with those of the candidates. Such games can attract voting classes and actual voters. Through data and the technology behind it, the team managed to identify potential timelines to promote the message with below-average pricing compared with the general media, but with the same efficiency. For example, his analyst team discovered an impressive number of voters didn't avoid the TV debates because they were not interested, but because they had children and they were too busy to follow those respective TV slots.

In early 2018, a conflict between Facebook and Cambridge Analytica (CA) went viral after the latter managed to collect data from the social media giant on their customers and exploited it for the benefit of the political campaign of the current American president, Donald Trump, during the 2016 US election (Silverman, 2018). Trump's campaign team hired Cambridge Analytica to help him build momentum for tech-savvy individuals who use social media daily in their online marketing plan (Silverman 2018). The scandal centered on claims that personal details obtained from at least 87 million US Facebook users were used to spread lies by Russian agents in support of President Donald Trump's election (Judge, 2018). CA began its work in Australia and assisted the Liberal Party during its election with documentation and government officials. CA was to bring an

increase in efforts to harness the two successful political profiles, based on the team's previous years and expanding its coverage that was established in democracies in western regions (Dolan, 2018). Cambridge Analytica's mission was to report on market indicators affected by the application of micro-targeting or custom polling to gauge people's attitudes. Dolan (2018) reminds us that the Australian population is around 24 million, allowing companies like Cambridge Analytica to generate enough money by engaging in political campaigns. Federal elections are held within three years, making it one of the shortest models of government in a nation. Cambridge achieved a level of notoriety after several reports that revealed information about information collection as well as apparent efficiency (Filloux, 2019).

Looking at the history of Big Data in politics, it all started with the development of a quiz app created by Cambridge alumnus Aleksandr Kogan (Etter & Frier, 2018) and installed by just 305,000 people that led directly to the "harvesting" of some 87 million Facebook user profiles in 2015 including, ironically, details from Facebook founder Mark Zuckerberg's account (The Independent, 2018). This explains Cambridge Analytica's interest in his work (Davies, 2018). The data collected by the "This Is Your Digital Life" app and shared with Cambridge Analytica exploited the 'social graph' or set of inter-linkages between Facebook users and the platform's API or Application Programming Interface (BBC News, 2018). This data was subsequently used to "build psychological profiles of voters in the United States" and elsewhere (Frenkel, Rosenberg, and Confessore, 2018).

The revelations around Cambridge Analytica's misuse of Facebook data for political marketing purposes prompted a US Congressional Committee investigation into data use, sharing, and privacy policies at Facebook (McKinnon & Seetharaman, 2018; US House of Representatives, 2018). In CA v Facebook, it was alleged that Facebook violated data privacy laws by allowing third parties to view personal data without the user's permission. This material was provided to the Trump campaign, which contravenes the organization's rules. The event gained worldwide interest when key players raised the topic of Big Data exploitation. The main argument is that when private information is posted on websites, this citizen data should be secured (Mirchandani, 2018). In a global society, both at the organizational and political level, good governance is critical as it decides the type of leadership. Politics influences significant social and economic decisions; thus, significant global events, such as the election of a substantial world leader, can be affected by the use of Big Data, which is a central

topic of debate and questions about the ethics and transparency of data use. The response to this crisis came immediately from Facebook, which included updating privacy policies and finding and reporting any loopholes that could be exploited for personal gain. To exonerate his company, CEO Mark Zuckerberg also had to appear before Congress. Academic research findings related to the topic of Big Data in light of the 2018 Facebook and Cambridge Analytica scandal interference and alleged Russian state-sponsored interference in the 2016 US presidential election campaign (Cadwalladr & Graham-Harrison, 2018, USA House of Representatives, 2018), demonstrate how the misguided/inetic use of Big Data can be applied in attempts to disrupt normal democratic processes.

In the United Kingdom (UK), links between political strategists at Cambridge Analytica and pro-Brexit campaigners contesting the 2016 European Union Accession Referendum led to claims that “data analytics” provided by the political arm of Political CA and AggregateIQ (Ram, 2018) effectively “hijacked the democracy” (Cadwalladr, 2017). These claims have been tested by a group of British expatriates (Bowcott, 2018), leading to a High Court case challenging the legality of the 'Brexit' result (Wilson, 2018), based on the £449,079 expenditure that Vote Leave campaign organizers made; the Electoral Commission has been fined several times as a result.

Digital spending on campaigns has been steadily increasing in the UK (Sabbagh, 2018), given trends captured by the need for professionalization, commercialization and mediatization, as well as dramatic changes in the way parties run their election campaigns (Lilleker, Tenscher, & Štětka, 2014). These developments and the problems associated with the promulgation of 'fake news', which researchers have observed can 'travel' very quickly on online social media (Vosoughi, Roy, & Aral, 2018), prompted a House of Commons Select Committee inquiry (Digital Media Culture and Sport Committee, 2018) to call on academic experts with advanced degrees in media and communications for evidence (Fuchs, 2018). Among ministers and MPs, there is widespread concern that digital communications and/or fake news, disseminated on the internet or social media, may be 'crowding out' real news, creating a 'crisis' for British democracy (BBC News, 2018).

In the USA, the 45th President of the United States, Donald Trump, has faced an investigation by Special Counsel Robert Mueller into his and his campaign team's ties to Russian operatives seeking to influence the outcome of the 2016 election

that brought him to power. Since his appointment as head of the independent federal investigative and prosecutorial agency (USA Office of Special Counsel, 2018) on May 17, 2017, Mueller has detained 22 criminal defendants and collected five pleas, including from Michael Flynn, former national security adviser; Richard Gates III, former deputy to campaign chairman Paul Manafort; and George Papadopoulos, former Trump foreign policy adviser (McCarthy, 2018).

A new dimension of how data can be misused has been outlined. For Cambridge Analytica, the financial and reputational results have been dismal as several of its clients have failed to conduct their business and become ineffective. At the end of April 2018, the firm reported shutting down its operations as a business. President Trump was unpopular among major US newspapers, with only 20 newspapers endorsing him, compared to the 200 Clinton-sponsored newspapers. The Trump administration ran out of the money Hillary used to invest $200 million in media ads. During the Make Political Marketing Great Again lecture, held in Bucharest at the invitation of the Romanian Academy in March 2019, Dan Parscale mentions that in the 2016 campaign, Hillary Clinton's team created 66,000 different messages. Trump's team created 5.9 million different ad messages. Those messages were thought out and targeted directly to voters in the way they consumed the messages. As a campaign strategy, Parscale notes in the same conference, he changed the way he looked at people as demographics, groups or individuals and proposed that they be looked at individually, as each act, because in his view, two people can look the same but behave differently.

Trump's target audience was largely male, white, with limited resources/income, without a high education, who felt they had no political voice, were externally intimidated, and lived in racially abusive areas. Trump responded by threatening to raise taxes on wealthy people, deporting unregistered aliens, and expelling Muslims from the country. Poor uneducated Americans have experienced frustration through globalization and rising tuition prices. Moreover, Trump's online advertising has been optimized to reach and influence the behavior of rural voters considered invisible (Hussain and Roy, 2018). Numerous studies have examined how online interpersonal activities as reasoning mechanisms link research for political campaigns to political outcomes (Yamamoto and Morey, 2019, Chan, 2016).

According to Brad Parscale, the digital and political consultant and member of President Donald Trump's re-election and digital operations team (2020 campaign), “With the president in office, we're developing a different set of actions from 2016. Back then, everything was on a knife-edge and the campaign operated, even at its best moments, at just a fraction of what was probably needed. Everything was mobile. Changing, adapting. It was about a man running for the first time for an official role” (interview taken for Face Nation, 2020). Also, Parscale shows that in 2016 the Trump campaign had 700,000 volunteers, and by 2020 they aim to reach 1.6 million volunteers connected through technology to the voter's phone, both through apps and other technological developments.

Propaganda based on information gathered through Big Data seems to be a growing problem in several states. In Kenya, Cambridge Analytica mined voter data to help President Uhuru Kenyatta win elections in 2013 and 2017. Over two presidential election cycles, it presided over some of the darkest and most visible campaigning Kenya has ever seen, “poisoning” the country's democracy (Madowo, 2018). It is currently unclear whether these observations are real, and ultimately it may prove impossible to determine (W. Davies, 2018), whether these interventions by companies or state-sponsored actors have had any direct impact or “clear monolithic effects” on electoral outcomes (Dimitrova & Matthes, 2018). Propaganda based on information gathered through Big Data seems to be a growing problem in several states. In Kenya, Cambridge Analytica mined voter data to help President Uhuru Kenyatta win elections in 2013 and 2017. Over two presidential election cycles, it presided over some of the darkest and most visible campaigning Kenya has ever seen, “poisoning” the country's democracy (Madowo, 2018). It is currently unclear whether these observations are real, and ultimately it may prove impossible to determine (Davies, 2018), whether these interventions by companies or state-sponsored actors have had any direct impact or “clear monolithic effects” on electoral outcomes (Dimitrova & Matthes, 2018).

Governments, regulatory agencies, and lawyers are examining the multiple breaches of online trust generated by these developments, while the scientific community is to some extent playing 'captive'; even though issues related to echo chambers (Gilbert, Bergstrom, & Karahalios, 2009), polarization (De Nooy & Kleinnijenhuis, 2013), participation (de Zúñiga, Veenstra, Vraga, & Shah, 2010) and disinformation (Budak, Agrawal, & El Abbadi, 2011) in political discourse in social media have been researched for some time. More broadly, there is a perception in the literature, particularly in the wake of the Facebook and

Cambridge Analytica scandal, that the rise of the network society elevates Big Data into the realm of an Orwellian Big Brother, constantly storing information about individuals' daily actions and using this data for manipulation or control. Previous revelations by former USA spy Edward Snowden, published in The Guardian (2018), which revealed that government surveillance agencies make extensive use of social media feeds, as well as any other internet and telecommunications data they can access, have already done little to inspire public distrust of online digital privacy, and, it seems, within a week of President Donald Trump's inauguration on January 20, 2017, following several post-election months in which Big Data-driven campaign techniques came to light, George Orwell's "1984" was the best-selling book on Amazon.com (Broich, 2017).

Jeff Chester and Kathryn Montgomery's paper tracked the "ongoing political marriage" and trade "and the rise of data-driven political marketing" (Chester and Montgomery, 2017). They looked at seven key techniques used in 2016 campaigns in the US, all of which point to massive consolidation efforts in the digital marketing ecosystem: cross device targeting; programmatic advertising; lookalike modelling, such as that offered through Facebook; online video advertising; targeted TV advertising; psychographic, neuromarketing and emotion-based targeting. In their new article in this collection, the authors expand on this analysis and preview the types of practices likely to be witnessed in the 2020 USA election campaigns (Chester & Montgomery, 2019).

At the same time, the power of data-driven elections may be overstated. Philippi's (2019) article shows that it is difficult to empirically determine how and if Big Data wins elections. Data-driven campaign strategies are likely to be more effective in mobilizing supporters and donors than in persuading undecided voters. Thus, the emphasis on the scale often substitutes for claims of effectiveness, the author believes. At one point, Cambridge Analytica claimed to have around 5,000 different data points about the American electorate. The USA voter analytics industry, including companies like Catalyst, i360, and HaystaqDNA claimed an extraordinary amount of personal data under their control – free and purchased, from public and private sources. Such claims about Big Data further reinforce widespread narratives about hegemony and glorification of size and granularity in databases over acceptable claims about efficacy (Baldwin-Philippi, 2019).

Social media analysis is a step used by many politicians and therefore data is quickly seen by the team in a short time. According to Yamamoto and Morey (2019), they make a distinction in terms of added value for a candidate between today's ordinary media and elective media. The former involves the use of traditional television and newspapers. The authors note that when it comes to major politicians, media is the most common form of presence for them. The second involves digital or modern media, and this includes the phones we have and whatever facilities are in them. Mobile phones can, without much difficulty, access data about users' perceptions of the state of governmental issues in a country from any location through the aggregation of data from pledges such as Facebook, Instagram, WhatsApp, among others (Yamamoto and Morey, 2019). The main social media platforms that Trump has used, Twitter being the most visible, have helped him spread his political vision to American citizens.

From the case study of the Trump campaign and Cambridge Analytica, it is essential to examine how Big Data enables public relations professionals to deliver more informed and accurate campaigns to their audiences. Also, an analysis of the new skills needed by the public relations professional to adapt and use Big Data technology, Big Data impacts communication goals and the different tools applied to public relations professionals to aggregate. They have analyzed the data, and now it is important to look at how the public relations professional uses Big Data to influence public agenda-setting. As Bârgăoanu (2018) notes, analyses have already emerged that show us a reality that many might consider harsh: the political class and traditional media are clueless about how and what is happening in the information ecosystem disrupted by technology in general and Facebook in particular.

Big Data Paradoxes

As stated before, Big Data in the political communication field lays before several paradoxes and questions. First, one must analyze the way Big Data is stored and reported. The second question is if Big Data has truly the capacity to change the world: is it going to become the main force in what concerns the politicians' ability to envisage protests or help doctors to save the patients' lives? Third, refers to how Big Data will serve the purpose to change behavior based on the insights gained from Big Data. If citizens' data will continue to be erroneously used or manipulated, the public will be less eager to share their information.

Smith and Cordes (2019) identified some Big Data pitfalls. These include misused data (e.g., truncated or specially chosen data, often associated with poor graphics), pre-theory data (e.g., false correlations and post-doc predictions), "worship" of mathematics in behind Big Data (e.g., analysis models are wrong, excessive matching, p-value hacking, regression applied to longitudinal data), correlations vs. causation, the determination of negative consequences (for example, the prediction of social characteristics such as software recidivism is extremely worrying (and simply wrong).

Previously, King (2013) observed that there are 3 paradoxes of Big Data: the paradox of transparency, the paradox of identity, and the paradox of power. In the case of the transparency paradox, he notes that major data analytics depend on small data intakes, including information about people, places, and things collected through sensors, cell phones, click devices, and the like. These small data inputs are added to produce large data sets with analytical techniques for observation. This data collection occurs invisibly and only accelerates. King notes that there are legitimate arguments for a certain level of Big Data privacy (just as there are legitimate arguments for personal privacy in the age of important data). To operate at full capacity, important commercial and governmental data systems that constantly attract private information from the growing all-encompassing Internet are often connected to highly sensitive intellectual property and national security assets. The advantage of Big Data may depend on trade secrets, and the existence of sensitive personal data in important databases recommends confidentiality and security. But as Big Data analytics is increasingly used to make decisions about people, those people have a right to know on what basis decisions are made. We do not propose that these systems be stored without security measures or available to the general public. But we need to recognize the paradox of transparency and bring together legal, technical, business, government, and political leaders to develop appropriate technical, commercial, ethical, and legal protections for important data and people. Big Data tries to identify but also threatens identity. King calls this the paradox of identity. He mentions that we instinctively want sovereignty over personal identity. While the important right to privacy comes from the right to be left free, the right to identity has its origin in the right to free choice about who we are. This is the right to define who I am. I am me; I am anonymous; I'm here; I'm there. I'm watching; I buy. I am a supporter; I'm critical. Vote; I abstain. I'm pro; I'm against. I like; I do not like. I am a permanent resident foreign national; I'm an American citizen. Even with the

most basic access to a combination of important data such as phone records, online history, purchase history, social media posts, and more, there is a risk that "I am" and "I like" will become "you are" and "you will like it." Any Google user is already affected by the provision of important data from Google search results, a risk that echoes individual and collective thinking.

Leonard (2013) details how companies that discover how to generate intelligence from that data will know more about us than we know about us, and will be able to develop techniques to determine which direction to go differently from the one we choose. we would stick to our own devices. The power to shape our identities for us suggests a third paradox of Big Data. They are promoted as a powerful tool that allows its users to see a more accurate and clearer picture of the world. For example, many Arab protesters and commentators have credited social media to helping Protestants organize. But important data sensors and important data warehouses are predominantly in the hands of strong intermediaries, not ordinary people. Seemingly learning from Arab organizers, the Syrian regime has simulated removing restrictions on the use of Facebook, Twitter and YouTube by its citizens just to secretly profile, identify and determine dissidents.

This is the paradox of power. Important data will give rise to winners and losers and there may be a benefit for institutions that have tools on the people investigated, analyzed and selected. Not knowing the legal or technical limits, each party can only guess. Individuals give in to denial as governments and corporations escape as best, they can through failure until they are allowed to falter as a result of a scandal following the shock of the revelation. The result is a not at all easy and insecure state that is not healthy for anyone and affects individual rights, and our democracy is reduced. If we do not take measures to protect the confidentiality, transparency, autonomy and identity of important data from the beginning, warns King (2013), the paradox of power will reduce the great ambitions of important data. He believes that a healthier balance of power is needed between those who generate data and those who make inferences and make decisions based on them so as not to generate inappropriate revolt or control of the other.

A closer look reveals that professionals in strategic communication influence the construction of public opinion and the construction of reality in media companies to a large extent (Hepp, 2020; Knoblauch, 2020). Combating or supporting conspiracy theories and fake news, intentionally or randomly, have an impact on

global health issues, as well as on the economic development of communities and individuals. This poses severe ethical challenges for communication professionals, which are driven by an exponential increase in Big Data, as defined in this paper. Recall that digital technologies offer many opportunities for strategic communication (Freberg, 2017), for example, using social robots (Wiesenberg & Tench, 2020), Big Data analysis (Wiesenberg et al., 2017), sponsored content (Zerfass et al., 2019) and social media influencers (Enke & Borchers, 2019). However, such practices are less institutionalized and are rarely covered by codes of conduct compared to traditional media relations or advertising.

According to the study *Euprera – Ethical challenges, gender issues, cyber security, and competence gaps in strategic communication* (2020), most communication practitioners are challenged by such practices: two out of three (67.6%) respondents say that the use of bots for Generating feedback and followers on social media is extremely or very challenging from an ethical point of view. Most consider the same for all the other practices mentioned above. Fewer issues are identified when it comes to profiling and targeting audiences and editing entries in public wikis such as Wikipedia. A second point considered with many ethical questions concerns the study of the exploitation of personal data of the audience by applying Big Data analytics (58% consider this practice very challenging), while profiling and targeting the audience based on age, gender, ethnicity, service, or interests is seen as less challenging in terms of ethics (46%).

Conclusions

Nasim Taleb (2012) said that "This is the Big Data tragedy: The more variables there are, the more correlations that can have meaning. Falsehood also grows faster than information; it is non-linear (convex) in terms of data (this convexity is similar to that of a payoff financial option). The noise is anti-fragile. The correlations and significance that Taleb mentions emerged from the analysis I conducted. Communication professionals have not yet discovered the creative and communication process based on Big Data. Our research has shown that from drawing messages to storytelling to following public trends, Big Data analytics can help the with positioning, reach new audiences, deal with public relations crises, decipher changes in its audience behavior, understand cultural differences, and discover new market segments. The advantages of using Big Data analytics, in the broad context of technological immersion in communication, outweighed

the disadvantages. The data we have shown us that we can use Big Data to build more effective and creative strategies in the political communication. Big Data, in essence, means that everything we do, both online and offline, leaves a digital mark. Every online purchase, Google search we've just done, every move we make is monitored by the app installed on your mobile phone, every online interaction is stored.

Does the fact that more people produce more data for us change what we say about what data looks like? Not really. For example, the easier ways to take and share photos with digital cameras and smartphones and social media have changed their behavior, but the reason people take pictures has not changed so profoundly that thing without the help of Big Data. But most importantly, as Nicolas Nassim Taleb said, addiction to Big Data is wrong without human intervention, because we now have so much data that any theory can be proven and disproved at the same time. Our data shows that, for the time being, the infrastructure for interpreting Big Data is minimal.

Big Data is useless if it is not interpreted and exploited for prospects. The question is how can we get to a place where we can incorporate it properly, so that it acts as what it was all this time, a bigger pond to fish for more details. As the market gets crowded, there is a clear and dynamic shift in power from brand, even a political one, to consumer/citizen. Thus, organizations need to build stronger and longer lasting relationships throughout the procurement process, ensuring the connections of this data.

A relevant question in the context of this research is how do we turn all this data into value for the organization? The responses we received showed that an up-to-date technological infrastructure, a coherent and standardized workflow (from data collection to analysis), correlated with the communication strategy, can have an extremely high impact in terms of regarding the competitive advantage of the organization in terms of: messages sent, branding, the user's perception, stakeholder involvement, crisis management, etc.

For future research, the present results raise new questions: what will be the cost of access to Big Data and who will be able to afford it, what will happen to those organizations that are not starting to invest now and how big will be the gap between the new agencies? communication and traditional ones. Moreover, there will be consequences arising from differences in access to Big Data. At the same time, there are technologies mentioned in this paper, such as Blockchain, which

will continue to shape Big Data and its use. Thus, we wonder what its role will be in the near future. Given the differences highlighted in research, in the future, a potential direction of research is to analyze the activity of these organizations after Big Data will become widespread in use and understanding and how it will influence the long-term thinking and skills of the communication specialist.

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