

# Disinformation, social media, bots, and astroturfing: the fourth wave of digital democracy

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## Abstract

This article reflects on the conceptualization and the salient features of the ecology of e-democracy. The authors identify four distinct waves marked by technological innovations and studied under the control–participation dichotomy. In the first wave, during the 1990s, political actors begin to establish their online presence but without any other notable changes in communication. The second wave takes place from 2004 to 2008 and features the consolidation of social networks and the increasing commodification of audience engagement. The third wave begins to take shape during Obama's 2008 election campaign, which featured micro-segmentation and the use of big data. The fourth wave, starting in 2016 with the Brexit campaign and the Cambridge Analytica scandal, has been defined by the front and center use of Artificial Intelligence. Some recent phenomena that challenge or buttress the make-up of critical public opinion are the following: a) digital platforms as political actors; b) the marked use of Artificial Intelligence and big data; c) the use of falsehoods as a political strategy, as well as other fake news and deep fake phenomena; d) the combination of hyperlocal and supranational issues; e) technological determinism; f) the search for audience engagement and co-production processes; and g) trends that threaten democracy, to wit, the polarization of opinions, astroturfing, echo chambers and bubble filters. Finally, the authors identify several challenges in research, pedagogy and politics that could strengthen democratic values, and conclude that democracy needs to be reimagined both under new research and political action frameworks, as well as through the creation of a social imaginary on democracy.

## Keywords

Artificial intelligence; Astroturfing; Automation; Bots; Covid-19; Big data; Democracy; Algorithms; Disinformation; Election campaigns; Political communication; Hoaxes; Fake news.

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## 1. Introduction: technology and democracy

The ecology of digital democracy is still unclear. In this hybrid and liquid environment, actors and processes once dominant in previous stages of e-democracy are intermingling with new centres of power such as online platforms. The changes, driven by the implementation of new technology, are not neutral. Per the theory of participation, technology has been used as a synecdoche of e-democracy and studied fundamentally under the control-participation dichotomy. Therein, technology can shift the axis towards or away from democracy. As such, democratic values and practices can be seen in participation, interaction or deliberation or, on the contrary, technology can be analysed as a homogenizer of messages, centralizer of control and, therefore, as fomenting the deterioration of voluntary citizen engagement in public affairs.

Today the processes are more complex and have given rise to dissimilar interpretations. For example, there is concern about the manipulation of citizens, especially around elections and referendums, through the creation of artificial public opinion that could provoke chaos and conflict in politics (Frost, 2020). Some question the significance of phenomena, such as polarization or online disinformation, whose pre-eminence in the social imaginary is not supported by empirical results, which indicate rather that it is a phenomenon with limited scope. As such, an analysis of the structural transformations that have given rise to such distrust is necessary (Jungherr; Schroeder, 2021).

In this re-thinking of the imaginary, the collective conception and vision created of technology, engagement and their role in democracy must be included. Citizen engagement is one of democracy's core values, but it is necessary to reflect on its meaning, where and under what conditions it is exercised, and its medium-limited ecosystem which can neutralize it by creating a false sense of engagement. New actors such as online platforms are engaging in the construction of this social imaginary and the reimagining of democracy, the public agenda and political action on and off the campaign trail (García-Orosa, 2021). In some cases, they even explicitly decide who can have a voice in the debate or conversation, as seen in the recent case of Trump on January 6, 2021, when *Twitter* decided to delete his account during the assault on the Capitol or in 2019 when *Facebook* banned four Ethnic Armed Organisations (EAO) of Myanmar from said platform by labelling them as dangerous organizations (Sablosky, 2021).

Under the umbrella of digital democracy, e-democracy or cyber-democracy, the scientific literature in the past 30 years has registered various changes in democratic systems, mostly linked to the use of technology in communication (30.8%), political science (17%) and engineering (15%) (*Web of Science*). Communication is a fundamental element of democracy and of research on democracy.

What is needed now is a systemic conceptual framework for research with a structural approach in which technology is analysed as an element of a complex system. Researchers advocate for this shift so as to determine and evaluate the role of information society tools in solving problems in democracies (Anastasiadou; Santos; Montargil, 2021) and in overcoming technological determinism, a theory which holds that technology imprints its own logic on social relations and different actors appropriate it in pursuit of their own interests (Agre, 2002).

In this sense, recent research is beginning to rethink democracy and the public sphere, in addition to exploring new analytical schemes and effective methodologies to better understand transformations. Mancini (2020) proposes a revision of the interpretative scheme first described in the 2004 book *Comparing media systems: Three models of media and politics*. In it, the author analyses a process of de-institutionalization which undermines the role of institutions such as the state, political parties and the media and transfers some of their actions to broader and more volatile actors which must be analysed.

Although there is no consensus on the definition of democratic quality, in recent years a line of research has arisen which seeks to measure digital democracy beyond citizen engagement and interaction. Kneuer (2016) identifies three dimensions of democratic quality essential to any analysis:

“(1) the dimension of civic and political rights and rule of law, which could be considered the constitutional and control dimension; (2) the procedural dimension, consisting of basic democratic principles relevant to the input level and decision-making level; and (3) the output dimension, which refers to the effectiveness of government performance. Synthesizing the different strands of the quality of democracy is a meaningful way to reduce complexity and provide a parsimonious concept which is at the same time sufficiently comprehensive to contain the convergent components (participation, competition, etc.)” (Kneuer, 2016, p. 668).

From the field of comparative analysis, *The monitor for democracy* (Trappel; Topaz, 2021) offers a new analytical proposal and studies the influence of the structures and behaviour of the mainstream media vis à vis the needs of contemporary democracies over the past decade in 18 countries.

When studying democracies, it is necessary to place democracies, which are dynamic and heterogeneous, in their historical context. Democracies are complex systems which involve values such as freedom and respect, as well as new and traditional processes and actors which influence and are influenced by technological innovations.

The public sphere and conscientious engagement with the knowledge necessary for responsible political action stand out as fundamental elements of e-democracy. Political power relations are at stake in the realm of communication (Cas-

tells, 2021). As such, this article aims to systematize the stages of political communication in democracy and provide a literature review of noteworthy phenomena in recent years. In the conclusion, the authors describe some of the challenges which may lie ahead.

## 2. Phases of digital democracy

Communication is essential for the proper functioning of democracy, in which ideally ultimate power resides in the citizens who should have access to knowledge to guide their political action. What were the milestones along the path which led to the current situation in which political communication departments have institutionalized lying as a strategy (Gaber; Fisher, 2021) and spending on disinformation campaigns is increasing? Let's look briefly at the four major phases of e-democracy and the milestones therein which have led to the present panorama.

- The first wave of digital political communication began in the 1990s, when political actors became more interested in gaining online presence rather than establishing a fixed identity. Governments, political parties and the media launched their first websites. The advent of e-mail began to change the flow of information, though its use had yet to become widespread. The first scholarly analyses focused on electoral campaigns and suggested that cyber-democracy had yet to arrive because most communication was unidirectional and asymmetric, serving as a mere propaganda channel. In this phase, smaller parties began to stand out as innovators (Auty; Nicholas, 1998) and local governments to see technology as a new way of offering services to citizens (Steyaert, 2000). While such actors failed to realize the significance of these changes, researchers started to examine the possibility of the birth of cyber-democracy and its potential consequences. Debate focused on questions about the authorship of messages, the right to Internet access and the definition of new concepts such as cyber-citizens, digital parties and digital native media.
- The second wave, from 2004 to 2008, (García-Orosa, 2021) began with Facebook's launch on 4 February 2004 and is marked by the proliferation of social networks, including Facebook, Twitter and YouTube. For political marketers, citizens are quintessential in promoting the ideas of civic engagement and democratic deliberation, but they are also tools to make messages go viral. In this phase, content still hasn't been adapted to fit social networks, but nascent changes in the distribution of power can be gleaned.

The scientific literature seeks to measure the influence of technology on traditional actors (political parties, media and citizens), especially during campaign season. Case studies tended to focus on a single platform at a given place and time. To a lesser extent, transformations in governments and campaigns, such as the introduction of electronic voting (Oostveen; Van-den-Besselaar, 2004) and the development of online government services (Torpe; Nielsen, 2004; Welp, 2008), are also analysed. By the end of the second wave, civic engagement is already seen as the cornerstone of democracy.

- The third wave of e-democracy kicks off with Barack Obama's groundbreaking presidential campaign in 2008. Following in the footsteps of Obama's campaign, political parties and candidates begin developing detailed profiles of voters and individualised messaging, in addition to relying heavily on social networks, micro-segmentation and big data. Scholars continued analysing languages, narratives, gamification and other tools that turn communication into hypermedia, especially during election campaigns (Lilleker; Tenscher; Štětka, 2015). In addition to specific studies on technological innovations, this phase delves deeper into the conceptualization and classification of e-democracy. In 2011 Dahlberg highlights different conceptions and provides a framework for examining and evaluating rhetoric and practice from four "positions" of digital democracy:

"...liberal-individualist, deliberative, counter-publics, and autonomist Marxist. The delineation of each position draws from critical-interpretative research and has been developed with respect to three elements: the democratic subject assumed, the related conception of democracy promoted, and the associated democratic affordances of digital media technology" (Dahlberg, 2011, p. 854).

Baarda and Luppicini (2014) and Martínez-Bascunan (2015) explore techno-ethics and the implications of technology for promoting e-democracy. Other studies highlight the promotion of *push-button activism*, which, according to Pe-tray (2011) offers opportunities for engagement to minority groups, whereas others point out significant limitations on engagement and contradiction between government discourse and the praxis of limited intervention (Firmstone; Coleman, 2015).

- In the current and fourth wave, beginning in 2016 with the pro-Brexit campaign and the actions of *Cambridge Analytica*, various watershed developments have arisen: a) digital platforms becoming political actors which intervene in every phase of communication; b) the intensive use of artificial intelligence and big data; c) the rise of falsehoods as a political strategy (among other fake news and deepfake phenomena); d) the combination of hyperlocal elements with supranational ones; e) technological determinism; f) audience engagement and co-production processes; and g) trends which pose a threat to democracy, e.g., polarization of opinions, astroturfing, echo chambers and bubble filters (García-Orosa, 2021).

There is a heated debate on what defines democracy in today's world, and cracks have started to form in the Manichean discussion of the advantages versus the dangers for democracy posed by technological innovation. While concern about the influence that the internet may have on the classic values of democracy is increasing, especially following studies on the use of social networks and bots in the 2016 US election campaign and the Brexit referendum

campaign, holistic studies are required to produce a more complete analysis of a complex reality. The study of the dangers, challenges, and opportunities for public discourse must go beyond the threats to election integrity posed by foreign hackers (**Chambers; Gastil, 2021**).

Within this setting, concern for the cognitive frameworks and procedures through which knowledge is built in the digital age resurfaces as an epistemic crisis of the public spheres related to the massive amount and velocity of information and the processes of knowledge construction, in addition to the new forms of knowledge derived from digital technologies (**Dahlgren, 2018**). **Entman and Usher (2018)** call for a re-evaluation of the processes through which news and information are produced, distributed, assimilated and acted upon, and outline five characteristics of digitalization which affect the relationships between elites, traditional media and individuals:

“We consider five important, new, digitally enabled *pump-valves* in the flow of socio-political information and frames: platforms, analytics, algorithms, ideological media, and rogue actors.” (**Entman; Usher, 2018**)

Along the way the structures and actors of democracy have undergone changes, and today new actors such as digital platforms co-exist with traditional and hybrid ones. Political parties began their reconfiguration more than 20 years ago (**Stokes, 1999**) and have become today digital or cyber-parties which share ideological characteristics such as an emphasis on grassroots participation and the use of participatory platforms in decision-making (**Deseriis, 2021**) though in most cases they do not take full advantage of the potential for engagement with citizens offered by such platforms. Per **Deseriis (2021)**, today there are two ideal party types: the platform party and the networked party. The author points out that the former is highly centralized, has charismatic leaders and focuses strictly on elections, whereas the latter is more decentralized and allows policy proposals and leadership positions to emerge from the network itself.

The media, another significant pre-Internet actor in democracy, have re-defined their space in political communication through the emergence of digital native media, by re-designing their relationship with audiences and through the tension between two major tendencies in the analysis of the relationship between media and politics:

“those who emphasize the mediatization of politics (...) and those who warn of the dependence of the media on external actors, as well as their loss of influence and weight in recent years” (**López-García, 2017**).

Also of note are the social movements which have emerged in Brazil, Turkey, Mexico and Chile, in addition to the Arab Spring, all of which have re-shaped the public sphere and magnify the voice of citizens with Internet access and online presence.

Many questions need to be re-examined in light of the Covid-19 pandemic, which has provoked major changes which must be evaluated to detect possible transformations in politics such as those brought about by the 1918 Influenza Pandemic. The pandemic's effects on democracy (**Webler; Tuler, 2021**) are still up in the air, and, for the time being, have yet to show any signs of causing any structural changes or effects on traditional political attitudes (**Bol et al., 2021**) though the implementation of policy has indeed changed (**García-Orosa, 2017; Field, 2020; Pilet, 2021**).

In this quasi post-pandemic period, with consequences still unknown, hybrid actors and liquid practices intensify the struggle for the construction of affirmations which, if correctly activated and distributed, can serve as a driving force for certain ideologies. In the construction of this social imaginary, two phenomena stand out: astroturfing and bots.

### 3. Astroturfing and bots

Given the multitude of actors involved, two new strategies should be pointed out given the significant impact they may have on democracy should their implementation become significant in quantitative or qualitative terms: identity concealment and identity theft. A paradigmatic example is astroturfing, understood as disinformation campaigns to promote the interests of those behind the campaigns, who typically conceal their identity and impersonate people who may add value to the network (often that of perceived credibility) or to democracy, as happens with “the voice of the people”.

More than 60% of studies on astroturfing have taken place in the last five years, 30% of which have been studied within the field of communication, 13% within different branches of computer science and engineering, and 11% within that of political science, given astroturfing power as a result of the consolidation of social networks. Nonetheless, as seen in **Cho's (2011)** analysis on large corporate polluters' astroturfing campaigns revolving around global warming, researchers defined and began studying the efficacy of astroturfing more than 10 years ago. In fact, the term astroturf was first used in Houston, Texas in 1966 by a company that manufactured artificial grass. In 1986 a senator from Texas coined the term “astroturf lobbying” to describe the artificial campaigns created by public relations firms. The term has since expanded to other fields and become increasingly prominent.

Recent literature has reached a consensus in defining astroturfing as fake grassroots campaigns which use disinformation to manipulate audiences in favour of the interests of the entities behind said campaigns (**Henrie; Gilde, 2019; Zerback; Toepfl; Knoepfle, 2021; Caro-Castaño, 2016**). Organized disinformation campaigns fundamentally threaten democracy inasmuch as they un-

“From the perspective of participation, technology has been used as a synecdoche for e-democracy and studied fundamentally under the control-participation dichotomy”

dermine civic engagement and joint decision making. Astroturfing poses an even greater threat, as a campaign's masterminds can use the appearance and words of legitimate social movements to conceal their identity.

“ Online platforms participate in the reimagining of democracy, the public agenda and political action ”

Astroturfers (**Peng et al.**, 2017) simulate public support for or rejection of a certain leader or an opinion, for example, public support for a bill so that private companies can create the illusion of public support for their cause. By concealing a message's author, astroturfers propagate inauthentic communication and undermine democratic values and plurality (**Lits**, 2020). Their strategies typically focus on promoting their own interests or disparaging or marginalizing those of others.

While researchers in communication sciences and political science have defined this phenomenon and conducted case studies, researchers in the field of engineering have striven recently to create new detection methods such as content analysis, techniques for identifying individuals or organized groups (**Peng et al.**, 2017), linguistic analysis and machine learning, (**Mahbub et al.**, 2019) algorithms (**Bai et al.**, 2018) and emotions (**Chen et al.**, 2017).

In the last year or so, many multidisciplinary studies have proposed mixed analysis systems. In this regard, **Lits** (2020) draws a connection between the detection of astroturfing campaigns and frames.

“The hypothesis is that astroturf groups employ different frames than genuine grassroots movements to comply with the private interests they truly represent. The results of the case study on the shale gas exploration debate in the United States show that astroturf groups used frames that differed significantly from authentic non-governmental organizations, which allowed their detection” (**Lits**, 2020, p. 164).

Empirical research has also provided concrete cases in which astroturfing campaigns have had different levels of success due to the importance of context (**Alallaq; Al-khiza'ay; Han**, 2019; **Keller et al.**, 2020; **Lits**, 2021; **Hobbs et al.**, 2020; **Francois; Barash; Kelly**, 2021).

These campaigns have been bolstered, at times, by the use of bots whose influence on election campaigns in various countries seems to continue unabated. Bots do not represent anywhere near a majority of accounts, but their presence is significant. In the April 2019 election campaign in Spain, the ratio of bots to non-bots was 0.063, and bots sent 1.903% of messages (**García-Orosa et al.**, 2021). However, despite these low percentages, bots were very active and sent an average of 132.3 tweets, compared to 4.3 tweets sent by the average human account. Though bots were a small minority of accounts in Spain's elections and those of surrounding countries, their ability to create artificial public opinion and turn non-existent opinions into majority opinions (**Ross et al.**, 2019) has caused their influence to continue growing (**Montal; Reich**, 2017).

Researchers have markedly improved automated bot detection, especially on Twitter, by using methods which determine not only the bot's location but also its structure and ultimate goal (**Gorwa; Guilbeault**, 2020). In terms of structure, a bot can either be a set of algorithms or a human with bot-like behaviour. In what **Frost** (2020) refers to as hybrid strategies, some bots use the enunciations of real humans and the credibility of real people to carry out automated manipulation strategies (**Frost**, 2020).

Regarding bots' purposes, they tend to make (a) pro-government statements; (b) create false opinion leaders; (c) delegitimize government systems; (d) drum up support for opposition groups; (e) empower the public; (f) set political agendas and debates; and (g) weaken political dissent.

In such a setting, citizens may find themselves helpless as they are not yet able to distinguish real speeches from fake ones, which employ deceit to hide their nature (**Waddell**, 2018; **Wölker; Powell**, 2021; **Kušen; Strembeck**, 2020). As such, citizens can only truly and responsibly participate in democracy when they are informed and know how to detect disinformation campaigns, as well as their authors, goals and reach. Only with such transparency could conscious engagement be possible.

In the coming years, researchers will have to go beyond case studies and try to understand the effects of these developments and their origins, in addition to improving analysis systems for automated and non-automated bot detection.

#### 4. Challenges

E-democracy will face many challenges in the coming years, some of which are still unknown. Algorithms produce communication strategies whose main value lies in the concealment of authors and intentions. The internet facilitates the creation of local, national or international communities which promote changes to the system. The internet also allows malicious actors to impersonate credible messengers who are both popular and fundamental for a functioning democracy: the voice of the citizenry, the voice of popular sovereignty.

Researchers stand before many challenges and opportunities, starting with the redefining of frames, analytical tools and threats. But citizens, too, face challenges. They have many ways to engage in public life but require knowledge and tools to engage in a conscientious way based on the actions of other actors in the public sphere. Legislators, political parties, governments, lobbies, professors and the heads of online platforms are some of the other actors who will shape post-pandemic democracy with their actions.

Below we list some issues from the point of view of research, teaching and political praxis which, if resolved, will help lift the fog which currently clouds the contours of e-democracy.

Some political communication departments have institutionalised the propagation of falsehoods, and spending on disinformation campaigns is increasing

### A. Research

1. Holistic analysis of democracies linked to their historical, socioeconomic and political contexts. Caused by platformization and technological determinism, the changes democracies have undergone and continue to undergo may seem similar, but they depend on context and have disparate effects. Only by conducting holistic studies will researchers be able to arrive at generalizations that can shed light on whether the aforementioned phenomena affect only communication and the flows of information, or if the actors, processes, power and the conception or essence of democracy have changed.
2. Critical reflection on the frames and discourses on which studies are based. For example, research on democracy which deals with discourses such as technology-focused engagement.
3. Search for transparent actors in democracy. Realization and action stemming from the accountability of the various actors in the public sphere, including online platforms. Increase our knowledge of new actors and re-configured, seldom-analysed traditional actors such as lobbies.
4. Increase our knowledge of the strategies, information flows and interrelations among the various actors to better understand messages and their possible influence on political action and democracy.
5. Study of the social imaginary. Rethink the creation of frames, the ways to acquire knowledge and the creation of social imaginaries.
6. Critical reflection on the possibility of emerging from a new paradigm that allows us to understand changes the near future may hold.
7. Continued study of checks and balances in the digital age.
8. Promote the study of the ontology of digital democracy to establish parameters for further detailed studies.
9. Analyse the significance of the key developments within public discourse, such as polarization, engagement and disinformation.
10. Post-pandemic analysis. The 1918 pandemic affected the development of election campaigns, as well as the very foundation of political communication, but the changes wrought by the current pandemic have yet to come to light.

### B. Teaching

1. Digital literacy. Education in e-democracy for all sectors of society. The transfer of knowledge from universities to society, as well as the inclusion of new skillsets in their curricula, will play a decisive role in this area.
2. Contextual education that provides students with a comprehensive view of their future role as professionals by helping them to understand the dynamics of the system in which their profession as communicators, educators or journalists lies and how said dynamics influence their work.
3. Curricula. Developing specific and updated skillsets in university curricula. Update and redefine professional skillsets.

### C. Political praxis in democracy

1. Public sphere. Reflection on the advisability of national and international regulations and the codes of ethics of the actors involved.
2. Programmed citizens. Reflection on the creation of programmable voters and the commodification of data especially during campaign season.
3. Information versus disinformation. Find systems that can detect disinformation campaigns to then provide this information to the public.
4. Reflection on possible structural, normative and/or ethical interventions in this situation.
5. Overcoming technological determinism. Given that political actors' strategies and tactics have been determined by technological innovations, it would be interesting to see them use such technology in a more critical manner.
6. Take advantage of the opportunity presented by AI for the promotion of information, knowledge and mass participation.
7. True co-creation with citizens in all areas of democratic politics.

Two strategies stand out: identity theft and identity concealment

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