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Back to polarization

An epistemological review from social network analysis

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Introduction

The study of political polarization among the academic and expert communities includes a diverse understanding of this phenomena leading to different definitions. For instance, according to Bauer (2019, p. 11), “The concept of political polarization is used to describe polarization among political actors such as parties, party members, elected party representatives, but also among voters and the public more generally”. From this point of view, the core of the concept of polarization would be the role of the different social and political actors. Nevertheless, for example, other authors as Sunstein (2017) argues that tools such as social media have a negative effect on political communication, not only because they favor processes of reinforcement of the starting opinions of citizens, thus favoring the polarization, but because they are associated with other equally pernicious phenomena such as fake news or incivility. There is an open debate in this area.

Additionally, there are several studies that point towards a “limited effect of exposure to digital content on political polarization” relativizing the weight that the digital medium has on political polarization (Barberá *et al.*, 2015; Nyhan *et al.*, 2023; González-Bailon and Lelkes, 2023). However, most of these studies are based

on survey analysis and experimental case studies. In opposition, some studies that observe the behavior of users in networks point to the trend towards fragmentation and polarization of digital public opinion (Terren and Borge-Bravo, 2021). Thus, we not only observe different definitions of political polarization, but also differences according to the methodological strategies to measure this phenomenon.

One approach to find a definition of polarization might be attempt to distinguish it from other similar processes, although not at all equivalent. Thus, political polarization is also a topic of sociological interest different to homophily (the tendency to share our views with those who think like us (Wojcieszak and Mutz, 2009; Stroud, 2010; Colleoni *et al.*, 2014)). That is, we can treat polarization as an emergent and self-regulated phenomenon or as the result of the explicit intentions of the agents involved. Therefore, the first thing to do is distinguish polarization from other phenomena that are “expected”, such as propinquity (probability of being connected when there is geographical proximity or co-presence).

A second consideration might address methodological questions. At this level the question focuses mainly on the type of tool used to analyze polarization processes. As noted, opting for survey-based and other experimental techniques or social analysis techniques imply illuminating different parts of the phenomenon. In the same way, and in metric terms, polarization has been measured through references as different as range, dispersion, group size or community fragmentation (Guevara, 2022). All of them statistical concepts that, despite representing an advance in the measurement of polarization, offer us, once again, different versions of the phenomenon and represent one more example of the differences when it comes to conceiving what political polarization is.

A third approach could be to draw a typology of polarization linked to social contexts and actions. Thus, first, partisan polarization would occur when this process is the result of a specific context, for example, in a bipartisan environment (what is also known as centripetal polarization (Reilly, 2018)). In second place, affective political polarization is defined as “The extent to which supporters of different political parties dislike the other political party (and possibly its supporters)” (Tucker *et al.*, 2018, p. 8). Additionally, there would be a third type of polarization that has been called “ideological polarization” in which the actors involved find themselves, on scales that go, for example, from “conservative” to “progressive”, or from “very conservative” to “moderate”, or from “the right” to the “left” (Wojcieszak and Rojas, 2011, McCright and Dunlap, 2011, Lee *et al.*, 2014). Polarization can also be the result of a process of radicalization around social values. Specifically, it consists of the polarization of public opinion regarding specific issues (e.g., in favor or against same-sex marriage or the health care reform (Lee *et al.*, 2014)).

Likewise, polarization can also be understood as a strategy of exclusion of groups, people, or collectives from public debate. This type of polarization has been called “polarization” according to purposes (Hargittai *et al.*, 2008, Gentzkow and Shapiro, 2011). We finally find digital polarization. As a result of selective exposure, online communication resembles an echo-chamber (Barberá *et al.*, 2015). Diverse studies (Sunstein, 2001, 2017) argued that digital technologies have a clear polarizing effect because they make it easier and more precise to select those people with whom you want to interact.

Likewise, and with a desire for greater specificity, we focus on defining the political polarization that occurs in online debate spaces. We consider that, precisely because of this heterogeneity, it is important to make proposals focused on specific aspects of the political polarization. The idea of a definition could be more relevant if we limit ourselves to specific areas of the reality analyzed.

To meet our objective, we have made an analysis of the academic literature on the concept of polarization, in general, to then focus on the concept that concerns us: political polarization in digital communication. This literature review deals with information by applying social network analysis and community detection techniques. Thanks to a two-phase analysis, co-occurrence of terms and co-citation analysis of references, we identified a series of trends that allow structuring the information contained in academic debates on political polarization in digital communication, as well as offering a definition that collects and synthesizes these trends. Thus, first, we have identified four clusters in each of the two analyzes (four in the case of the term analysis and four in the co-citation analysis). Secondly, we have observed that there is coincidence between the clusters of each applied analytical technique. In this way, clusters 1 of the term analysis and 1 of the co-citation analysis deal with the same topic. The same happens with clusters 2-2, 3-3 and 4-4 of both analyzes. Finally, we have identified that, although each pair of clusters responds to specific research interests, there is still a common set of interests, terms, and objectives.

Therefore, we consider that common concepts and interests found in our analyzes are a solid foundation on which to build a definition of polarization in digital communication. This will be the objective of the last section of this work.

This article will be structured as follows. First, we will show the methodology used to collect and analyze information about the term under study here. Likewise, we will show the main results. Secondly, we will describe the thematic coincidence between each pair of clusters, we will analyze the topics that occupy them, and we will identify the epistemological foundations of each pair. In the last section, discussion, we outline our epistemological point of view on this topic, we point out the common trends of the four pairs of clusters and make our definition proposal.

Data, methods, and preliminary analysis

To define a corpus for research on political polarization in digital communication, we retrieved all publications matching the search *political* and *polarization* and internet-related political polarization using the subject index in the ISI Web of Science (WOS) database covering the whole database period. We use WoS database as it covers most relevant scientific papers. As might be expected, other databases or sources could have been used as a complement, such as contributions to specialized conferences. However, we have considered that a potential base of almost 12,000 academic journals and a time period of practically 20 years could generate analytical material broad enough to meet our objective; have a plural representation of the multifaceted nature of the phenomenon of political polarization. Additionally, the database used (Isi Web of Science) collects scientific contributions from all areas of knowledge and the highest impact indices in each of them. This, again, allows us to meet our objective.

We carried out two separate searches -one focused on political polarization and the second focused on internet-related concepts (online, digital, internet world wide web and social media) and define the final corpus as de union of these two sets. This search was performed on May 29, 2023, and it returned 6118 records (Wos core collection) for political polarization, 636 of which were internet related ones, with “article” as document type (see Table 1).

The number of articles focusing on both political polarization in general and on political polarization in digital communication has increased over time (see Table 1 and Figure 1). Internet-related articles on political polarization represent 10.4% of total records. This percentage has increased over time, changing from 3.2% in the 2001-2005 period to 10.7% in the 2016-2020 period. Over the last three years, this percentage has increased up to 13.6%.

TABLE 1
Number of publications on political polarization and internet-related articles

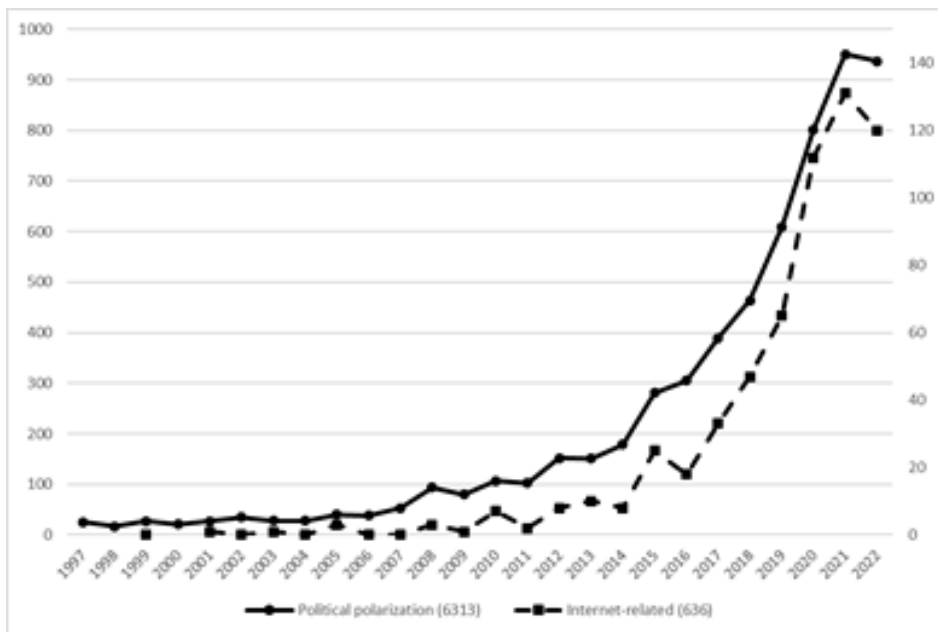
Political polarization	YEAR					Total
	2023-2021	2020-2016	2015-2011	2010-2006	2005-2001	
	2154	2569	865	372	158	6118
Internet-related political polarization	292	275	53	11	5	636
Percentage	13.6%	10.7%	6.1%	3%	3.2%	10.4%

Note: Articles published before 2000 are not displayed in the tables across years due the low figures on internet related political polarization articles

Source: ISI Web of Science (Core collection)

FIGURE 1

Number of articles on political polarization (left axis) and internet-related political polarization (right axis) 1997-2022



Source: ISI Web of Science (Core collection).

We carry out a term frequency analysis and a co-citation analysis of cited references with the *vosviewer* software (1.6.16 version), which is a software tool for constructing and visualizing bibliometric networks that includes text mining capability (van Eck & Waltman, 2011). The aim of the term frequency analysis is to extract the most frequent terms by constructing a co-occurrence network of terms. The co-citation analysis of cited references extracts a bibliographic co-citation network of cited references. These networks represent relationships between items (e.g. terms or bibliographic coupling links between publication) whenever they co-occur within a specific unit (e.g. article). Once the co-occurrence network of terms has been obtained, a community detection algorithm reveals the groups, or clusters, of highly interconnected items. Similarly, the co-citation analysis of cited references applies the community detection algorithm on an extracted bibliographic co-citation network. Thanks to this tool, we can synthesize all the information contained in the analyzed articles on polarization, finding groups of terms that tend to appear together and authors who most frequently cite each other.

There are several topic extraction approaches from bibliographic data or scientific publications that differ in either how the data is modelled or in the clustering

algorithms used (Velden *et al.*, 2017). We use the approach that models the data as direct citation network and uses the Leiden algorithm (Traag *et al.*, 2019; van Eck *et al.*, 2010) which is an improved version of the Louvain algorithm (Blondel *et al.*, 2008), being both the most popular solutions across topic extraction approaches (Velden *et al.*, 2017). Clusters of terms and topics tend to provide similar results, especially when the number of clusters are not large (*Idem*).

The combination of co-citation and co-occurrence analyzes also allows us to control a potential negative effect; the relative weight of academic articles that, because they were published longer, may have collected a higher number of citations. The analysis by terms is not subject to this possible bias and, therefore, serves as a control.

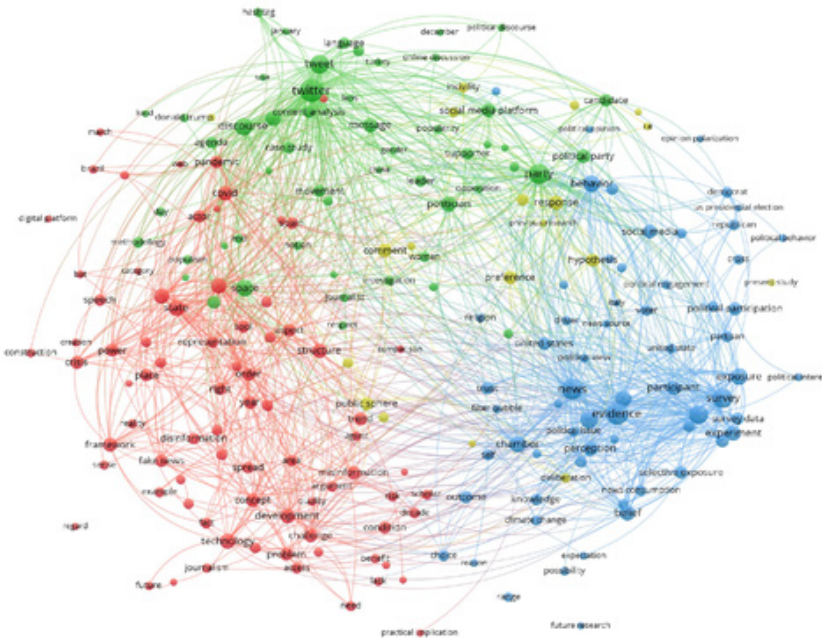
First, we carried out a term frequency analysis processing all identified articles (6,313), resulting in 88,602 terms, to detect main clusters of political polarization and to locate the terms associated to polarization across clusters: *Multi-disciplinary cluster*; *Behavioral and policy-related cluster*; *Political science cluster*; and *Information and communication cluster* (see annex Figure A.1 and Table A.2 and A.3). This term frequency analysis helped us to identify broad “topics” or approaches to political polarization and to check the similarities and differences with the results of the term frequency analysis of “internet-related political polarization” presented in the next section. After analyzing the main topics on political polarization and on internet-related political polarization, we carry out the co-citation analysis of cited references on internet-related political polarization that help us to better understand the main sources of the different approaches to internet related political polarization. This co-citation analysis is complemented with a thorough review of the content of the main articles and cited references that constitutes the main section of our results (interpretation of the analysis of co-citations) before presenting our operational definition.

Co-occurrence analysis of terms

We processed 636 internet-related articles on polarization, resulting in 13,500 terms. Terms are extracted from title and abstracts (we ignored structured abstracts labels and copyright statements). We applied a binary counting method in which the presence or absence of a term is counted per document, instead of a full counting method.

From a total of 13,500 terms identified, 356 met the minimum threshold of number of occurrences of a term set at 10. For each term a relevance score is calculated (Van Eck and Waltman, 2011). Based on this score, 60% of the most relevant terms are selected, resulting in 214 terms. The most frequent terms are: “twitter”, “evidence”, “news” and “party”.

FIGURE 2
Map of related terms about “internet political polarization” (N= 636)



Source: ISI Web of Science (Core collection).

Figure 2 shows the term-map of political polarization in digital communication. The higher the co-occurrences of two terms the closer the distance between these two terms. Bubble size represents the frequency of a term. The co-occurrence analysis of internet-related political polarization shows 4 clusters that could be considered a translation of the clusters identified when analyzing political polarization into information and communication terms¹:

The first cluster (red) includes 79 terms, such as “state”, “technology”, “social network”, “account”, “covid”, “development” or “structure”. That is to say, the multi-disciplinary cluster that now appears specified for a *technology approach*. The word “covid” could appear due to the proliferation of studies derived from the current situation of the pandemic crisis in recent years.

Cluster two (blue) includes 63 items, including “evidence”, “survey”, “individual”, “behavior” or “exposure”. This cluster includes terms of political polarization. Therefore, cluster two could be associated with the *behavioral and policy-related approach* to political polarization.

1. The term “internet” is associated with the information and communication cluster (4-yellow) on political polarization co-occurrence analysis (Figures 1 and A.1 in the annex).

Cluster 3 (green) includes 53 items, such as, “twitter”, “party”, “tweet”, “agenda”, “politician”, “political party”, “candidate” or “discourse”, and could be associated with the *political science approach*.

Cluster 4 (yellow) includes 19 items, such as, “news”, “response”, “public sphere”, “incivility” or “deliberation”. This cluster could be associated with a *deliberative approach* to information and communication political polarization.

To better understand the field of internet-related political polarization we carried out further analysis, such as, a co-citation analysis of cited references. From the list of political polarization in digital communication references, we have identified their sources and authors for a co-citation analysis.

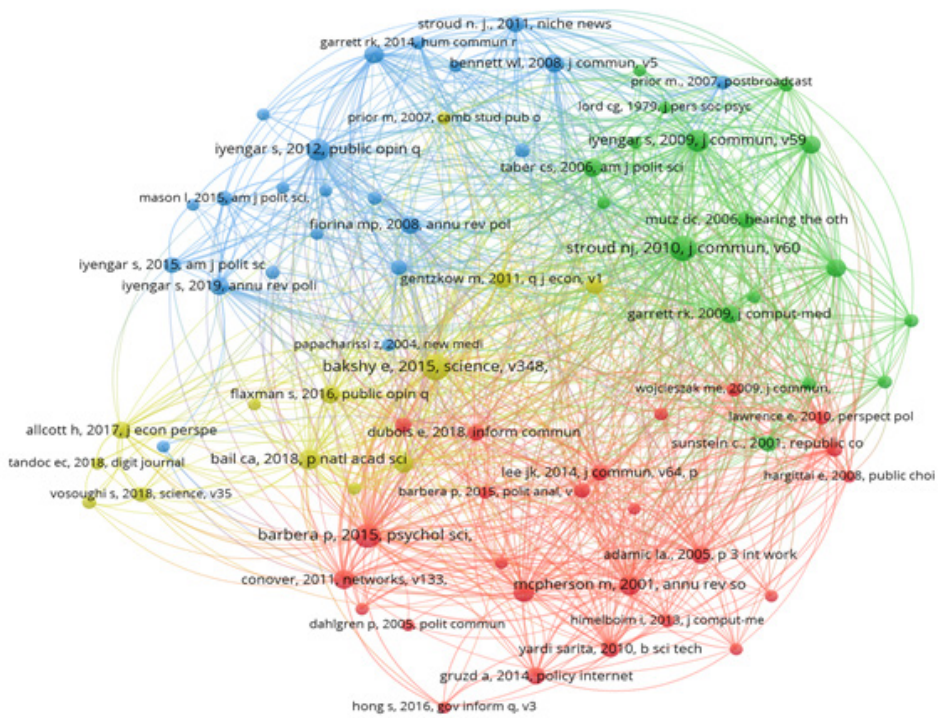
Co-citation analysis references

The 636 internet-related articles on political polarization cite a total of 27,980 cited references. We set the minimum number of citations at 20, which lead to a list of 77 most cited references.

Figure 3 provides the results of the clustering process that resulted in four clusters. In cluster one (red) with 25 cited references, appear “barbera 2015” or “mcperson 2001”. In cluster two (blue) “iyengar 2012” or “iyengar 2019”. Cluster three (green) “stroud 2010” or “iyengar 2009” and “taber 2006”. Finally, cluster four (yellow) includes references such as “bakshy 2015” or “Gentzkow 2011”. The following section uses the information of the clusters and the lists of most cited references to better understand polarization in digital communication. The interpretation combines the cluster analyses with an interpretative review of the content of the main articles used and referenced.

Cluster 1, (yellow color in figure 4, see Table A.5), covers a total of fourteen references. The studies included in this category analyze how the very characteristics of the internet and social networks favor users having a selective exposure. In the cluster 2, (blue color in figure 4, see Table A.6), there are seventeen references with a total of 638 citations. The cluster 3 (red color in figure 4, see Table A.7) is the one with the highest number of citations (869); however, it is also the one with the greatest dispersion of them. The cluster 4, (green color of figure 4, see Table A.8), is the second with the highest number of citations (702).

FIGURE 3
Author co-citation map (analysis cited references) (N= 636)



Source: ISI Web of Science (Core collection).

Interpretation of the analysis

In this section we will carry out a reconstruction and theoretical analysis of the four clusters represented, respectively, in Figures 2 and 3. As we have seen, both the analysis of terms (figure 2) and that of co-citations (figure 3) respectively offer resulting in four clusters. We will point out here that pairs 1-1, 2-2, 3-3 and 4-4 of the clusters of both techniques share research topics. This will be, as explained above, the first step in our proposed definition of political polarization in digital spaces. In addition to pointing out this coincidence, in this section we will focus on two more issues. Firstly, the academic interests or objectives related to the polarization of each pair of clusters will be summarized and, secondly, their epistemological bases will be described.

Technology approach of internet political polarization

Cluster 1 resulting from the analysis of terms is structured around concepts such as “technology”, “social network”, “account”, “development” or “structure”. Additionally, the most cited reference of co-citation cluster 1 is Bakshy, Messing and Adamic (2005). These authors studied how online social networks influence exposure to perspectives that cut across ideological lines and “observed that online communication structures are flexible and situation-specific, and that the aggregate level of political polarization depends heavily on the nature of the issue” (p. 10). In a similar vein, Flaxman, Goel and Rao (2016) point out that the magnitude of the effects of the ICT on political polarization is relatively modest, as do Gentzkow and Shapiro (2011), who question whether the Internet is increasing the levels of ideological polarization and that poses a threat to democracies. With this statement, they position themselves opposite to Sunstein (2001), whose study is in the blue cluster, and which will be discussed later.

The findings of Messing and Westwood (2014) also suggest that attitudinal polarization should decrease as source diversity increases. However, authors such as Bail *et al.*, (2018) understand that social networks (e.g. *Facebook*) can increase the levels of ideological polarization, but especially when users are exposed to points of view contrary to their starting positions. The most pessimistic line of studies within the yellow cluster related to the technological approach is represented by authors such as Pariser (2011), whose reference work develops the concept of “filter bubble”. This phenomenon gives rise to the so-called “echo chambers” that isolate internet users, preventing them from accessing alternative visions and, thereby, increasing their levels of polarization (Garret, 2009a; Flaxman and Rao, 2016; Vaccari *et al.*, 2016; Boutyline and Willer, 2017; Terren, 2021). These communication processes are considered especially pernicious for democracies when social media is used as a tool to spread fake news, for example, in electoral processes (Allcott and Gentzkow, 2017), since in networks like twitter “lies spread faster than the truth” (Vosoughi, Roy and Aral, 2018, p. 1146).

In epistemological terms, polarization is presented here (Technology approach of internet political polarization) as a consequence of the characteristics and structure of digital technologies. Thus, the sociopolitical processes of polarization would basically be an epiphenomenon of the functioning and social use of digital technologies.

Behavioural and policy-related approach of internet political polarization

In our analysis of terms, we have identified a second cluster centered on terms that, such as “evidence”, “survey”, “individual”, “behavior” or “exposure”, seem to indicate a theme of polarization analysis focused on experimental methods. In line with this, cluster two of the self-citation analysis, studies the cognitive and attitudinal factors of users to explain their willingness to select the information that shapes their values and opinions. The reference study in this cluster is that of Stroud (2010). The author focuses the debate on the effects of exposure to social media based on belonging to a political party and increased polarization. This same premise is based on studies that show that those individuals related to the same party share homogeneous digital social networks (Garret, 2009a and b, Stroud, 2008) and this leads to the coincidence of attitudes and behaviors in political debates on the Internet (Taber and Lodge, 2006; Iyengar and Hahn, 2009).

Even though some authors argue that partisan exposure to social media does not always have a negative impact, since it also promotes political participation (Mutz, 2006) and exposure to far more dissimilar political views (Mutz and Martín, 2001; Mutz, 2002), a large part of the studies in this cluster refer to the link between congenial media consumption and polarization. These studies cite the work *Republic.com* by Sunstein (2001) which, in turn, is very close to the red colour cluster of co-citation (see Figure 34), relative to the political science approach that will be explained in the next section. The author warns that the exhibition on the internet to similar political points of view, it can not only imply a greater polarization, but it can also mean an increase in extreme positions and a decline in tolerance levels (Sunstein, 2001).

There is, in epistemological terms, an interpretation of digital political polarization as a process linked to individual behavior. That is, polarization would be a phenomenon that can be understood as a disposition of subjects to information, as well as their willingness to see their points of view modified in situations that contradict their previous beliefs.

Political science approach of internet political polarization

The political agenda, political parties and leaders are the central themes of the third cluster according to our analysis of terms. In more substantive terms, according to co-citation analysis, the central theme is the external factors that generate selective exposure (such as political parties, media, and opinion leaders). Barberá *et al.*, (2015), whose reference is the most cited in this community by far, understand that online communication is not the cause of higher levels of polarization, but the nature of

the topics that are discussed. Their findings contradict those of other studies in which ideological segregation is considered decisive in the use of social networks. Among these studies, there is that of McPherson, Smith-Lovin, and Cook (2001) who are a reference in the development of the principle of homophily applied to various types of interactions in social networks. These authors remark the powerful implications on strong levels of polarization in terms of the attitudes people form and the information received.

Focused on the issue of homophily and its effects on political polarization, part of the references refer to which parties (conservatives versus liberals) have their most polarized bases. Barberá (2015) demonstrated that users with similar opinions tend to engage in public discourse on Twitter, and that users with a right-leaning inclination tend to group together as a community of extremely motivated people who predominate in public discourse. Linking homophily with political orientation, Colleoni, Rozza, and Arvidsson (2014), consider that at the level of political leaders and parties (more than at the level of the public), polarizations is more pronounced. The structure in the content of users' tweets seems to be strongly associated with their political affiliation (Conover *et al.*, 2012). Then, the activists of the parties seem, based on their political ideology, to contribute to further polarize the debates around certain issues that concern the community.

Greater access to information, may encourage selective exposure to ideologically congenial content, creating an “echochamber” environment that could reinforce social extremism and political polarization if people only expose themselves to information that supports their preexisting beliefs (Adamic and Glance, 2005). In the communication network on Twitter, Gruzd and Roy (2014) also noticed a clustering effect around common political viewpoints among party supporters and they found linkages between different ideologies. In cases involving relationships to conservative members, animosity was directed especially at the other discussant in the dyadic relationship. However, when left-leaning party supporters were involved, there was animosity against the conservative government or its followers as the shared “opponent” in these cross-party relationships.

The difference between the last two cited academic references establishes a drift in the main theme of the external factors that generate polarization identified in the red community. In line with Gruzd and Roy (2014), Yardi and Boyd (2010) findings demonstrate that people frequently engage in open discussions across ideologies and are exposed to a variety of opinions. According to Sunstein (2002), the possibility of extremism and instability will decrease as society moves toward a more general “public sphere”, without significant discussion, but this may also result in a suffocating homogeneity. According to him, the direction of discussion should be such that

polarization results through learning rather than from group dynamics (Sunstein, 2002). Even similarly minded persons who are members of the same groups will have different viewpoints, so conversations within groups may result in debate and a range of opinions. This alternative approach encompasses authors who claim the moderating impact of diversified media and political interest, which means that the so-called echo chamber is overstated (Dubois and Blank, 2018). For instance, in the study of Lee *et al.* (2014), the political, ideological, and issue components of opinion polarization are all analyzed. The results show that partisan and ideological polarization levels and network heterogeneity have a more modest association when political conversation is present. According to this study, the quickly growing social media is extremely likely to promote a more diverse debate among users.

The rest of the references within this cluster support the idea of the heterogeneity of social networks that might reduce worries about the echo chamber effect on the Internet (Brundige, 2010; Lawrence, Sides and Farrell, 2010; Wojcieszak and Mutz, 2009). Some of these studies refer to DiMaggio, Evans and Bryson (1996), who questioned that American's social attitudes have become more polarized when discussing specific issues. This last reference is close to the yellow cluster on "behavioural and policy-related approach".

From a political point of view, polarization in digital spaces would be closely related to the effect of political actors on selective exposure processes. Thus, it is understood that polarization depends largely on the topics that are discussed (more or less potentially conflictive), the ideological approaches to the debates, as well as the existence of leaders who, such as those who propose a populist point of view, they present the debate in a more or less dichotomous way.

Deliberative and communication approach of internet political polarization

The news that is shared in public spaces, as well as the discussion and deliberation processes that they generate, are the central themes of the fourth cluster of our analysis of terms. This coincides with the interests of academics from the point of view of self-citation analysis. Thus, the references address how political debates are configured in the digital public sphere, and the way in which citizens communicate publicly with forms of deliberation that may sometimes end up with incivility, hate speech or even failed communication.

Iyengar, Sood, and Lelkes (2012) understand digital political polarization as a communicative process of deliberation that can lead to phenomena of exclusion. Specifically, they point out that exposure to messages that attack the outgroup reinforces the biased opinions of supporters about their opponents.

In contrast to the long tradition in political science of analyzing polarization as the difference between the policy perspectives of opposite parties, Iyengar *et al.*, 2019, understand polarization as founded in affect and identity. This sense of partisan group identity naturally leads to affective polarization, which is defined as “the tendency of people identifying as Republicans or Democrats to view opposing partisans negatively and copartisans positively” (Iyengar and Westwood, 2015, p. 691). However, the degree of this ideological polarization is a topic of ongoing scholarly debate. According to some academics, the public has become more ideologically polarized (Abramowitz and Saunders, 2008). Other authors point out that partisan selective exposure is not necessarily linked to an increase in polarization (Fiorina and Abrams, 2008). Iyengar *et al.* (2012) do not have a position on this current controversy. In fact, as Mason (2015) claims, they consider that the ideological divided and affective polarization are largely separate from one another and that extreme issue viewpoints do not always imply that there is affective polarization. The rise in political polarization that has coincided with the expansion of news sources is not a coincidence. The degree of broad public opinion appears to have paralleled an increase in polarization over time (Abramowitz and Saunders, 2008). Bennet and Iyengar (2008) point out that even nonpolitical topics are prone to the polarization of news viewers. Audiences have more option to access information, whether real or misleading, and use it to establish their opinions based on the ideology of political parties. This process can be related to partisan polarization, although it does not work with all segments of the public, since it also depends on other factors such as level of education and digital skills of citizens who participate in digital debates. These scholars expected to see reinforcement effects even when voters come across one-sided news at odds with their political priors, since media users will be more adept at repelling any signals that prove discrepant. In terms of partisan selective exposure, Stroud (2010) also provided evidence about the connection between news choices and partisanship. Her study is linked to that of Baum and Groeling (2008), who address the polarization not so focused on terms of how partisanship influences media selection, but rather on the media’s effects on the audiences. Thus, this reference is linked to the red cluster related to the external factors that generate selective exposure. In the same vein, the findings of Garret *et al.* (2013) suggest that despite substantial cross-cultural differences, exposure to pro-and counter-attitudinal information had unique effects (positive/negative) on perceptions of and attitudes toward members of opposing parties.

Regarding the effects of the deliberative model of political communication on the Internet, Baldassarri and Gelman (2008) examined the negative emotional reactions against members of the opposition party. They explore to what extent

exposure to material supporting party identities vs information reflecting opposing partisan viewpoints might be responsible for this. Linked to this reference, we found one of the most cited authors (e.g. Sobieraj and Berry, 2011; Rowe, 2015) that has addressed digital polarization and incivility: Papacharissi (2004). The author differentiates it from that of “civility” (“Incivility can be defined as negative collective face; that is, disrespect for the collective traditions of democracy. Civility can then be operationalized as the set of behaviors that threaten democracy, deny people their personal freedoms, and stereotype social groups”) (Papacharissi, 2004, p. 267). In the context of digital communication, this term is very relevant.

The anonymity that social media offers makes it simpler for people to be unpleasant, albeit not necessarily uncivil. Thus, her approach is connected to the first analyzed cluster (color yellow), the technology perspective of internet political polarization.

Epistemologically understanding political polarization in digital spaces from a communicative point of view implies emphasizing the distance between communicative ideals and real communication in digitally mediated spaces. In short, we understand this point of view as the open gap between the normative conception of communication and the deliberative practices and habits of citizens.

Discussion

Political polarization, in general, and, in particular, that which takes place in digital areas of debate (digital social networks) is a multifaceted phenomenon. This has become clear in the themes, terms, content, and methods that define the clusters identified thanks to our analysis.

From our point of view, an epistemological approach to political polarization in digital spaces must start from the fact that a specific approach or method is always a partial approach. The four previously mentioned approaches thus serve as a basis for an approach that tries to integrate the different studies on polarization into a single definition. We understand science as a cumulative process that is capable of, adding different empirical and theoretical contributions, offering increasingly useful instruments and interpretations for the understanding of different phenomena. In this section, based on all of the above, we intend to offer a definition that syncretically collects and unites the central elements of all the approaches indicated above.

We additionally introduce an element that we consider key to understanding polarization. That is, its dynamic nature. Generally, the studies noted above analyze polarized social or political events and offer a “still shot” image of them. That is, political polarization is analyzed, in general, and, in particular, that which occurs in digital spaces, as a certain moment of the phenomenon being studied.

Our definition proposes, together with the effort of synthesis and syncretism typical of the cumulative conception of science, a dynamic way of understanding digital political polarization. That is, as a process that begins with a selective exposure to information and social interactions (very characteristic of spaces such as digital social networks) and ends in a rupture or, almost rupture, of the communicative flow. We understand that digital political polarization admits degrees and that it has antecedents that lead, in some contexts, to failed communication. This dynamic dimension is largely present in the studies analyzed, but in a disaggregated manner. Our contribution has consisted of putting together, in a single definition, academic reflections that focus on selective exposure with others that tell us about the motivations of the agents and with those that focus more on the consequences of polarization. Our integrative proposal is, to a large extent, the sum of different ways of understanding polarization.

After the analysis of co-citations we have identified the same four theoretical approaches that in the co-occurrence of the terms one. We also have found peculiarities that distinguish them from authors whose references are in the same cluster or features than link them with other clusters.

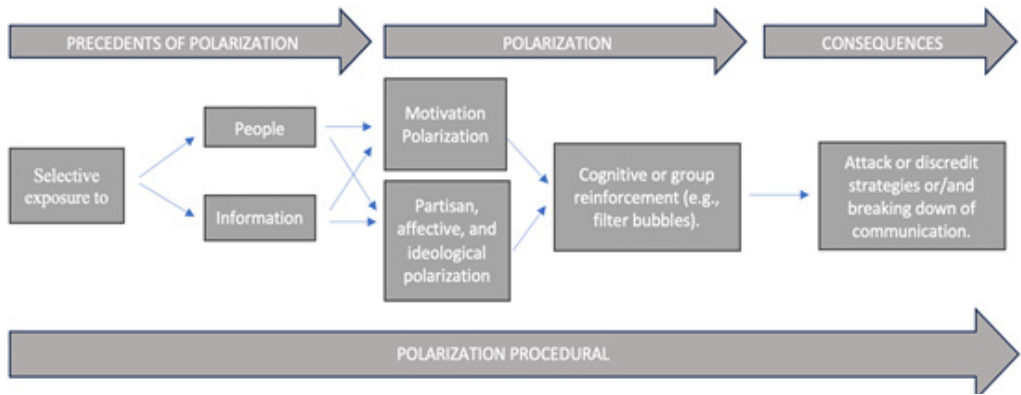
Additionally, thanks to our empirical research, we observed the presence of a set of terms and analysis themes that seem transversal and are present in the four pairs of clusters resulting from our empirical study. Among the terms we refer to are central axes of the idea of polarization such as its ideological or emotional dimension, the question of to what extent digital technologies themselves foster polarization phenomena, whether we are in a more or less polarized context, the consequences of polarization (filter bubbles, incivility etc.) and the question of selective exposure. These issues are, as we say, latent in the debates identified in four clusters that offer a global approach.

This means that the academic debate takes place based on a common lexicon which, in theory, could facilitate the exchange of ideas. However, there are methodological issues, as well as those linked to the most used case studies in each cluster, that guide the definitions and conceptions of political polarization in digital communication in one direction or another. It is precisely this orientation, and not so much the terms used (terms that, as we say, often coincide), that, from our point of view, generate well-differentiated clusters.

That said, having a common analytical language and a limited range of application areas allows us to offer a definition that would be representative of the current state of the debate on political polarization in digital communication. Thus, from our point of view, the first factor to consider outlining our proposal for an operational definition is the processual nature of polarization (see figure 4).

FIGURE 4

Proposed definition of political polarization in digital communication



We understand, based on the coherence between the four clusters, that polarization manifests itself as a process resulting from two starting situations; a selective exposure to information, as well as to the links and contacts of people or actors with whom one debates². This double dimension of selective exposure generates, both at the individual level (motivations) and collectively (partisan, affective and ideological polarization), a tendency to generate space for cognitive or/and ideological reinforcement (for example, bubbles). When this circumstance is reached, the risk increases that one, several, or all poles of the debate will initiate attack or discredit strategies such as, for example, incivility. Even, in the extreme case, a total breakdown of communication or failed communication is expectable. That means that polarization can lead to a breakdown of communication between social groups, making it more difficult to identify fake information or reach consensus with those who have a different opinion on objective facts. Burning the bridges of dialogue with political opponents may involve a rise of confrontation and an inclination to share messages or fake news that denigrates other persons or institutions (Osmundsen, 2021).

Thus, political polarization in digital spaces is a process that begins with a limitation of social interaction and access to heterogenous information and ends with a communicative collapse. From our point of view, it is necessary to advance in the operational definition of other forms of political polarization in order, through the accumulation of knowledge, to be able to offer a broader and more general version of this process potentially valid for all cases of polarization.

This article is an analysis based on bibliometric techniques and social network analysis. This implies that it is an approach to the study of the concept of digital

2. The selective exposure is, to a certain extent, a consequence of the characteristics of digital media.

political polarization focused on terms and interrelationships. This decision implies, as always when a methodology is selected, certain limitations. However, we consider that, to meet our objectives of theoretical reconstruction of a concept, it is a solvent and useful method. Likewise, we must point out that our data is downloaded from the database of more than 12,000 academic journals indexed in Web of Science. This represents a limitation for our analysis to the extent that not all possible sources are included (other journals, conferences etc.). However, we consider that such a broad database, as well as a set of journals with the greatest impact within all areas of knowledge, can be an excellent reference for our analysis. Finally, we should note there is a potential limitation to our analysis of self-citations; the effect of the time elapsed since a work was published and the number of citations. You can understand that articles published longer ago may have more citations, not because they are more relevant, but because of the time that has passed since their publication. This potential risk has been controlled through two strategies: on the one hand, double analysis co-citations and terms. On the other hand, it has been observed that there is a coexistence, in the most cited articles, of recent and classic research.

“Backing to polarization” has meant, thanks to our work, a sociological reexamination of this concept. Specifically, the proposal we put forward here takes into account both the structural and dynamic dimensions of every social process understands that polarization has different dimensions depending on the area or topic of debate in question. However, a synthesis exercise such as this one inevitably implies abandoning a certain degree of specificity in favor of greater applicability.

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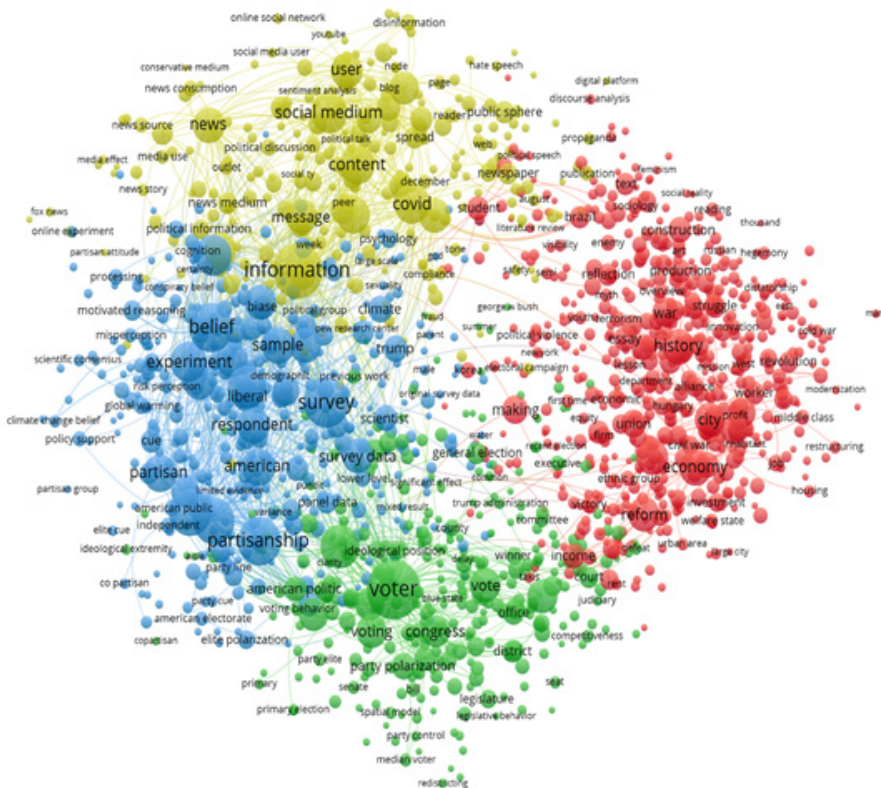
Anexo. Link to the figures of networks of terms and co-citations.

FIGURE 2: <https://tinyurl.com/27et3jov>.

FIGURE 3: <https://tinyurl.com/29sfql7>.

Annex

FIGURE A.1
Term map of “political polarization” (N= 6,313)



Source: ISI Web of Science (Core collection).

TABLE A.1
Search strategy and records (totals and articles)

TOPICS	TERMS	TOTAL RECORDS	ARTICLES
Political polarization	Political AND polarization	6,860	6,313 (92%)
Political polarization and internet-related	“social media” online OR digital OR internet OR www	734 (10.7%)	636 (86.6%)

Note: Results by internet-related concepts (total-articles non excluded): (1) internet -514,989 records; (2) world wide web - 23,764; (3) digital -1,026,829; (4) online - 708,533; “social media” -113,820.

TABLE A.2
Terms associated to polarization across clusters

Multi-disciplinary cluster (1) red (11 items)	Behavioral and policy-related cluster (2) blue (12 items)	Political science cluster (3) green (11 items)	Information and communication cluster (4) yellow (1 item)*
class polarization	affective polarisation	congressional polarization	opinion polarization
deep polarization	affective polarization	depolarization	
economic polarization	attitude polarization	greater polarization	
ethnic polarization	elite polarization	high polarization	
ideological polarisation	geographic polarization	mass polarization	
job polarization	issue polarization	Partisan polarization	
racial polarization	polarization effect	party polarization	
religious polarization	polarized attitude	party system polarization	
social polarisation	polarized environment	polarized country	
social polarization	polarized view	polarized politic	
spatial polarization	polarizing effect	policy polarization	
	public polarization		

Note: Concepts such as “misinformation”, “disinformation”, “incivility”, “echo chamber” are included in cluster 4.
 Source: ISI Web of Science (Core collection).

TABLE. A.3
The most relevant terms (occurrences) and scores (N= 6,313) “political polarization”

ID	TERM	OCCURRENCES	RELEVANCE SCORE
1521	voter	614	0.44
606	information	529	0.35
1427	survey	452	0.21
88	belief	423	0.53
949	partisanship	401	0.50
1250	republican	398	0.61
276	democrat	376	0.59
115	candidate	340	0.50
158	climate change	320	0.85
1352	social medium	298	0.99
918	participant	294	0.64
439	experiment	289	0.57
250	covid	282	0.55
224	content	269	0.57
922	partisan	249	0.79
186	communication	246	0.41
38	american	246	0.40
1257	respondent	239	0.40
1288	sample	236	0.39
844	news	225	1.07
354	economy	225	0.94
602	inequality	225	0.92
1497	user	223	1.22
21	affective polarization	222	0.77
445	exposure	221	0.62
542	history	220	0.71
1518	vote	216	0.51
1049	political ideology	216	0.50
91	bias	215	0.30

Source: ISI Web of Science (Core collection).

TABLE. A.4
The most relevant terms (occurrences) and scores (N= 636) of internet-related political polarization

ID	TERM	OCCURRENCES	RELEVANCE SCORE
203	twitter	108	0,71
60	evidence	93	0,66
109	news	89	0,68
125	party	80	0,59
191	survey	77	1,74
12	attitude	70	1,18
202	tweet	68	0,73
50	discourse	60	0,67
84	individual	58	0,75
14	behavior	54	0,54
65	exposure	53	1,68
184	space	53	0,65
122	participation	49	0,94
188	state	49	0,74
24	chamber	49	0,29
64	experiment	48	2,06
193	technology	48	1,31
182	social network	45	0,67
2	account	45	0,55
15	belief	44	1,09
144	politician	44	0,56
59	event	44	0,55
37	covid	43	0,95
46	development	43	0,94
126	perception	43	0,92
102	message	43	0,53
121	participant	42	1,39
170	response	40	0,55
189	structure	40	0,40

Source: ISI Web of Science (Core collection).

TABLE A.5

List of references in cluster 1, yellow color. Technology approach

CITED REFERENCE	NUMBER OF CITATIONS	TOTAL LINK STRENGTH
Bakshy, E. <i>et al.</i> , 2015. "Exposure to ideologically diverse news and opinion on <i>Facebook</i> ". <i>Science</i> .	94	870
Bail, C. A. <i>et al.</i> , 2018. "Exposure to opposing views on social media can increase political polarization". <i>Proceedings of the National Academy of Sciences</i> .	57	411
Gentzkow, M., Shapiro, J. M. 2011. "Ideological segregation online and offline", <i>The Quarterly Journal of Economics</i> .	48	465
Flaxman, S. <i>et al.</i> , 2016. "Filter bubbles, echo chambers, and online news consumption". <i>Public Opinion Quarter</i> .	45	429
Pariser, E. 2011. <i>The filter bubble: How the new personalized web is changing what we read and how we think</i> .	45	370
Allcott, H., Gentzkow, M. 2017. "Social media and fake news in the 2016 election". <i>Journal of Economic Perspectives</i> .	44	250
Messing, S., Westwood, S. J. 2014. "Selective exposure in the age of social media: Endorsements trump partisan source affiliation when selecting news online". <i>Communication Research</i> .	39	392
Vosoughi, S. <i>et al.</i> , 2018. "The spread of true and false news online". <i>Science</i> .	34	204
Prior, M. 2007. <i>Post-broadcast democracy: How media choice increases inequality in political involvement and polarizes elections</i> .	30	265
Prior, M. 2009. The immensely inflated news audience: assessing bias in self-reported news exposure. <i>Public Opin</i> .	25	215
Lazer, D. M. <i>et al.</i> , 2018. "The science of fake news". <i>Science</i> .	24	104
Boxell, L. <i>et al.</i> , 2017. "Greater internet use is not associated with faster growth in political polarization among US demographic groups". <i>Proceedings of the National Academy of Sciences</i> .	22	193
Sunstein, C. 2017. <i>#Republic: Divided democracy in the age of social media</i> .	21	181
Tandoc, J. R. <i>et al.</i> , 2018. "Defining 'fake news': A typology of scholarly definitions". <i>Digital Journalism</i> .	20	101

Source: own elaboration from ISI Web of Science (Core collection).

TABLE A.6
List of references in cluster 2, blue color. Behavioural and policy-related approach

CITED REFERENCE	NUMBER OF CITATIONS	TOTAL LINK STRENGTH
Stroud, N. J. 2010. "Polarization and partisan selective exposure". <i>Journal of Communication</i> .	88	840
Iyengar, S., Hahn, K. S. 2009. "Red media, blue media: Evidence of ideological selectivity in media use". <i>Journal of Communication</i> .	68	660
Taber, C. S., Lodge, M. 2006. "Motivated skepticism in the evaluation of political beliefs". <i>American Journal of Political Science</i> .	49	411
Garrett, R. K. 2009. "Echo chambers online?: Politically motivated selective exposure among internet news users". <i>Journal of Computer-mediated Communication</i> .	46	476
Stroud, N. J. 2008. "Media use and political predispositions: Revisiting the concept of selective exposure". <i>Political Behavior</i> .	46	470
Garrett, R. K. 2009. "Politically motivated reinforcement seeking: Reframing the selective exposure debate". <i>Journal of Communication</i> .	45	513
Mutz, D. C. 2006. <i>Hearing the other side: Deliberative versus participatory democracy</i> .	44	456
Sunstein, C. R. 2001. <i>Republic.com</i> .	39	313
Mutz, D. C. 2002. "Cross-cutting social networks: Testing democratic theory in practice". <i>American Political Science Review</i> .	27	283
Mutz, D. C., Sanmartín, P. S. 2001. "Facilitating communication across lines of political difference: The role of mass media". <i>American Political Science Review</i> .	27	250
Garrett, R. K. <i>et al.</i> , 2013. "A turn toward avoidance? Selective exposure to online political information, 2004-2008". <i>Political Behavior</i> .	26	304
Knobloch, S., Meng, J. 2009. "Looking the other way: Selective exposure to attitude-consistent and counterattitudinal political information". <i>Communication Research</i> .	24	271
Huckfeldt, R. <i>et al.</i> , 2004. "Disagreement, ambivalence, and engagement: The political consequences of heterogeneous networks". <i>Political Psychology</i> .	23	225
Festinger, L. 1962. "Cognitive dissonance". <i>Scientific American</i> .	23	201
Lord, C. G. <i>et al.</i> , 1979. "Biased assimilation and attitude polarization: The effects of prior theories on subsequently considered evidence". <i>Journal of Personality and Social Psychology</i> .	22	170
Kunda, Z. 1990. "The case for motivated reasoning". <i>Psychological Bulletin</i> .	21	139

Weeks, B. E. <i>et al.</i> , 2017. "Incidental exposure, selective exposure, and political information sharing: Integrating online exposure patterns and expression on social media." <i>JC-MC</i> .	20	218
Stroud, N. J. 2010. "Polarization and partisan selective exposure". <i>Journal of Communication</i> .	88	840
Iyengar, S., Hahn, K. S. 2009. "Red media, blue media: Evidence of ideological selectivity in media use". <i>Journal of Communication</i> .	68	660
Taber, C. S., Lodge, M. 2006. "Motivated skepticism in the evaluation of political beliefs". <i>American Journal of Political Science</i> .	49	411

Source: own elaboration from ISI Web of Science (Core collection).

TABLE A.7
List of references in cluster 3, red color. Political science approach

CITED REFERENCE	NUMBER OF CITATIONS	TOTAL LINK STRENGTH
Barberá, P. <i>et al.</i> , 2015. "Tweeting from left to right: Is online political communication more than an echo chamber?". <i>Psychological Science</i> .	84	680
McPherson, M. <i>et al.</i> , 2001. "Birds of a feather: Homophily in social networks". <i>Annual Review of Sociology</i> .	58	519
Colleoni, E. <i>et al.</i> , 2014. "Echo chamber or public sphere? Predicting political orientation and measuring political homophily in <i>Twitter</i> using big data". <i>Journal of Communication</i> .	54	484
Wheeler, S. E. 2011. "Local nature of substituent effects in stacking interactions". <i>Journal of the American Chemical Society</i> .	52	407
Adamic, L. A., Glance, N. 2005. "The political blogosphere and the 2004 US election: divided they blog". <i>Proceedings of the 3rd international workshop on Link discovery</i> .	45	414
Gruzd, A., Roy, J. 2014. "Investigating political polarization on <i>Twitter</i> : A Canadian perspective". <i>Policy & Internet</i> .	44	303
Yardi, S., Boyd, D. 2010. "Dynamic debates: An analysis of group polarization over time on twitter". <i>Bulletin of Science, Technology & Society</i> .	42	363
Dubois, E., Blank, G. 2018. "The echo chamber is overstated: the moderating effect of political interest and diverse media". <i>Information, Communication & Society</i> .	39	337

CITED REFERENCE	NUMBER OF CITATIONS	TOTAL LINK STRENGTH
Lee, JK. <i>et al.</i> , 2014. "Social media, network heterogeneity, and opinion polarization". <i>Journal of Communication</i> .	37	325
Sunstein, C. R. 1999. "The law of group polarization". <i>University of Chicago Law School, John M. Olin Law & Economics Working Paper</i> .	35	260
Brundidge, J. 2010. "Encountering 'difference' in the contemporary public sphere: The contribution of the Internet to the heterogeneity of political discussion networks". <i>Journal of Communication</i> .	34	382
DiMaggio, P. <i>et al.</i> , 1996. "Have American's social attitudes become more polarized?". <i>American Journal of Sociology</i> .	33	252
Lawrence, E. <i>et al.</i> , 2010. "Self-segregation or deliberation? Blog readership, participation, and polarization in American politics". <i>Perspectives on Politics</i> .	31	335
Wojcieszak, M .E., Mutz, D. C. 2009. "Online groups and political discourse: Do online discussion spaces facilitate exposure to political disagreement?". <i>Journal of Communication</i> .	31	334
Barberá, P. 2015. "Birds of the same feather tweet together: Bayesian ideal point estimation using <i>Twitter</i> data". <i>Political Analysis</i> .	27	225
Himelboim, I. <i>et al.</i> , 2013. "Birds of a feather tweet together: Integrating network and content analyses to examine cross-ideology exposure on <i>Twitter</i> ". <i>JC-MC</i> .	26	247
Granovetter, M. S. 1973. "The strength of weak ties". <i>American Journal of Sociology</i> .	26	216
Hargittai, E. <i>et al.</i> , 2008. "Cross-ideological discussions among conservative and liberal bloggers". <i>Public Choice</i> .	23	245
Dahlgren, P. 2005. "The internet, public spheres, and political communication: Dispersion and deliberation". <i>Political Communication</i> .	23	82
Boutyline, A., Willer, R. 2017. "The social structure of political echo chambers: Variation in ideological homophily in online networks". <i>Political Psychology</i> .	22	164
Hong, S., Kim, S. H. 2016. "Political polarization on <i>Twitter</i> : Implications for the use of social media in digital governments". <i>Government Information Quarterly</i> .	22	147

Papacharissi, Z. 2002. "The virtual sphere: The internet as a public sphere". <i>New Media & Society</i> .	21	157
Vaccari, C. <i>et al.</i> , 2016. "Ofecho chambers and contrarian clubs: Exposure to political disagreement among German and Italian users of <i>Twitter</i> ". <i>Social Media + Society</i> .	20	238
Conover, M. D. <i>et al.</i> , 2012. "Partisan asymmetries in online political activity". <i>EPJ Data science</i> .	20	179
Habermas, J. 1962. <i>Ein neuer Strukturwandel der Öffentlichkeit und die deliberative Politik: Platz 1 der Sachbuchbestenliste der Welt</i> .	20	143
McPherson, M. <i>et al.</i> , 2001. "Birds of a feather: Homophily in social networks". <i>Annual Review of Sociology</i> .	58	519

Source: own elaboration from ISI Web of Science (Core collection).

TABLE A.8

List of references in cluster 4, green color. Deliberative and Communication approach

CITED REFERENCE	NUMBER OF CITATIONS	TOTAL LINK STRENGTH
Barberá, P. <i>et al.</i> , 2015. "Tweeting from left to right: Is online political communication more than an echo chamber?". <i>Psychological Science</i> .	84	680
McPherson, M. <i>et al.</i> , 2001. "Birds of a feather: Homophily in social networks". <i>Annual Review of Sociology</i> .	58	519
Colleoni, E. <i>et al.</i> , 2014. "Echo chamber or public sphere? Predicting political orientation and measuring political homophily in Twitter using big data". <i>Journal of Communication</i> .	54	484
Wheeler, S. E. 2011. "Local nature of substituent effects in stacking interactions". <i>Journal of the American Chemical Society</i> .	52	407
Adamic, L. A., Glance, N. 2005. "The political blogosphere and the 2004 US election: divided they blog". <i>Proceedings of the 3rd International Workshop on Link Discovery</i> .	45	414
Gruzd, A., Roy, J. 2014. "Investigating political polarization on <i>Twitter</i> : A Canadian perspective". <i>Policy & Internet</i> .	44	303
Yardi, S., Boyd, D. 2010. "Dynamic debates: An analysis of group polarization over time on <i>Twitter</i> ". <i>Bulletin of Science, Technology & Society</i> .	42	363
Dubois, E., Blank, G. 2018. "The echo chamber is overstated: the moderating effect of political interest and diverse media". <i>Information, Communication & Society</i> .	39	337

CITED REFERENCE	NUMBER OF CITATIONS	TOTAL LINK STRENGTH
Lee, J. K. <i>et al.</i> , 2014. "Social media, network heterogeneity, and opinion polarization". <i>Journal of Communication</i> .	37	325
Sunstein, C.R. 1999. "The law of group polarization". <i>University of Chicago Law School, John M. Olin Law & Economics Working Paper</i> .	35	260
Brundidge, J. 2010. "Encountering 'difference' in the contemporary public sphere: The contribution of the internet to the heterogeneity of political discussion networks". <i>Journal of Communication</i> .	34	382
DiMaggio, P. <i>et al.</i> , 1996. "Have American's social attitudes become more polarized?". <i>American Journal of Sociology</i> .	33	252
Lawrence, E. <i>et al.</i> , 2010. "Self-segregation or deliberation? Blog readership, participation, and polarization in American politics". <i>Perspectives on Politics</i> .	31	335
Wojcieszak, M. E., Mutz, D. C. 2009. "Online groups and political discourse: Do online discussion spaces facilitate exposure to political disagreement?". <i>Journal of Communication</i> .	31	334
Barberá, P. 2015. "Birds of the same feather tweet together: Bayesian ideal point estimation using <i>Twitter</i> data". <i>Political Analysis</i> .	27	225
Himelboim, I. <i>et al.</i> , 2013. "Birds of a feather tweet together: Integrating network and content analyses to examine cross-ideology exposure on <i>Twitter</i> ". <i>JC-MC</i> .	26	247
Granovetter, MS. 1973. "The strength of weak ties". <i>American Journal of Sociology</i> .	26	216
Hargittai, E. <i>et al.</i> , 2008. "Cross-ideological discussions among conservative and liberal bloggers". <i>Public Choice</i> .	23	245
Dahlgren, P. 2005. "The internet, public spheres, and political communication: Dispersion and deliberation". <i>Political Communication</i> .	23	82
Boutyline, A., Willer, R. 2017. "The social structure of political echo chambers: Variation in ideological homophily in online networks". <i>Political Psychology</i> .	22	164
Hong, S., Kim, S. H. 2016. "Political polarization on twitter: Implications for the use of social media in digital governments". <i>Government Information Quarterly</i> .	22	147
Papacharissi, Z. 2002. "The virtual sphere: The internet as a public sphere". <i>New Media & Society</i> .	21	157
Vaccari, C. <i>et al.</i> , 2016. "Of echo chambers and contrarian clubs: Exposure to political disagreement among German and Italian users of <i>Twitter</i> ". <i>Social Media + Society</i> .	20	238

Conover, M. D. <i>Et Al.</i> , 2012. "Partisan asymmetries in online political activity". <i>EPJ Data Science</i> .	20	179
Habermas, J. 1962. <i>Ein neuer Strukturwandel der Öffentlichkeit und die deliberative Politik: Platz 1 der Sachbuchbestenliste der Welt</i> .	20	143
McPherson, M. <i>et al.</i> , 2001. "Birds of a feather: Homophily in social networks". <i>Annual Review of Sociology</i> .	58	519

Source: ISI Web of Science (Core collection).

Abstract

Back to polarization. An epistemological review from social network analysis

The concept of political polarization increasingly appears in academic and media vocabulary. However, there is not a single definition of this term that allows us a structured and coherent production of knowledge in relation to its nature, determinants, and consequences. In this article, we make a proposal to define a variant of political polarization that occurs in spaces of digital public debate. We intend to offer one more resource to improve our capacity to analyze polarized social and media contexts. To meet this objective, we analyze set of bibliometric techniques (network extraction and community detection mechanisms) that have allowed us to establish the terms that structure the academic debate on political polarization in digital debate (co-occurrence of terms analysis), the co-citation analysis of cited references that group the most relevant works in this field, as well as its content. We have identified a series of common trends both in the term communities and in those defined from cited-references. We have verified that there are backbone elements of the academic debate on this topic. These elements have been used as the basis for our proposed definition that remarks the procedural character of political polarization in digital communication. This article may therefore be useful not only for social scientists, but also for communications experts and professional politicians interested in better understanding what political polarization is and its limits and spheres of influence.

Keywords: Political polarization in digital debate; Social network analysis, Social media.

Resumo

De volta à polarização. Uma revisão epistemológica com base na análise de redes sociais

O conceito de polarização política aparece cada vez mais no vocabulário acadêmico e midiático. No entanto, não existe uma definição única para esse termo que nos possibilite uma produção de conhecimento estruturada e coerente em relação à sua natureza, seus determinantes e consequências. Neste artigo, propomos definir uma variante da polarização política que ocorre em espaços de debate público digital. Pretendemos oferecer mais um recurso para aprimorar nossa capacidade de analisar contextos sociais e midiáticos polarizados. Para atingir esse objetivo, ana-

lisamos um conjunto de técnicas bibliométricas (mecanismos de extração de redes e detecção de comunidades) que nos permitiram estabelecer os termos que estruturam o debate acadêmico sobre polarização política no debate digital (análise de coocorrência de termos), a análise de cocitação de referências citadas que agrupam os trabalhos mais relevantes nesse campo, bem como seu conteúdo. Identificamos uma série de tendências comuns tanto no termo comunidades quanto naquelas definidas a partir de referências citadas. Verificamos que existem elementos centrais do debate acadêmico sobre esse tema. Esses elementos foram utilizados como base para nossa proposta de definição, que destaca o caráter processual da polarização política na comunicação digital. Este artigo pode ser útil, portanto, não apenas para cientistas sociais, mas também para especialistas em comunicação e políticos profissionais interessados em entender melhor o que é polarização política e seus limites e esferas de influência.

Palavras-chave: Polarização política no debate digital; Análise de redes sociais, Mídias sociais.

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