CUADERNOS.INFO Nº 49
Versión electrónica: ISSN 0719-367x
http://www.cuadernos.info
https://doi.org/10.7764/cdi.49.27509

Received: 3-30-2020 / Accepted: 4-22-2021

"A Vital testimony confirmed…": Sources and Networks Polarization over Catrillanca's Case on Twitter

"Vital testimonio confirmó…": Polarización de fuentes y redes en el Caso Catrillanca en Twitter

"Vital testemunha confirmou…": Polarização de fontes e redes no Caso Catrillanca no Twitter

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ABSTRACT | The murder in 2018 of Camilio Catrillanca, a member of a Mapuche tribe located in the South of Chile, garnered notorious relevancy because of the event itself but also due to the failed attempt by Chilean police to manipulate evidence that pointed to police violence and abuse. This study explores networked behavior surrounding Catrillanca's death once the police coverup became public, seeking to identify echo chambers and filter bubbles within politically radicalized user clusters. Through social network analysis (SNA), social media analytics, and content analysis, the study concludes that networks on the right of the political spectrum are homophilic and refer to less diverse sources of information, pointing to network behavior resembling echo chambers and filter bubbles. The final portion of this study provides further discussion of its results in context, limitations, and future research pathways.

KEYWORDS: Mapuche; Catrillanca; polarization; social media; user-generated content; disinformation; Twitter; SNA.

HOW TO CITE

Santos, M. L. B., Jaramillo Castro, O. & Aguirre, D. (2021). "Vital testimonio confirmó…": Polarización de fuentes y redes en el Caso Catrillanca en Twitter. *Cuadernos.info, (49)*, 26-50. https://doi.org/10.7764/cdi.49.27509

RESUMEN | *Este estudio analiza la polarización de las opiniones en Twitter que se generaron en torno al asesinato del comunero mapuche Camilo Catrillanca en Chile, en 2018, tras revelarse las irregularidades del procedimiento policial en torno a su muerte. Se explora la presencia de las llamadas cámaras de eco y las burbujas de filtro en clústeres formados por grupos con mayor presencia de usuarios radicalizados políticamente de acuerdo con sus perfiles en la plataforma. Apoyado en técnicas de análisis de redes sociales (ARS), analítica de medios sociales y análisis de contenido, se observa que las redes formadas por actores más radicales de derecha son más homofílicas y usan menor diversidad de fuentes. Se discuten los resultados, se señalan limitaciones y posibles caminos futuros.*

PALABRAS CLAVES: *Mapuche; Catrillanca; polarización; redes sociales; contenido generado por usuario; desinformación; Twitter; ARS.*

RESUMO | Este estudo analisa a polarização das opiniões no Twitter que se geraram em torno do assassinato do comuneiro mapuche Camilo Catrillanca no Chile, em 2018, após a revelação das manipulações do procedimento policial na sua morte. Explora-se a presença das chamadas câmaras de eco e as bolhas de filtro em clusters formados por grupos com maior presença de usuários mais radicais politicamente segundo seus perfis na plataforma. Apoiado em técnicas de análise de redes sociais (ARS), analítica de mídia social e análise de conteúdo, se conclui que as redes formadas por atores mais radicais de direita são mais homofílicas e usam menor diversidade de fontes. Analisam-se os resultados e apontam-se limitações e possíveis caminhos futuros.

PALAVRAS-CHAVE: Mapuche; Catrillanca; polarização; redes sociais; conteúdo gerado por usuário; desinformação; Twitter; ARS.

INTRODUCTION

The study of political polarization in the social networks' opinion flows and its consequences has gained relevance in recent times. This communicational phenomenon has been linked to filter bubbles and echo chambers, as well as with homophily tendencies, observable in networks. These communication practices generate a significant volume of data, thus computational methods are important allies to explore them.

Some social events in which democratic life it is potentially affected by phenomena such as political polarization and misinformation (Garrett et al., 2013; Vaccari, 2018) –like the murder of the Mapuche community member Camilo Catrillanca in Chile, in 2018, and the public debate on Twitter generated around the truth about his death– constitute milestones to illustrate problems in the communication field. This study explores the dynamics of polarization and misinformation, based on a press release widely shared on Twitter: "A vital testimony confirmed that Camilo Catrillanca participated in a violent robbery prior to his death" (Crónica Chile, 2018). Other connection and communication dynamics around the revelation of the Carabineros de Chile[1] procedures are also explored.

In the specific field of digital communication, since the advent of search engines and blogs, metaphors that seem to be proper to the Internet, such as filter bubbles (Pariser, 2011) and echo chambers (Sunstein, cited by Bruns, 2019), have already been discussed; these metaphors seek to explain phenomena supposedly derived from the integration of these technologies into daily life, the informative task, and political communication. Bruns (2017, 2019) posits that echo chambers refer to connection patterns between users, and filter bubbles, to *communication* practices on digital platforms:

> An echo chamber comes into being where a group of participants choose to *preferentially* connect with each other, to the exclusion of outsiders (...) A filter bubble emerges when a group of participants, independent of the underlying network structures of their connections with others, *choose to preferentially communicate* with each other, to the exclusion of outsiders (Bruns, 2017, p. 3).

Despite the prolific speculation about polarization processes leading to political and informational isolation phenomena, further research is needed to obtain more scientific evidence on filter bubbles and echo chambers, to avoid, as Bruns (2017, 2019) states, remaining based on speculations of little definition, based on anecdotal evidence or metaphors. The author also criticizes the popularization

1. The Chilean police (translator's note).

of both expressions limited to their techno-deterministic aura in the context of digital media, which present networks rather as a "convenient technological scapegoat" (Bruns, 2019, p. 2). From the empirical perspective, although with different definitions and thresholds –for example, how closed a communication network must be to be considered a bubble– studies have systematically dismissed the association of both perspectives with the advent of digital communication technologies, be it blogs, search engines, digital social network algorithms, or others (Adamic & Glance, 2005; Bruns, 2017, 2019; Duggan & Smith, 2016; Gentzkow & Shapiro, 2011).

In this regard, this work seeks to partially meet the demands identified by Tucker and colleagues (2018) when studying a case of polarization and exposure to disinformation outside the United States and, at the same time, assess "the role of ideological asymmetries in mediating the effect of exposure to disinformation and polarization" (p.7). Additionally, Bruns (2017) argues that better empirical evaluations are needed on the relevance and specific impact of both concepts.

Another research phenomenon related to the communication problem of political polarization and its specific study in social networks is that of homophily. In sociology, homophily can be broadly defined as "the tendency for social relationships to link socially similar people" (Bargsted et al., 2020), and can be motivated by different social factors, such as age, religion, and political stand. If, on the one hand, homophily favors social cohesion, on the other it can generate distance between cohesive social groups, fragmenting the social fabric; in situations of acute social conflict, this can eventually lead to political polarization (Bargsted et al., 2020). Additionally, as there are leaderships that disqualify or make the other invisible, such polarization can become demonization and create the breeding ground, from the symbolic, for confrontation and violence (Romero Rodríguez et al., 2015).

On Twitter, specifically, figures of opposite ideological extremes can gather quite disconnected groups around them. In the Chilean case, Alcatruz (2018) examines political polarization on Twitter around specific presidential candidates who appeal to polarization in their discourses, but also around the presidential debate broadcast throughout the country by the National Television Association (ANATEL, by its Spanish acronym), with few shared viewpoints between the groups, even when the networks are formed ad-hoc (Bruns & Burgess, 2011) around a shared hashtag. In other words, few or no individuals are linked to both discussion poles, which favors the echo chamber idea. Aruguete (2019) argues that Twitter algorithms "educate the echo chamber, consolidate segregation by homophily, and underpin polarization" (p.24).

Likewise, not all social groups, or even radical groups with different political orientations, necessarily operate in the same way in their network interactions. Faris and colleagues (2017) have shown how in the 2016 US election, won by Donald Trump, there were significant differences in the media ecosystems consulted by partisans on both sides of the political spectrum. The radical right in the United States was less exposed to sources that the authors consider reliable which, in principle, should contribute to balance the counterpoints, corroborate information, or refuting disinformation: "the more insulated right-wing media ecosystem was susceptible to sustained network propaganda and disinformation" (Faris et al., 2017, p. 16). Barberá and colleagues (2015) found something similar in an analysis of 150 million tweets: liberals were more likely to be exposed to sources of opposing ideology than conservatives, but at the same time the degree of ideological homophily depends on the topic discussed. The authors conclude that "previous works possibly overestimated the degree of ideological segregation in the use of social media" (Barberá et al., 2015, p. 1). In the same vein, Dubois and Blank (2018) relativize the scope of echo chambers in high-choice media environments, identifying political interest and a diverse media diet as moderating factors of this phenomenon.

According to Dalton (2008), for there to be polarization of the political system, there should be a significant number of parties at the political extremes. Although in Chile the latter is not currently verified, between 1990 and 2017 there are indications of a growing generational ideological distance between adults and the elderly, and also between individuals of different socioeconomic levels, in which "opponents and adherents distanced themselves from each others and, in addition, they became internally more cohesive" (Lindh et al., 2019, p. 116), which could be identified with what Sunstein (2002) calls "group polarization", in which the positions of the group, when there is deliberation, radicalize instead of moving towards the center (p. 176).

Political polarization currently occurs in a scenario in which, in the dispute over the meanings of events, not only does the official press play a role as the traditional gatekeepers and agenda setters, but users also become *gatewatchers*, who "engaged in a secondary practice of *gatewatching* by observing the stories covered in other, mainstream as well as alternative outlets, and linked to, shared, and expanded on these stories in their own coverage" (Bruns, 2018, p. 2).

From this perspective, users cease to be passive information consumers to become content creators and driving agents of to make circulate information sources of their own selection to feed their digital networks. Indeed, if this was already happening in a less visible way through conversations and material

circulation of the printed or electronic media, in the digital social networks this phenomenon expands and becomes something specifically observable through the users' actions, whether individual or aggregate.

The native Mapuche people and the Catrillanca case

In 2019, the report of the United Nations General Assembly special rapporteur on extreme poverty and human rights stated that "the rights of indigenous peoples are the Chile's Achilles' heel in terms of human rights in the 21st century" (Naciones Unidas, 2016, p. 15). The conflict between the Mapuche indigenous people and the Chilean State dates to colonial periods and resurfaces with force today due to police abuses and explosive violence between both parties, with at least four Mapuche citizens dead by the police forces in democracy (Calfío et al., 2020).

The situation of the Mapuche people is the scene of disputes in different spheres of Chilean society: legislative (laws, public policies, agreements such as Convention 169 of the International Labor Organization[2]) and judicial, such as the criminalization of social protest and the State's predominantly punitive action response (Toledo Llancaqueo, 2007), or even the application of the anti-terrorist law in cases of land claims (Calfío et al., 2020). Likewise, the semiotic field, i.e., the dispute over the events' meanings among those who participate in the formation of public opinion in the country, becomes important as a space of potential discord, although frequently the official press, both national and regional, covers the subject in a way that is unfavorable to the Mapuche, often omitting perspective and using negative frames when the Mapuche subject has an active position in society, and positive ones when its position is passive (Hudson et al., 2020).

Camilo Catrillanca Marín was murdered on November 14, 2018, in the community of Temucuicui, in the ninth region. The Mapuche community member died from a shot to the head, attributed to members of the Special Police Operations Group of Carabineros de Chile, better known as the *Comando Jungla* (Jungle Command), which was not the primary official version. Although on November 17 the institution had declared that there were no audiovisual recordings of the event –despite the protocol of recording the operations with video cameras–, two days later the Ciper Chile Journalistic Investigation Center published the key testimony of the events (Sepúlveda, 2018), which confirms that there was at least one video, captured with a GoPro camera, made by the police officer who shot Catrillanca in the operation. This is how the scandal of the Carabineros montage was uncovered; this montage hid and falsified evidence (Basadre & Equipo Ciper, 2019), and recounted a partially

2. Establishes the obligation to consult indigenous peoples when there are measures that impact them.

invented version of the events (Ramírez & Sepúlveda, 2018). In the following days, in addition to the montage, other evidence began to circulate that revealed the truth of the events surrounding Catrillanca's murder. After the revelations, politicized oppositions emerged around the image of different actors, such as the government, Carabineros, the Mapuche, among others. Thus, the analysis of the information that circulated sentenced that "they manipulated facts, they manipulated data, they manipulated information, they manipulated protocols, they lied blatantly" (Calfío et al., 2020, p. 19). The death of Camilo Catrillanca was finally defined as murder by the case prosecutor (Basadre & Equipo Ciper, 2019).

The period analyzed for this exploratory research corresponds to the flow of opinion on Twitter after the montage was revealed, joining two issues that historically divide Chilean public opinion, i.e., the actions of Carabineros and the historical situation of one of the native indigenous peoples that lives in southern Chile, the Mapuche people (in Spanish, people of the land). In this context, this study aimed to answer the following question:

> How were the *connection* patterns and communication patterns of the groups predominantly identified with one or another political orientation on Twitter?

METHODOLOGY

To address the research question, we applied methods of social network analysis (SNA), social media analytics[3] (Stieglitz et al., 2014), and content analysis to a sample of the data set, selected by computational methods (screening or filtering) so that each method feeds on the other.

Data

The data were downloaded directly from the Twitter API[4] on November 24, 2018, at 11:00 p.m. Continental Chile, with the paid version of the NodeXL SNA software. At that time, Twitter allowed downloading information for a period of up to 10 days; thus, 18,472 unique tweets were obtained between November 14 and 24, 2018.

The only search term used was Camilo Catrillanca, to obtain an exact match. We got a corpus composed of 25,595 relations or edges, and 10,028 vertexes or network nodes (Twitter accounts). NodeXL not only collects the tweets that have the search term, but also all the relationships established through retweets, mentions, and

3. Tableau Desktop software was used for data analysis and visualization, to complement NodeXL.

4. Application Programming Interface.

replies (Hansen et al., 2019). Therefore, it reproduces the threads or conversations that occur in the social network around a specific topic (Hansen et al., 2019).

Once the data was collected, we conducted the SNA cluster or community analysis with the NodeXL software. We then calculated the different measures of centralization (which apply to the entire network) and centrality (which applies to each specific vertex). In addition to these two measures, we applied the NodeXL text mining tool to identify: vertex (Twitter account) that initiates the relationship (V1), the vertex that receives the relationship (V2), the type of relationship that occurs (tweet, retweet, mention or reply), the full text of the tweet, the cluster (group) to which the vertex initiating the relationship belongs, the cluster to which the vertex receiving the relationship belongs, the specific URL(s) used in the tweet and the name of the domain used in the tweet, the most used bigrams (pairs of words) in each cluster, the description of the Twitter account made by its own author, its ID number and the link to the Twitter account.

With these databases, we carried out a content analysis on the vertexes that initiate the relationship (V1), coding them from keywords in their profile biography as right-wing radicals and left-wing radicals. We then applied social media analytics to perform the cross between the two to identify clusters with a predominance of coded users, assuming in an exploratory way that said predominance allows inferring the political militancy of the other members of the cluster. Based on the same method, we identified the main sources of information disseminated by groups with different political orientations, according to groupings (clusters) of social networks. This procedure makes it possible to analyze the preferred communication patterns of the identified groups, i.e., to suggest degrees of existence of filter bubbles. Subsequently, the modularity analysis of the network through the SNA made it possible to examine degrees of connectivity between clusters, or rather, their isolation, which could characterize echo chambers.

However, in the absence of parameters defined in the literature to clearly distinguish which degree implies an echo chamber or a filter bubble (Bruns, 2019), along with the fact that the methodological design is exploratory in nature, the focus is to discuss clusters in comparative perspective, discussing trends, rather than venturing definitive conclusions. In addition, it should be considered that the people's self-assessment in their profiles to define their political orientation was not directly corroborated with them.

Social network analysis

SNA (Hansen et al, 2011) is the application of a broad field, such as network science, to the study of human relationships and their connections. It is an analysis method used to describe and analyze the links in social networks between entities, including people.

Relationship	Relative frequency	Percentage
Retweets	16,426	66.8%
Mentions	6360	25.9%
Replies	309	1.3%
Tweets	1498	6.1%
Total	24,593	100.0%

Table 1. Relations of the Catrillanca case based on tweets downloaded from November 21 to 24, 2018

Source: Own elaboration.

Social network analysis is not concerned with the rating, but with the social relationships established and how information flows through the networks formed after the different forms of contact between individuals. Due to the focus on network structures, not only messages (tweets) are analyzed, but also relationships: retweets, mentions, and replies. Table 1 shows the summary of all the relationships downloaded for this research. In total, 24,593 relationships were obtained, of which 16,426 (66.8% of the total) correspond to retweets, 6,360 are mentions (25.9%), 1,498 are tweets (6.1%), and 309, responses (1.3%). The number of relationships is not equal to the number of tweets, since a tweet can contain more than one relationship: it can be a response mentioning someone or a retweet of a tweet that contains mentions, and so on.

Cluster analysis

To perform the cluster analysis with NodeXL, we used the Clauset-Newman-Moore algorithm, which is based on modularity to establish the border between the different groups. Said algorithm searches for groups of vertexes densely connected to each other and that have few connections with other groups (Clauset et al., 2004; Mendes Rodrigues et al., 2011). In human networks, it is common for people to form groups marked by friendship, homophily, or blood ties, but "in the language of network analysis, groups (clusters) are sets of densely connected vertexes only scarcely connected to other sets" (Hansen et al., 2019, p. 95).

In a social network like Twitter, NodeXL creates a connection when a vertex (a Twitter account) retweets, mentions, replies, or favorites a tweet made by another account (De Nooy et al., 2005; Smith et al., 2014; Hansen et al., 2019). Each of these actions is mapped and results in a relationship between two users, for example, the user (vertex) that mentions (V1) and the mentioned (V2). The algorithm was selected because it adequately handles computational resources

when dealing with large networks of more than 10,000 relationships (Hansen et al., 2019; Clauset et al., 2004).

The SNA cluster analysis differs from the cluster analysis normally conducted in the statistics field since the object of study is different (Himelboim et al., 2017). Cluster analysis is a set of statistical techniques used to classify objects or cases into homogeneous groups, called conglomerates or clusters (Cea D'Ancona, 2004). The construction of the groups or clusters is carried out based on the characteristics or behavior patterns of the cases studied (Uriel & Aldás, 2005). Unlike the hierarchical and non-hierarchical cluster analyses, which group individuals based on their distances from anthropological or sociological variables, the SNA is structural in nature, so it forms the clusters based on the connections established between people thanks to the platform's functionalities. People establishing many reciprocal relationships with each other and few with the rest will form a group or cluster.

For this study, we selected the five most populous clusters that had a marked political orientation towards one of the political poles. Such a sample accounts for 63.1% of the total number of messages in the data set and is made up of clusters 1 to 6, excluding 4, considered to be of mixed composition, as we will see later.

In the SNA approach, the homophily concept means "the conscious or unconscious tendency to associate with people who remind us of ourselves" (Christakis & Fowler, 2009, p. 17), thus pointing to the metaphor of echo chambers. One way to find out, in SNA, is by calculating modularity indexes, a measure of the clustering quality of subnetworks (Himelboim et al., 2017) that reveals their level of tightness. The range of this metric varies from 1 to 0, where zero indicates the absence of modularity and 1, total modularity or secrecy: the inexistence of relationships with other groups.

In Chilean society, where group closure predominates (Bargsted et al., 2020), users of more homophilic networks are likely to be less exposed to diverse information sources, generating filter bubbles, in the way we operationalize for this study. Additionally, as we will see, if a cluster is very homogeneous (e.g., it shares a low diversity of information sources), the absence of connections with other clusters could indicate a form of echo chamber, because it reduces the probability of exposure to political positions or sources of information other than those of a given group.

Content analysis: clusters' political orientation

Several studies have used the Twitter profile biography content to identify the field to which an academic belongs (Vainio & Holmberg, 2017), to classify types of users according to their relationship with a political protest (Santos, 2018), to

study the self-branding of journalists on Twitter from the biography's words, links, and metadata (Hanusch & Bruns, 2017), or to find patterns of profile images that correlate with traces of depression or anxiety (Guntuku et al ., 2019). Other studies have undertaken the opposite procedure, using the content of the biography as an input to classify users (Uddin et al., 2014) or detect clusters around a link to a New York Times news item based on repeating words in the biographies (Herda Ğdelen et al., 2013).

In this line, it is reasonable to expect that expressions of political position in the biography are an indicator of political radicalization of a user of social networks. Although the act of posting messages and other interactions on Twitter may be more of a performative nature (Papacharissi, 2012), by expressing something in the biography the user is taking a stand, if not a permanent one (Shima et al., 2017), at least more durable than his/her posts.

To determine the users' political orientation from their biographies, we conducted a three-stage exploratory procedure: (i) filtering (supported by computer) by keywords present in the users' biography, related to political radicalism, followed by a manual review of said biographies, (ii) identification of the presence of said users in the clusters previously mapped with SNA, as an indicator of the predominance of users of one or another political tendency, and (iii) analysis of the most mentioned bigrams in the texts of the tweets belonging to each cluster to ratify their political tendency identified from the predominance of users coded as left or right winged.

Therefore, to identify the group of radical right-wing and left-wing users, we made a brief content analysis based on a group of keywords that designate political radicalism, to the extent that they were identified in the biography of the Twitter users of the sample, as it can be seen in table 2.

Right-wing radicals	Left-wing radicals
right-wing, patriot, pinochet, kast, conservative	left-wing, lefty[5], communist, marxist

Table 2. Keywords for preselection of radical political users

Source: Own elaboration. For technical reasons, the automatic search was conducted in lowercase.

5. In Spanish: *zurdo*. Term commonly used in Chile and other Latin American countries to define a person with left-wing tendencies (translator's note).

Of a total of 9,753 issuing users (V1), 1,546 had an incidence of the identified keywords (606 right and 940 left). However, it is common for users to define themselves through discursive negation: "Never on the left" or "anti-Pinochet". Thus, we conducted an individual manual check of the descriptions, adjusting the result for greater validity. In cases of lack of clarity, the user's recent Twitter messages were observed to definitively evaluate his/her political orientation. The result after this procedure was 1,383 politically radical users, 476 from the right and 907 from the left, almost twice as many as their opposites, showing a reasonable imbalance between the presence of both groups in the discussion around the selected topic in favor of radical left-wing users.

After studying homophily in Chile, Bargsted and colleagues (2020) conclude that "there is a marked discontinuity in the level of interaction between people with and without defined ideological preferences" (p. 603). In other words, Chileans with a defined ideological preference interact much less with those without a defined ideological preference, and vice versa. If users without a defined political position interact little with those who do have one, we suggest that those who do interact –and, therefore, are included in the cluster– tend to also be users with a defined, but not declared, position in their biographies. Given the absence of the coded radicals of the opposite spectrum in all the clusters, except for number 4, we therefore propose to extrapolate the coding according to said orientation, as indicated in table 4.

In other words, the issuing users (V1) of clusters 1, 2, 5 and 6 were all coded as Left-User, while the users of cluster 3 were coded as Right-User, without discussing the intensity of said orientation. This evidently exploratory maneuver allows some findings to be discussed within the inherent limitations of that scope.

Additionally, we conducted an analysis of the most frequent bigrams to verify political tendencies from these combinations of words (table 3). Note the difference between the bigrams of cluster 3 (negative, criminalizing Catrillanca) versus those of 1, 2, 5 and 6, characterized as left-wing clusters (table 4). It should be noted that the bigrams of cluster 3 are almost all related to the most shared press release entitled "A vital testimony confirmed that Camilo Catrillanca participated in a violent robbery prior to his death" (Crónica Chile, 2018), something that will be analyzed more in detail.

After coding the users, the sample was re-incorporated into the database to identify its incidence in each cluster and analyze the sources used, supported by social media analytics procedures.

Cluster	Most frequent bigrams in tweets
1	murder, camilo's death, camilo commando, jungle repudiation, murder forces, canal 13 specials, 13, people years, mapuche, minute, silence
2	death, camilo now, demonstration, demonstration, peaceful 100, palace people, peaceful currency, silent silence, catrillanca's death, front front, palace
3	violent, life robbery, testimony testimony, confirmed confirmed, camilo catrillanca, participated participated, violent robbery, prior prior, death resignation, mayor
4	death, camilo murder, camilo minute, silence face, camilo hundred, young people, surrounds surrounds, coin coin, commando face, jungle
5	commando,jungle 1,piñera piñera,create create,jungle commando, 2 2,jungle commando,assassin assassin,camilo catrillanca,3
6	school,san san,ignacio ignacio,bosque catrillanca,vía bosque,flag flag,mapuche mapuche,high school high school,flag pole,signal

For technical reasons, the search was conducted in lowercase.

Table 3. Most frequent bigrams in tweets, by cluster

Source: Onw elaboration based on NodeXL.

RESULTS AND DISCUSSION

The network of relationships in the data set is a relatively modular network (0.57), implying that there is generally little connectivity between the different subgroups identified from the cluster analysis. Below we observe the main clusters in greater detail and the individual modularity of each cluster to be able to infer some observations on the problems addressed in this research regarding echo chambers and filter bubbles.

Metaphor 1: echo chambers

The applied method resulted in six clusters, five of which present some degree of polarization (table 4): four are made up mainly of left-wing users (clusters 1-2-5 and 6) and one has a predominance of right-wing users (cluster 3). Only one (cluster 4) presents a composition that we call mixed in the groups' nominal classification. It was therefore decided to exclude cluster 4 from the sum of the total for each column in that table to better observe the poles.

We can observe that there is a certain relative balance in this sample in terms of users coded as right-wing radicals and left-wing radicals, since both represent between 8 and 9% of the total users in the clusters studied.

	Right		Left		Total single users	Unique messages in the cluster	Modularity (0-1)	Nominal Classification
	Users number	Percentage	Users number	Percentage				
Cluster 1	**2**	0.1%	**373**	21.6%	1.730	4.245	0.77	**Left 1**
Cluster 2	**1**	0.1%	**53**	4.3%	1.237	1.428	0.68	**Left 2**
Cluster 3	**424**	34.6%	**8**	0.7%	1.224	1.944	0.95	**Right**
Cluster 4	**11**	1.6%	**25**	3.6%	693	1.009	0.61	**Mixed**
Cluster 5	**2**	0.3%	**27**	4.0%	668	725	0.57	**Left 3**
Cluster 6	**1**	0.2%	**17**	3.5%	485	507	0.66	**Left 4**
SUM*	**430**	8,0%	**478**	8,9%	5.344	8.849		

*Excludes cluster 4.

Table 4. Analysis of the clusters according to the incidence of users coded as right-wing radical and left-wing radical

Source: Own elaboration.

Nevertheless, the concentration of radical right users in cluster 3 is remarkable: 424, which indicates that 70% of all users coded as radical right-wing are concentrated in a single cluster, while the cluster coded Left 1 contains just under 40% of users coded as left-wing radicals. In terms of a general analysis of the network's behavior, this implies that, although the sample has a predominance of users that could be categorized as left-wing, those that we code as right-wing radicals are almost all concentrated in a single cluster. Likewise, this cluster is the one with the highest modularity (0.95). This implies that only 5% of the messages configure connections with other clusters – for comparison purposes, the second most endogamic cluster is 1, with 77% of interactions within the same group. Cluster 3 presents characteristics, at least relative to the studied network, that could be linked to the idea of echo chambers, since the interactions connect little to other clusters codified with different political orientations.

Metaphor 2: filter bubble

Although the metaphor of the filter bubble is born from a (non-systematic) observation of the Google search engine behavior and its different results for different users (Pariser, 2011) –hence the idea that the bubble is caused by a filter of an algorithmic nature–, in this study the effects of filters or other types of algorithmic interferences are not explored, at least not directly.

Considering a broader definition, in which the information bubbles are generated by the sharing procedures of human and non-human actors (Latour, 2004), the domains of sites most shared by users of the different clusters can be observed in the extracted data, focusing on the human component of the equation, and looking for patterns between the users' political orientation and the characteristics of the sources they share in their publications.

A general analysis of the incidence of Internet domains in the messages of the data set suggests that there is an evident distinction in the mentions of the most markedly politically oriented media. On the side of right-wing users, *Crónica Chile*, a newspaper with markedly critical guidelines towards the left, linked to libertarian right-wing groups such as *Fundación para el Progreso,* predominates. On the left-wing side, *El Desconcierto* stands out, an emerging media that, despite not ascribing to any partisan orientation, declares in its editorial line that it "keeps a critical distance from the economic and political powers, and largely adheres to social discomfort and the emancipatory wills and in the transformation of society" (El Desconcierto, s/f, parr. 1). Both *Crónica Chile* and *El Desconcierto* have rates of 99% mentions[6] by radical right-wing and left-wing users, respectively. The *Radio Bío Bío* site is the only one shared by both sides: its mentions are divided into 84% of mentions by left-wing users versus 16% by right-wing users. Considering that the data set, after coding, contains substantially more users coded as left (77%) than as right winged (23%), this distribution could indicate a reasonable perception of media neutrality by users.

If we also consider the users coded as Undefined-User, i.e., all the users of the other clusters (except the coded ones), we have a less clearly marked distribution, but it allows us to easily visualize the little diversity of domains with which users coded as right-wing interact. Only *Crónica Chile*, *Bío Bío*, *Cooperativa* and *Ahora Noticias* present five or more interactions of these users in the sample (figure 1).

The filter bubble is operationalized, as a communicative act, as the option to interact with certain sources of information. In this interpretation, a bubble would form in a group that uses the same set of sources, making them less exposed to divergent accounts and eventually even fact-checking sources (Faris et al., 2017).

The first thing that can be seen in figure 2 is the predominance of *Crónica Chile* and the few other sources that accompany it in cluster 3. Clearly, a radical right-wing cluster was formed around the publications of said medium, particularly a news piece entitled "A vital testimony confirmed that Camilo Catrillanca participated in a violent robbery prior to his death" (Crónica Chile, 2018). This in itself should not be worrying, but a deeper analysis reveals circumstances that raise a greater problem.

6. This number is calculated by looking only at the domains with which radical users had some interaction as authors.

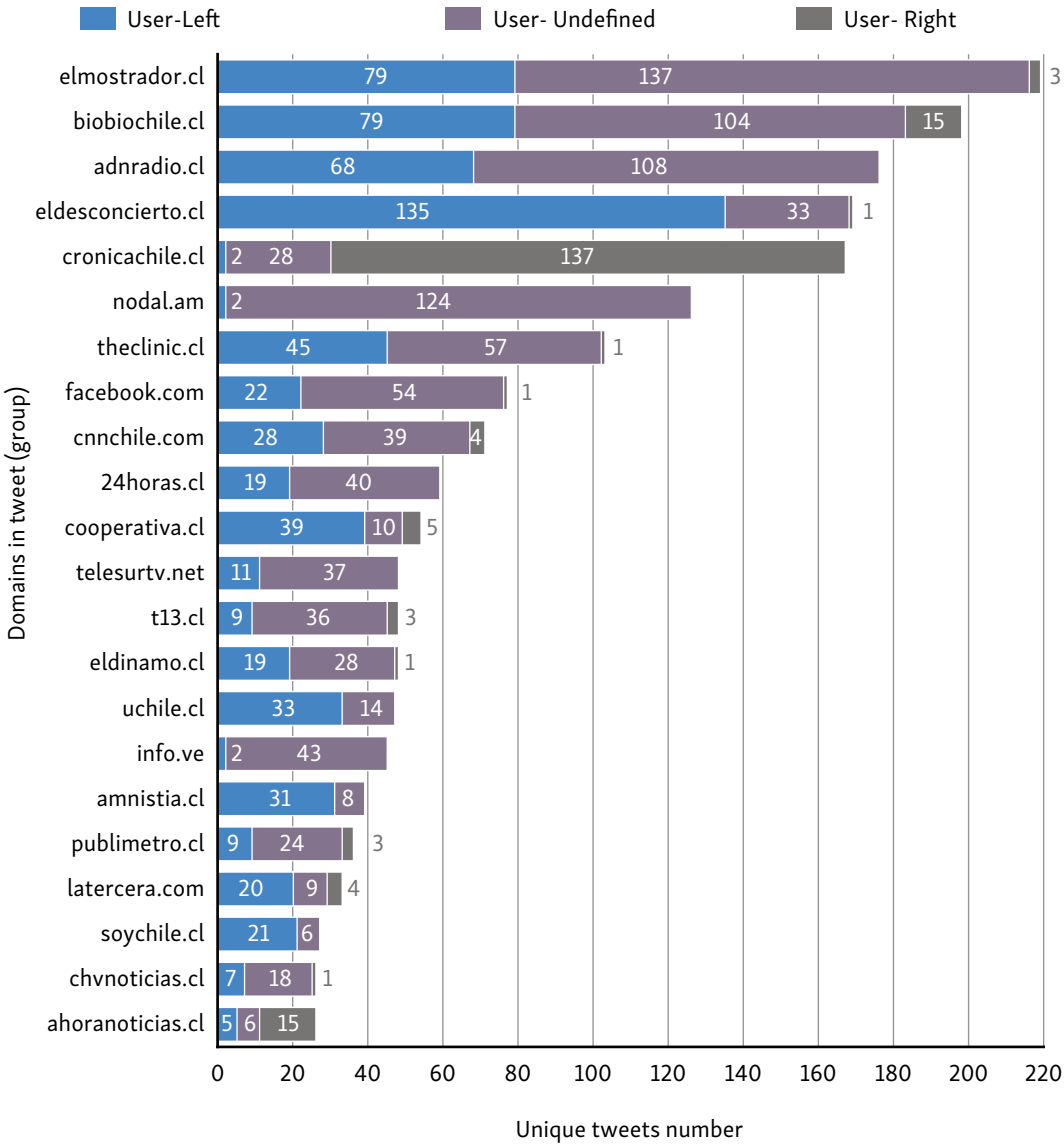

Figure 1. Incidence of the main sources according to what was disseminated by users classified as undefined, left, or right winged

Source: Own elaboration.

On the one hand, that news piece is specifically a recast of reports from other media at a time (11/21/2018) when that information had already been widely questioned by respected media such as *Ciper Chile*.

In a cluster that is already highly modular (95% of interactions with other members of that cluster), user interactions also occur with little diversity of sources: 80% of interactions with sources occur with *Crónica Chile* in cluster 3, while the most radical cluster on the left presents a concentration of only 32% with *El Desconcierto*.

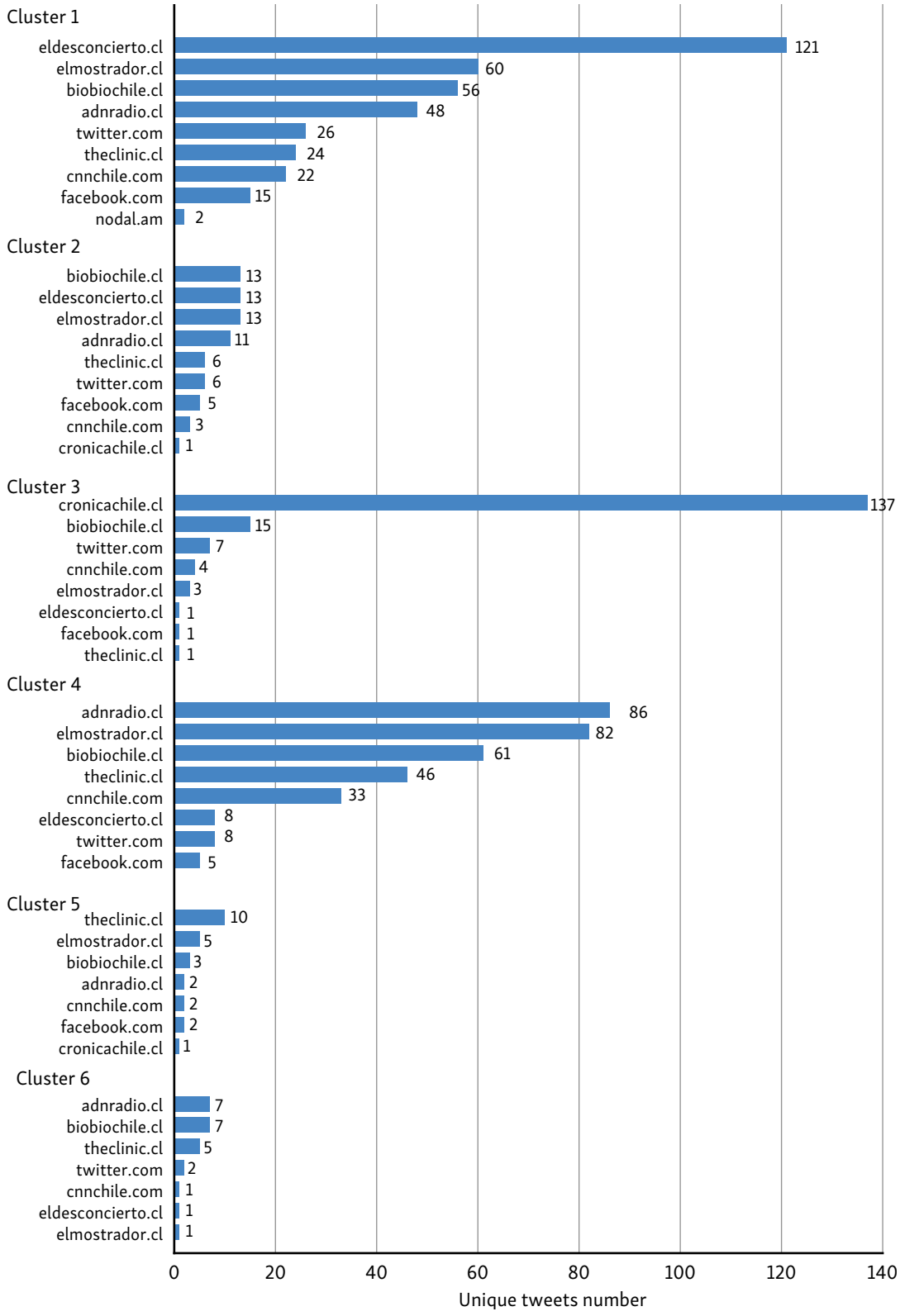

Figure 2. Main sources (according to their web domains) cited in the interactions in each cluster, in the first 6 clusters

Source: Own elaboration.

Another piece of evidence that should point to the unreliability of the medium is that less than two years after its publication the article was no longer available on the site. It may be for technical reasons, possibly the recent interface update of the site, since tests with other terms and old articles do not yield results either. In any case, coverage of the Catrillanca case by this site was not available at the time of writing this article.

In short: a radical right-wing cluster of users is assembled talking to each other around a source of dubious quality, with minimal interaction with other sources and other users outside the group, setting up a case that could be classified as both a filter bubble and an echo chamber.

Cluster 1 would be the opposite analog of 3 but shows a greater diversity of sources. Clusters 2, 5 and 6 seem not to revolve much around sources, so they are probably more conversational, as shown by the bigrams (table 3). Another relevant cluster, 4, has the greatest predominance of diverse and plural sources, which possibly explains its mixed nature in terms of this group's users' political orientation.

Although the data presented does not seem to point to the existence of filter bubbles in all cases, it can be stated that, in the case studied, the right-wing cluster (3) presents a more intense degree of homophily than all the others analyzed and identified with the left, including the most notoriously left-wing cluster (1). This allows us to partially answer the question of the study, since a significant difference is identified in the connection patterns of different political orientations, in line with the results of Barberá and colleagues (2015) and Faris and colleagues (2017). Similarly, although the presence of echo chambers is not evident in all cases, there seems to be a tendency towards less diversity of sources in the interactions of the users identified here with the right-wing than with the left-wing.

CONCLUSIONS AND NEXT STEPS

Informative isolation, low diversity and plurality of sources consulted, low quality of the sources and absence of dialogue with people or sources of different perspectives are real problems in a country's political context, either due to forced control devices –such as the censorship– or by sociotechnical devices, such as ways of appropriating technology. This study sought to identify trends and establish possible methods to evaluate these phenomena in the context of a viral event on Twitter.

In the field of social network analysis there is no single and established methodology, so most of the research, like this one, if of an exploratory and experimental nature (Himelboim, et al., 2017; Mendes Rodrigues et al., 2011).

The proposed method could serve as input for mixed approaches, including *netnographies*, content analysis, and others that allow a more qualitative look at one or two clusters, for example, to simultaneously deepen the findings and ratify –or rectify– the method.

Other strategies could complement the findings and clarify them, such as observing not only sources that users actively share, but also sources consulted, since it is obviously not the same to retweet, follow, read, favorite, or respond to a message on Twitter. Although users, due to their political orientation, could tend to amplify only content aligned with their ideological vision, this does not ensure that they are not informed by other means. In fact, studies indicate that citizens with a radical political orientation –or hyper partisans– get information from antagonistic sources, even to arm themselves, prepare their arguments, or question said sources (Garrett et al., 2013). In conflict situations in which a high degree of affective polarization emerges, the same detractors of a subject, media, or person, can become the main agents of visibility of what they originally reject (Santos, 2020). Additionally, the field would benefit from an ecological perspective of the media (Postman, 1998; Treré & Mattoni, 2016), encompassing different media, other platforms, and supports in interrelation.

Regarding the metaphors treated in the research, it is important to highlight that the fact that patterns emerge that indicate important degrees of what could be called filter bubbles and echo chambers does not result in evidence that this happens as an exclusive function of Twitter and of its characteristics, so we avoid a techno-deterministic view. The findings can be seen more as a phenomenon probably linked to the polarization ascribed to the case and the national context than to the platform, more to sociotechnical patterns than to their functionalities. What these platforms do allow us is the privilege of visualizing these relationships and this is a positive, not a negative, point of digital media, from the perspective of the transparency of social phenomena.

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