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## Digital Echo Chambers as Phenomenon of Political Space

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**Abstract.** This article attempts to provide a comprehensive overview of the academic literature on the subject, examining the different approaches, their similarities and general differences, advantages and disadvantages, and providing a consolidated and critical perspective that will hopefully be useful for future research in the field. The paper presents the results of a systematic review of Western academic studies on the existence of echo chambers in social media, an initial classification of the literature and the identification of research patterns. The authors show how conceptual and methodological choices influence research findings on the topic. Future research should take into account the potential shortcomings of different approaches and the significant potential of linking data.

**Keywords:** echo chambers, social media, digital platforms, filter bubbles, political polarization


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## Цифровые эхо-камеры как феномен политического пространства

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**Аннотация.** В исследовании приводится всесторонний обзор академической литературы по теме эхо-камер в цифровом пространстве как политического феномена, рассмотрены различные подходы, их сходства и общие различия, преимущества и недостатки, а также раскрывается консолидированная и критическая перспектива, которая, как мы надеемся,

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будет полезна для будущих исследований в данной области. Представлены результаты систематического обзора западных академических исследований о существовании эхо-камер в социальных медиа, первоначальная классификация литературы и выявление моделей исследований. Авторы показывают, как концептуальный и методологический выбор влияет на результаты исследований по данной теме. Будущие исследования должны учитывать потенциальные недостатки различных подходов и значительный потенциал связывания данных.

**Ключевые слова:** эхо-камеры, социальные медиа, цифровые платформы, пузыри фильтров, политическая поляризация

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## Introduction

The world of politics has been markedly transformed in recent decades. This is true both in the world of political production and in the world of political consumption (to continue with the metaphors of political marketing). The agora and the forum have been replaced by networks and forums — but already in the electronic, Internet sense. The intensification of communications, the growth of communicative and digital power, has produced a variety of effects in this sense, often paradoxical. The public and the intimate, openness and closedness, consistency and subjectivity, regularity and randomness, free decision and control technologies, agreement and disagreement, fabrication of agreement and imitation of disagreement have come into collision. All these clashes are only intensified and dramatized in the context of the latest processes associated with the transformation of the lifeworld and the technical sphere of modern society [Habermas 1991]. One of these processes is the crystallization and consolidation of the walls of “echo chambers”.

We are talking about “echo chambers” as specifically and operationally closed (though relatively open) topoi of digital and social space, in which multiple reproduction and constant repetition (and thereby affirmative, amplifying retransmission) of the same communicative acts take place. The “chamberness” of such communication does not imply the absence of communicative receipts from the outside; this “chamberness” means joint, collective, communal elaboration, processing, comprehension of these communicative receipts; it means specific regulation of these receipts (and limitation of alternative opinions and positions); it means a special mode of functioning of external “issuing” from such chamber both information (communicative aggregates) and individual people.

The digital nature of these echo chambers implies not only their functioning in digital (Internet, communicative) space, but also their quantifiability in principle. In this sense, the world-famous case of Cambridge Analytica [Kaiser 2019] was the most important signal for all sociology and political science: it turned out that “echo chambers” and the communicative communities populating them can be counted, quantified, structured, architected from the outside, subjected to professional operation. This raises questions

about both the “naturalness” of such communities and the “fragmentation of democracy,” about both “distributed freedom” and “exclusivity of political action,” about both the “right to limit the other” and the “politics of subjectivity”.

Two recent political events triggered a significant interest to the research of the effects social media on democracy: the 2016 presidential elections in the U.S. and the British vote to leave the EU. The focus of such fears and concerns is the belief that social media function as an “echo chamber,” where like-minded voters, through self-selecting and tuned algorithms based on big data, aggregate to consume and share ideologically satisfying news and information [Bartlett 2016<sup>1</sup>; Benton 2016; Preston 2016; Tait 2016; Wolff<sup>2</sup>, series on articles in *Economist*<sup>3</sup>]. Those close circles of like-mindedness are allegedly formed at the cost of a comprehensive, multidimensional, fact-based understanding of public affairs, which ultimately leads to political polarization between ideologically rooted and/or emotionally charged segments of society. Right-wing ideological polarization among anti-establishment segments of society, which has been seen as a key factor in Brexit and the Trump presidency, has been attributed to the functioning of social platforms like Facebook<sup>4</sup> and how they have been misused for political marketing by companies like Cambridge Analytica.

All this is amplified and further emphasized in “digital echo chambers,” where all of the above becomes tangible, easily detectable, empirically measurable, visible not only to the researcher, but also to direct social actors, participants in the political process, producers of communicative processes. These “digital echo chambers” in this sense can be considered as peculiar sociological and political science “petri dishes” in which the processes latent in many other conditions are emphatically accentuated.

Such “digital echo chambers” are not only the most important stage in the development of political marketing and political science, but also a significant threat to the very phenomenon of democracy and political space — precisely as space. The disintegration of space into such (operationally closed) topoi destroys politics as a spatial phenomenon, as openness, as publicity — in short, as everything that J. Habermas [1991] or H. Arendt [1972] wrote about. However, it is only possible to understand and evaluate this phenomenon in direct objective research.

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<sup>1</sup> Bartlett, B. (2016). It’s not too late to fix Fox News. *New York Times* (19 September). Retrieved from <https://www.nytimes.com/2016/09/19/opinion/its-not-too-late-to-fix-fox-news.html>. Access date: 07.06.2022.

<sup>2</sup> Wolff, M. (2016). Michael Wolff on Brexit: How ‘stupid’ beat ‘smart’ media (and how Trump benefits). *Hollywood Reporter*. Retrieved June, 7, 2022 from <https://www.hollywoodreporter.com/news/michael-wolff-brexit-why-stupid-906430>.

<sup>3</sup> Scandal, outrage politics: Do social media threaten democracy? *Economist*, 4 November 2017. Retrieved from <https://www.economist.com/leaders/2017/11/04/do-social-media-threaten-democracy>; Once considered a boon to democracy, social media have started to look like its nemesis. *Economist*, 4 November 2017. Retrieved from <https://www.economist.com/briefing/2017/11/04/once-considered-a-boon-to-democracy-social-media-have-started-to-look-like-its-nemesis>.

<sup>4</sup> 21 марта 2022 г. Тверской суд города Москвы признал Meta (продукты Facebook и Instagram) экстремистской организацией.

Sociologists and psychologists have recorded similar phenomena before. Thus, the “bandwagon” or the “spiral of silence” [Henshel, Johnston 1987; Noelle-Neumann 1974], in essence, represent the same “echo chambers”, only produced and supported by other technical means. However, in this case the change of technical means generates a change in the structure and even the nature of social phenomena, supported and provided by these technical means. This is explained by the fact that communicative Internet digital media are characterized by:

- a) their permanent and universal presence in human life;
- b) their high penetrability in different spheres of life;
- c) the diversity of channels of influence (text, audio, video, photo, etc.);
- d) the speed and ease of transmission and retransmission;
- e) the diversity of organization (channel, forum, agora, chatboard, club, etc.).

The variety of external designs they generate creates the illusion of multiple and heterogeneous echo chambers. This also gives rise to the insecure illusion that the heterogeneity of such “digital echo chambers” also preserves the chance for multiplicity, diversity, and ultimately, the reality of democracy itself.

This article is an attempt to look at the history and logic of the development of the term “echo chamber” in the Western academic discourse. Specifically, in this literature review, we examine social science writings that provide evidence for the existence, causes, and effects of online echo chambers.

Much of the existing research focuses on the United States, which is in many ways an extreme outlier among high-income democracies because political elites, the media system, and public opinion are more polarized there than in otherwise similar countries.

Research in this area is extensive in some respects, almost non-existent in others. To avoid an overlong review, we focus our efforts on recent studies primarily in the social sciences that have a direct bearing on the possible links between media use and how the public understands the world around them.

In the literature review we aim to summarize relevant empirical research and clarify the meaning of terms that are used both in public and policy debate and in more specialized scientific research, and not always in the same way.

Our hypothesis, however, is that external representation, formality, and external structuredness are exclusively multiple forms for essentially homologous phenomena. It is to investigate — in this publication primarily theoretically and in an outline exploratory format — the essence of these phenomena that will be the goal of our article.

To achieve this goal, we will use a combination of research methods, including desk research and uninvolved observation.

### **Echo chambers and filter bubbles as a social problem**

Against the backdrop of recent decades, the advent of the Internet and World Wide Web has drawn the attention of researchers to their potential impact on democracy and the public sphere. There are diverging trends in the literature on this topic in the modern Western academia.

Many see these new technological innovations as contributing to a diversity of communicative activities and diverse perspectives [Papacharissi, de Fatima, Oliveira 2012], and creating opportunities for public engagement and increasing access to news and political opinion [Bode 2012; de Zúñiga et al. 2012; Xenos et al. 2014]. The other group of scholars have been more pessimistic, believing that digital technology will lead to polarization suggesting it fosters users' cautious selection of information according to previous beliefs and the formation of increasingly homogeneous online groups [McPherson et al. 2001].

Among the most typical expressions of this pessimistic vision are Sunstein's [2002; 2009] metaphor of the echo chamber and Pariser's [2011] image of the online filter bubble. The idea underlying the echo chamber is that social media users are selectively interacting with like-minded people and ideologically similar content, and hence rarely engage with the contradictory ideas. Perhaps this process is complicated by the algorithmic processing of content by social media platforms based on previous user activity (see "filter bubbles"), which reduces the novelty and diversity of content that users encounter, and which, instead of encouraging a diversity of viewpoints, leads to clustering and polarization online.

Very often "echo chambers" are being used in the academic discourse along with the term "filter bubbles". It is necessary to underline the difference between an echo chamber and a filter bubble. While many scholars do not find the difference between "filter bubble" and "echo chamber", we suggest that there is a conceptual difference between those terms. There is a basic understanding of the definition of the two. Internet communication has meant individuals only access ideas by those with like-minded beliefs. A narrow information consumption pattern leads to increasing polarization and misunderstanding of those who are part of the same community.

More and more specialists and researchers are using the phrase "filter bubble" to describe only online mechanisms of information polarization, like the algorithms you find on social media and search engines. In contrast, "echo chamber" refers to both online and offline mechanisms, that act simultaneously. Usually, the concept of "echo chamber" describes the situation when information consumers mostly communicate with people with the same interests and receive information from them. This situation is often recognized as "homophily" — the tendency of individuals to interact and associate with similar people [McPherson et al. 2001]; selective exposure, which is related to the processes of avoiding challenges and reinforcing demand and expressed in a tendency to consume ideologically consistent information [Garrett, 2013; Garrett et al. 2013]; or confirmation bias — the tendency to seek, select and interpret information according to one's belief system [Nickerson 1998]. It has been suggested that these tendencies are due to our desire to avoid cognitive dissonance [Festinger 1957].

In general, there is no a coherent approach to understanding of this issue. What we observe is that different scholars select different empirical approaches and utilize different concepts for their analysis. And yet, the problem that remains is the forecasted breakdown of the information-seeking, debate and opinion-forming environment. Social media has the prospective to be a free and autonomous space for information-

seeking and communication between people, fostering the development of the public sphere as was viewed by Habermas [1991] and Dahlgren [2019]. At the same time, this mechanism is not used when there is a lack of diversity, when there is no (or little) exchange of views, there is no debate between opponents, which means that there is no common opinion and common problems.

Information sharing, likely the result of echo chambers and filter bubbles, poses a significant threat given the growing focus of social media on news consumption (Pew Research Center, 2018) and the fact that political reflection and knowledge of the views of other politicians is foundation of a healthy democracy.

Either way, echo chambers and filter bubbles are telling illustrations of the general public fear that the use of social media can lead to limiting the information users encounter or receive online, thereby not contributing to the overall free flow of information experience.

For the purposes of this paper, the allegories of the echo chamber and the filter bubble are interpreted as a situation or space in which pre-existing beliefs are repeated and reinforced — similar to the echo in an acoustic echo chamber. For the sake of clarity, we will use the term “echo chambers in social media” (ECSM) to refer to both the echo chamber problem and filter bubbles.

### **Background: politics, internet and echo chambers**

Following the 2016 US election, concerns have grown about the threats that digital platforms pose to functioning Western liberal democracies. However, despite the vast body of academic work in this area, the precise nature of these threats, empirical solutions, and their relationship to the broader digital political economy remain under-theorized. The four main threats have been identified as: fake news, filter bubbles/echo chambers, networked hate speech, and surveillance. Although these threats are widely discussed in academic and popular discussions, there is little understanding of them: of their exact scope and scope (mutual) connections or how to fight against them. With so much information in circulation, the state of empirical knowledge is often obscured by the volume and interdisciplinary forces themselves, as well as by the political and economic programs of competing interests (academics, platforms, regulators, activists,).

ECSM emerge from the interplay between filter bubbles and people’s tendency to search for information that fits comfortably with what they already know [“confirmation bias”; Berentson-Shaw 2018]. ECSM can operate as a shield of identity against epistemological and ontological uncertainty induced by viewpoints that contradict our worldviews [Ceron, Memoli, 2016; Lu & Yu 2020]. Political substance often exploits this vulnerability to amplify tendencies and a strong polarization effect [Ceron & Memoli 2016].

ECSM form when people with similar views or opinions share information within their group. They try to find and disseminate information that is consistent with their group’s norms and reinforces existing attitudes [Jamieson, Cappella 2008;



Sunstein 2009]. Social psychology has shown that this tendency to associate with like-minded people is common across cultures. Recently, however, there have been concerns that the current media system is helping people get into echo chambers more easily than ever before. The research in the 1950s showed that people tend to avoid dissonance and gravitate towards agreement [Festinger 1957]. This is related to concepts such as groupthink [Janis 1982] and selective influence theory [Klapper 1960]. In social networks, there are relevant theories about homophilia — the tendency to form social bonds with similar people [McPherson, Smith-Lovin, & Cook 2001]. There are two main ways in which the Internet and related technologies can contribute to the development of ECSM: allowing people to make choices that reinforce existing preferences, and algorithmic filter bubbles. The “filter bubble” argument suggests that algorithmic filtering, which personalizes content presented on social media and through search engines, may exacerbate people’s tendency to choose media and content that reinforce their existing preferences [Pariser 2011].

**«Echo chambers»  
in the modern media coverage:  
the dangers to democracy**

Social media as an “echo chamber” (ECSM in our words) has been a part of the media discourse for the last ten years. Eli Pariser [2011] published a rather worrying book warning about the rise of “filter bubbles” in social media. And it received a very substantial response from the journalist community resulting in the additional attention to this issue eventually also raising the interest in the problem of “echo chamber” [Bruns 2019] — and its potential harms to the ways we live and operate.

There was also a considerable concern about the future of social media where growing reliance on personalized social networks will cause the people to trust their friends more than the professional experts, which would have serious consequences for social life [Keen 2007].

Eventually the issue of “echo chambers” presenting the danger for democracy became a part of the mainstream media discourse following the elections of 2016 and Brexit. The media people expressed their concerns with the voters’ behavior in Facebook<sup>5</sup> communities when the people are “forced” to interact with like-minded peers, which contradicts the initial assumption that social media and free internet should make the users less isolated from new ideas and values. The other concern was that in such situation it is more likely for those people to develop more extreme views, resulting in greater political polarization [Benton 2016; Tait 2016].

Bartlett [2015] describes this as a process of “self-brainwashing”, “where certain ideas are reproduced so frequently and without an opposing or alternative viewpoint that it meets the classical definition of brainwashing” [Bartlett 2015]. This has been particularly troubling for journalists because polarization has proven to be a gas pedal

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<sup>5</sup> 21 марта 2022 г. Тверской суд города Москвы признал Meta (продукты Facebook и Instagram) экстремистской организацией.

of misinformation in social media. Peter Preston [2016] bemoaned that the first loss in a post-truth world would be the further degradation of public trust in mainstream news. Applying the concept of “epistemic closure”, Preston feared that an increasingly polarized political world might force people to leave quality journalism in favor of biased reporting or no reporting at all.

**«Echo chamber» in the research literature:  
divergent facts. Evidence of the existence  
and manifestation of echo chambers**

Sociologists and political scientists mostly focus on surveys, passive observation data, and social media data when analyzing the presence and distribution of ECSM. From these data sources, only surveys and surveillance data can reveal a broader picture of what media space people live in, because conclusions based on data from a single social media platform that is almost never used alone cannot reveal whether people live in limited, closed media space. For example, data from Twitter is often used for analysis because it is more readily available, but is necessarily limited to Twitter and says nothing about the wider use of media by people, not to mention the vast majority of the population who do not use Twitter. In the UK, only 31 % of respondents say they use Twitter, and only about half say they use it to get messages [Newman et al. 2021].

In various countries, including the highly polarized United States, several cross-platform studies — both based on surveys and passive surveillance — have shown that relatively few people live in politically engaged news-ECSM.

To some extent, the concept of the “echo chamber” is supported by selective exposure theory, which has been around for decades, stating that users of information selectively choose messages that conform to their views while avoiding inconsistent opinions [Sears, Freedman 1967]. Previously, when the number of existing news channels was limited, studies found that selective influence in information seeking in general does not happen in situations of mass persuasion. However, with the emergence of the Internet, users have greater access to a wealth of information and can choose what they want, so they are more selective about content [Garrett 2013; Sunstein 2009; Tewksbury 2005]. Social media seem to have taken this situation to new heights with their shared ability to allow users to interact with news in unprecedented ways and use sophisticated user-tracking algorithms to provide them with ideologically relevant information [Beam, Kosicki 2014; Spohr 2017].

Looking closer, however, the assumption of the ECSM concept must be closely examined and tested. At its simplest level, it has a tendency to reduce the social news audience to a very passive role of a group of people easily sculpted by algorithms. This, as has been shown by decades of audience studies, is at the very least too oversimplified and does not help us comprehend the sophisticated socio-psychological dynamism of public perception and the connection to news and media content. Even more important, public discourse about the ECSM ignores the growing empirical evidence that directly contradicts this notion.



The main research methods that were used to analyze the effects of ECSM were primarily surveys, passive tracking data, and social media data. The single social media platforms do not constitute a sufficient unit of analysis because the available data in this case is limited to the specific platform and does not say anything about individual's wider media use.

There is a number studies conducted in various countries, which utilized a cross-platform research relying on survey data and on passive tracking data, and found that few people inhabit politically one-sided news-ECSM.

One latest study [Fletcher et al. 2021], relied on survey data from 2020 to analyze the number of people in politically biased news-ECSM in the UK, Norway, Denmark, Germany, Austria, and the US by looking at how many people only use news sources with left- or right-leaning viewpoints (measured in terms of the overall ideological angle of each group of audience). The results were quite intriguing, demonstrating that the US case was very distinctive from the rest and the only one where more than 10% of the respondents indicated that they rely only on partisan news sources. In every country included in this study, more internet users indicated that they do not consume online news on a regular basis, thus not inhabiting any politically partisan echo chambers.

What was particularly interesting is that the UK results from this study were comparable to a previous analysis, also based on survey data, that found that around 10% in the UK said they almost never get political content on social media that they disagree with [Dubois, Blank 2018].

These results were similar to other studies of several European countries. In the Netherlands, the research conducted by Bos et al. [2016] found some evidence of selective exposure to news but acknowledged that the formation of ECSM was largely weakened by people's common use of moderately impartial public TV broadcasting. Similarly, in Sweden, for instance, Dahlgren et al. [2019] discovered that while some people did involve in selective exposure to news sources, this involvement was limited demonstrating the suggesting a pattern of cross-cutting exposure to the news from ideologically different sources. The study by Masip et al. [2020] in Spain did not find solid evidence for widespread news-ECSM and detected that most people accessed other side media at least sometimes.

Even in the politically polarized United States, scholars discovered that ECSM are smaller and less prevalent than commonly assumed. The study by Gentzkow, Shapiro, Sinkinson [2011] detected that internet news consumers with homogeneous news consumption are in minority, while the study by Garrett [2013] discovered that the notion that large numbers of people inhabit ideological news-ECSM, is exaggerated and wrong.

There are also studies based on passive tracking that have similar results as analyses of survey data from nationally representative samples, but such studies were mostly conducted in the US.

A study by Fletcher et al. [2020] found a relative lack of political news-ECSM in the UK when analyzing web tracking data. Likewise, in Israel, Dvir-Gvirsman et al. [2016], while using web tracking data collected during the 2013 election, discovered that 3% of people were in a completely one-way political partisan ECSM, and that

in most cases, people in Israel either had a relatively mixed media diet or did not consume online news at all.

As it is evident, the existence of moderately neutral public service broadcasting leads to the smaller likelihood of existence of political echo chambers. This is revealed by the fact that the emergence and the size of ECSM is limited by the fact that many people do not consume much online news in the first place. For instance, in the UK, around 25 % of internet users admitted that they consume no online news at all each week [Newman et al. 2021].

There is also a series of studies that, while not intending to measure the size of ECSM, nevertheless often arrives at similar conclusions by analyzing patterns of media use. It should be noted, that in rather polarized U.S. the results are largely similar. The study by Webster and Ksiazek [2012] discovered that the news consumers tend to significantly overlap across news sources. In 2018 A. Guess, B. Nyhan, B. Lyons and J. Reifler in their study based on analysis of tracking data found that there is a significant degree of equilibrium in respondents' media consumption regardless of political affiliation. Much of their media consumption is grouped around the center of the ideological spectrum. Shortly before, Nelson and Webster [2017] discovered that consumers focus on a few popular political news sites and that political news sites in general, regardless of popularity, have ideologically diverse audiences.

Later study by Yang et al. [2020], analyzing desktop and mobile data found observe that ideologically dissimilar US audiences join on mainstream news outlets online, and also noticed discovered little evidence of ideological selective exposure and, despite what some researchers suggested, discovered growing co-exposure to news sources over time. Based on the results from survey data, the authors also indicated that significantly more internet users consume no online news at all not rely exclusively on one-sided sources.

We have previously discussed that single platform studies are rather problematic for identifying ECSM. But in the process of our review we found but there are several interesting studies that detect like-minded groups emerged within specific social media platforms, and this happened through various ways like self-selection, or algorithmic selection, or a combination of both [Bakshy et al. 2015; Barberá et al. 2015; Kaiser and Rauchfleisch 2020; Vaccari et al. 2016]. Nevertheless, they [Barberá 2015], often conclude that most social media users acquire information from diverse viewpoints. Due to the absence of data on what other media (other than the social media platform) the people studied use, this study does make it impossible to conclude if people live in a limited, closed media space in which certain messages are celebrated and defended from being disputed.

Other studies revealed that the social media have demonstrated either a limited effect [Dimitrova et al. 2014] or a significant positive effect (de Zúñiga et al. 2012) on political knowledge. Furthermore, social media is only one of many likely media-related drivers that foster political polarization. Yang et al. [2020], in a largescale cross-national survey, discovered that the general use of online news consistently predicted polarization on divisive political issues that were at the top of the agenda in the countries examined. Turcotte et al. [2015] found in an experiment that while exposure

to news shared by friends on social media boosts users' trust in the relevant media and their intention to use it, the potency of this connection largely rests on whether the recommender is seen as an opinion leader.

In addition, it should be noted that there is a wealth of research showing that social media can encourage political similarity and uniformity as well as promote political heterogeneity and diversity. As Messing and Westwood (2014) have shown, social news users are more likely to read news shared by their friends, even if that news does not align with their political ideology.

Indeed, as Barberá [2015] and Barberá et al. [2015] have shown, online networks not only replicate offline networks, but also facilitate the formation and reinforcement of weak ties, allowing for greater political diversity. Even in the presence of ideological similarities, exposure to heterogeneous content is still a typical outcome in a social media environment [Vaccari et al. 2015]. Furthermore, users may choose to view news site content that reflects their political views, but the amount of self-selected influence through intentional selection of individual news sites or political groups accounts for a small share of online activity. Moreover, much of the influence of news via social media is incidental, and users may be exposed to a broader range of news and views [Kim et al. 2013].

Relatively recent work provides further evidence. As shown by Bruns [2017] who analyzed a large dataset of Twitter accounts with more than thousands of followers, there is moderate evidence that these Twitter accounts form distinctive clusters, but there is rather significant interaction between these clusters. In 2018 study based on a national survey in the UK, Dubois and Blank discovered that people interested in politics are generally able to elude echo chambers. Therefore, the authors concluded that fears of the creation of echo chambers may be exaggerated.

Following the U.S. elections in 2016 events the studies demonstrated that it is unlikely that the rise of populist politics was due to the polarizing effect of social media. In 2017 the study by Allcott and Gentzkow determined from a U.S. post-election survey that despite the fact that the ECSM effect was positively connected to beliefs in fake election news, social media was the most important source of election news for only 14 percent of U.S. voters. Later, study by Benkler et al. [2017] demonstrated profoundly deep-seated sociopolitical and structural factors, rather than ideological ECSM effect as a key factor in Trump's victory. At the same time, Groshek and Koc-Michalska [2017] discovered that, despite the popular assumption, social media users are less likely to vote for Trump.

This does not necessarily indicate that there is insufficient convincing evidence to support the argument for an ECSM effect. A study conducted two months after the 2016 US presidential election [Justwan et al. 2018], discovered that Republican supporters exposed to the ECSM were more likely to feel satisfied with American democracy. According to the authors, the post-election polarization resulted in significant differences between voters of the winning and losing parties. On the other hand, in 2017 Bae examined survey data for social media users and discovered that social media use influenced the users from South Korea to believe in political rumors that matched with their beliefs, which he also explained by the effect of "echo chambers".

While social media is not the only reason for the development of ECSM [Beam, Hutchens, & Hmielowski 2018], research on Twitter [Guo et al. 2020; Himelboim, McCreery, Smith 2013] demonstrates how certain platform features contribute to ideological similarity and therefore polarization of the political views [Himmelboim et al. 2013]. Research on Reddit by Massanari in 2015 has found that a content selection algorithm that favors the most popular and recent posts can contribute to a toxic ‘technoculture’ that leads to divergent views on contemporary issues. This creates the impression that some views are more widespread than they really are, which legitimizes the systematic segregation of marginalized groups or people with different views.

Some scholars argue that the debate around ECSM is exaggerated and that technology should be blamed for human problems [Bruns 2019]. Empirical research on political communication shows that it is user choice, not algorithms, that limits the diversity of information [Fletcher et al. 2018; Moeller et al. 2016]. There are human factors that reduce the ECSM effect including: communication methods [Zimmer, Scheibe, Stock 2019], network homogeneity [Allcott, Gentzkow 2017], root beliefs [Nguyen, Vu 2019], level of political interest, and diverse media choices [Dubois, Blank 2018].

To summarize, the depiction of the ECSM effect in political news consumption has received ambiguous empirical support, with the more evidence in favor of rejecting this effect.

It should be noted that besides the Western research on echo chambers there is a lively discussion on this topic going on in other parts of the world. It is interesting to highlight that most of the empirical studies conducted in Russia confirm the echo chamber phenomenon. According to Martyanov and Bykov, traditional political ideologies in today’s information society do not lose their importance, although their ideas and values are transformed and modernized in online space [Martyanov, Bykov 2017]. Users, belonging to different political ideologies, form stable “echo chambers” in their online environment, rigidly filtering the information they receive, locking themselves in and reproducing attributes only of their political ideology and not allowing outsiders in. At the same time, on the margins of social media there are fierce clashes between supporters of different political currents, often crossing the line between online and offline interactions. These conclusions are supported by a number of other Russian scholars [Martyanov, Martyanova 2019; Volodenkov, Fedorchenko 2021; Zamkov 2019; Barsukov 2018, and others].

## **Conclusion**

In this review, we have looked at the evidence concerning the existence, causes, and effects of online echo chambers and have considered what related research can tell us about scientific discussions online and how they might shape public understanding of science and the role of science in society.

To conclude, let us make several final points about the state of the Western research of the echo chambers.

First, a lot of empirical studies demonstrating that ECSM are smaller than commonly assumed, and the mounting volume of research rejecting the filter bubble hypothesis, should not be confused with the assumption that our increasingly digital, mobile and platform-dominated media environment poses no serious social problems. There are a number of them, including the often overlooked reality of significant inequality in the use of news and information documented in many of the studies reviewed here, as well as a host of others, such as widespread online harassment and abuse, various types of misinformation, often invasive data collection by dominant platforms, serious disruption of established news businesses and market concentration, and many other problems that are beyond the scope of this review. The research show that people who are not interested in politics and do not use a variety of media are more likely to be in an ECSM. They are less likely to check multiple sources or discover things that change their minds. This is an argument that the ECSM exists, but for a certain segment of the population.

Second, the perils associated with people primarily seeking out information that matches their views, let alone living in a confined media space where their pre-existing views are rarely challenged, may be far less than many believe, and yet they are ever-present, and it is clearly possible for people to come to hold very polarized views, often the views that contradict the best available scientific research — without living in echo chambers or filter bubbles. Sometimes minorities, however small, play an important role in driving public and political debate and decision-making. As was noted, in the U.S. context, despite the fact that most Americans do not live in ECSM, they are influenced by those who do. And in many cases confirmation bias, motivated reasoning, and social reinforcement from the off-line communities where we were politically socialized for most of our life, will cause us to have very distinct views, even though we also encounter a wide variety of different kinds of information through digital media.

Third, research in the field is broadly developed in some aspects and almost absent in others. Among other things, there is often a lack of research outside the US, there is much less research specifically on academic issues rather than on policy and media use in general.

Finally, the research suggests that ECSM may exist for a certain segment of the population leading to conclusion that increasing media literacy may help people learn to avoid ECSM. Media literacy campaigns often argue that people should not rely solely on social media and that people with a wider choice of media are better able to avoid ECSM.

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