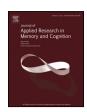
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Commentary

The "Echo Chamber" Distraction: Disinformation Campaigns are the Problem, Not Audience Fragmentation



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The importance of the arguments made in "Beyond misinformation" (Lewandowsky, Ecker, & Cook, 2017) is difficult to underestimate. Recognizing that the current crisis of faith in empirical evidence and in the value of expertise has roots that reach far beyond individual-level psychological processes is a crucial step in countering it. As the authors note, there are a host of social, technological, and economic factors that contribute to the situation we face today, and accounting for these interdependent forces will enable stakeholders, including scientists, journalists, political elites, and citizens, to respond more effectively.

Further, the authors clearly articulate why scholars must engage in politically charged debates. The argument that political motivations are driving the emergence of a "post-truth" world has ample precedent: rumors and lies have been used to shape public opinion throughout human history (Allport & Postman, 1965 [1947]; Jamieson, 2015; Knapp, 1944; Mara, 2008; Shibutani, 1966). What is perhaps unique to the present situation is the willingness of political actors to promote doubt as to whether truth is ultimately knowable, whether empirical evidence is important, and whether the fourth estate has value. Undermining public confidence in the institutions that produce and disseminate knowledge is a threat to which scientists must respond.

The primary goal of this response, however, is not to underscore the article's insights. Those contributions speak for themselves. Lewandowsky, Ecker, and Cook (2017) cover considerable intellectual territory, which necessarily requires brevity in their treatment of complex issues. I aim to explore critically an area that merits additional attention: namely, the authors' characterization of the online information environment.

The risk is that some readers might misinterpret the authors' claims about the role of technology in a substantively important way. There is strong empirical evidence that most individuals encounter a range of political viewpoints when consuming news, a fact which is potentially obscured by references to "echo chambers" and "filter bubbles." This has important implications for the strategies used to counter misinformation. In the absence of echo chambers, promoting contact with belief-challenging corrections is insufficient. Effectively responding to disinformation campaigns requires that we find ways to undermine beliefs that persevere *despite* encounters with counter-evidence.

Diversity of Online Political Information Exposure

In their discussion of the changing media landscape, the authors briefly allude to echo chambers, where "most available information conforms to pre-existing attitudes and biases" (Lewandowsky et al., 2017, p. 353). Although the authors are careful not to assert that this is what most people experience when they go online, readers may nevertheless assume that it is. Yet there is ample evidence that echo chambers are not a typical part of Internet users' experience. Numerous analyses of large-scale observational data indicate that online news consumers do not systematically avoid exposure to content with which they would be expected to disagree.

Two important studies help illustrate this point. First, a three-month study of 50,000 online news users in the U.S. found that news audience fragmentation was quite low. Specifically, the authors found that, on average, the distance between the ideologies represented in the news diets of a random pair of consumers is small. On a scale from zero to one, where zero corresponds

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to no segregation (e.g., being randomly exposed to news), the overall segregation level was only 0.11 (Flaxman, Goel, & Rao, 2016, p. 308). Further, the authors found that although most Americans rely on only a few online news outlets, the most used outlets tend to attract comparable numbers of conservatives and liberals, suggesting that they represent a more diverse range of views. News outlets that appeal to the political extremes receive relatively little attention. The second study contrasts the ideological segregation that Americans encounter in their online news exposure to what they encounter in a variety of other settings. Analyzing Internet tracking data collected from 12,000 comScore panelists over a 12-month period, this study found that face-to-face interactions tended to be more segregated than online news use (Gentzkow & Shapiro, 2011). In short, the notion that people have constructed highly polarized online news environments, environments in which they never see the other side, is a myth.

Nor are exposure-based echo chambers likely to emerge, as their existence is inconsistent with well documented human information-selection preferences. Selective exposure research dating back to the 1960s has shown that individuals are attracted to attitude-congruent information, but that their response to attitude-discrepant information is more complicated (Frey, 1986; Hart et al., 2009). Importantly, when presented with a mixture of one- and two-sided news stories, individuals do not choose attitude-congruent information at the expense of attitude-discrepant information (Garrett & Stroud, 2014). As long as an individual's views are represented in a news story, most people are indifferent to the inclusion of other viewpoints. Furthermore, there are instances when the inclusion of other perspectives is preferred (Carnahan, Garrett, & Lynch, 2016; Knobloch-Westerwick & Kleinman, 2011). These patterns have not changed despite the radical transformation of communication technologies (Garrett, Carnahan, & Lynch, 2013).

In a similar vein, Lewandowsky et al. also claim that "most online users are, knowingly or not, put into a filter bubble," where software systematically shields them from views with which they might disagree (2017, p. 353). Although there is less research on this question, a growing body of evidence suggests that this is a misleading characterization of the influence of what computer scientists often refer to as "recommender systems." The first evidence comes from the three-month observational study of online news users described above. Not only were overall segregation levels low, but individuals who got their news through technologies commonly characterized as promoting filter bubbles—including social networks and search engines—saw an *increase* in their exposure to news representing the political opposition (Flaxman et al., 2016, p. 316).

A study of over 10 million Facebook users provides additional evidence on this question (Bakshy, Messing, & Adamic, 2015). Researchers at the company compared users' self-reported ideology to the political orientation of the news that they encountered via the social networking service. The results provide straightforward evidence that Facebook does not systematically screen out all counter-attitudinal exposure. Algorithmic filtering removed a relatively small fraction of the cross-cutting content found in users' news feeds, reducing it by 5% for conservatives

and 8% for liberals. After filtering, more than one in five political stories to which Facebook users in the study were exposed was cross-cutting.

Although it is obviously possible to tailor automated recommender systems to promote filter bubbles, designers have long recognized the importance of diversity and serendipity (Negroponte, 1996), and have strived to protect it. Over the past decade, scholars interested in system design have proposed and tested dozens of approaches that actively promote diverse information exposure (for reviews, see Bozdag & Hoven, 2015; Garrett & Resnick, 2011). Furthermore, since recommender systems typically "learn" users' preferences by extrapolating from past behavior, the psychological tendency to tolerate, and sometimes seek, counter-attitudinal information should help preserve diversity in recommended content.

This does not mean that the authors are wrong to assert that the online environment has contributed to the rise of a post-truth mentality, but it does mean that some of the mechanisms they describe are misspecified. Different mechanisms suggest different remedies. If ignorance induced by echo chambers or filter bubbles were the problem, then diversifying exposure would be an obvious solution. But something else is going on. Given the relative rarity of echo chambers, strategies focused on countering them are unlikely to have a substantively important influence on belief accuracy. It is crucial that we understand why these inaccurate beliefs persist so that we can develop strategies that target those causes specifically.

Reconceptualizing the Threat

The terms "echo chamber" and "filter bubble" are sometimes used in a way that is empirically supported. The terms have been used to describe social media practices that exhibit highly segmented content *engagement*—rather than exposure—in the form of "likes," shares, and comments (Schmidt et al., 2017). For example, someone who "likes" a Facebook post about a conspiracy theory is unlikely to engage substantively with other more scientifically informed posts (Zollo et al., 2017).

Both the antecedents and consequences of exposure differ substantively from those of engagement. For example, an individual who is motivated to consume counter-attitudinal content may be much less likely to endorse that same content with a Facebook like (Stroud, Muddiman, & Scacco, 2013). And reading a news article that challenges one's beliefs is less likely to be persuasive when it is accompanied by comments (from a like-minded individual) that challenge the articles' conclusions (Anderson, Brossard, Scheufele, Xenos, & Ladwig, 2014). Given these differences, the use of "echo chambers" to refer to both exposure and engagement is potentially confusing. For this reason, I use the label "engagement echo chambers" when referring to highly segmented interaction with social media content.

Engagement echo chambers can promote falsehoods regardless of the diversity of information exposure. One does not need to avoid contact with all belief-incongruent information to maintain inaccurate beliefs (Kahan, 2015). Belonging to a social network that consistently affirms one view can promote

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