Social Media Echo Chambers & Democratic Discourse
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INTRODUCTION

The First Amendment was enacted with the fundamental concern of preserving freedom of political speech above all else. This has been theoretically justified, predominantly by theories of the marketplace of ideas and democratic self-governance. The first posits that through the competition of conflicting views, an abundance of unproscribed speech will eventually lead society to the democratic goods of progress and truth. The second that in a self-governing republic, people must be informed, and they must decide for themselves what progress and truth mean, and thus must be free to choose from a plethora of options.[1] Both presuppose that democracy is most effective when citizens have accurately informed beliefs; formed through regularly encountering information that contradicts their preexisting views.[2]

Traditionally, the greatest threat to "robust, uninhibited, and wide-open" debate was the specter of government censorship;[3] however, the greater risk now may be that individuals, with some assistance from internet technology,[4] are censoring their own informational environments and immunizing themselves against the clash of competing ideas. Unsurprisingly, there has been considerable scholarly attention paid to the phenomenon of echo chambers: whereby citizens self-select into communities of like-minded individuals, and close themselves off to conceptions which contradict their own preconceived ideas. In particular, the advent of social media has caused a great deal of anxiety around the future of free and productive civic discourse. The 2016

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[1] JŰRGEN HABERMAS, THE STRUCTURAL TRANSFORMATION OF THE PUBLIC SPHERE: AN INQUIRY INTO A CATEGORY OF BOURGEOIS SOCIETY (1989); The Omidyar Group, *Key Risks of Social Media for Democracy*, 1, 2 (2017).
[2] Matt Gentzkow & Jesse M. Shapiro, *Ideological Separation Online and Offline*, 126 THE Q. J. OF ECON. 1799, 1799 (2011) [herein after Gentzkow & Shapiro, *Ideological Separation*].
[3] N.Y. Times Co. v. Sullivan, 376 U.S. 254, 270 (1964).
[4] Robert Epstein & Ronald E. Robertson, *The Search Engine Manipulation Effect (SEME) and its Possible Impact on the Outcomes of Elections*, 112 PROC. OF THE NAT'L ACAD. OF SCI. E4512, E4520 (2015) "campaign influence is usually explicit, but search ranking manipulations are not. Such manipulations are difficult to detect, and most people are relatively powerless when trying to resist sources of influence they cannot see".

election and the current climate of viscerally tribalistic politics has exacerbated concerns that social media is having a deleterious effect on our democracy.

This paper will seek to summarize findings on this topic so far, focusing on why social media might make echo chambers breed extremity and inflexibility of opinion to a greater extent than prior forms of social filtering. It is notable that some of the previous work approaches this topic from a normative perspective of echo chambers as limiting the autonomy and choice of individuals, while others from a more collective perspective, emphasizing the diminishing quality of information and deliberation at the societal level. However, both of these standpoints are reconcilable with the same overall aim of a vibrant, deliberative republic.[5] Finally, I will discuss three sets of avenues that have been suggested to curtail the risks of this phenomenon.

PART I: ECHO CHAMBERS AND POLITICAL DISCOURSE

A: The Role of Social Media in Modern Politics

In recent years, social media has utterly transformed the way we interact with one another and the external world, altering almost every form of communal interaction, including politics. Donald Trump's election demonstrates that politicians' ability to succeed in modern political competition is based in no small part on their ability to adapt to this reoriented communicative landscape. In particular, social media sites have become the portals from which we select a great deal of the news we choose to read, which informs our political decision-making.

[5] Engin Bozdag & Jeroen van den Hoven, *Breaking the Filter Bubble: Democracy and Design*, 17 ETHICS INFO. TECH. 249, 250 (2015). *Compare with* Aaron Shaw & Yochai Benkler, *A Tale of Two Blogospheres: Discursive Practices on the Left and Right*, AM. BEHAV. SCI. 459, 465 (2012) stressing that concerns over polarization stem from a particular conception of democracy whilst less deliberative models focus on greater representation of the views in society.

The reach of social media cannot be understated. In 2017, the Reuters Institute found that Facebook-owned platforms reached 86% of internet users aged sixteen to sixty-four in thirty-three countries.[6] They also found 54% of users across the thirty-six countries used social media as a source of news, with 14% describing it as their main source.[7] Another study found 44% of people across twenty-six countries used social media to get news.[8] A survey by the Pew Research Center found 62% of Americans get news on social media, and 18% do so often.[9]

Another survey found the share of Americans who use Twitter and Facebook as a news source is rising, with 63% of Twitter and 63% of Facebook users saying that each platform serves as a source for news in 2015; versus 2013, when 52% of Twitter and 47% of Facebook users said the same.[10] The Pew Research Center also found that this rise was consistent across nearly every demographic, including gender, race, age, education, and income.[11] They did find however that news plays a varying role across sites, with 66% of Facebook users, 59% of Twitter users, and 70% of reddit users, but only 31% of Tumblr users, and less than 20% of users on other platforms, getting news from the above.[12]

There has been a particular interest in whether the reach and impact of social media is magnified for younger generations. The American Press Institute found 88% of millennials regularly get news from Facebook, and 69% do so daily.[13] 61% of millennials surveyed by the

[6] Nic Newman et al., *Digital News Report 2017*, REUTERS INST. 1, 90 (2017).
[7] *Id.*
[8] The Omidyar Group, *supra* note 1 at 3.
[9] Jeffrey Gottfried & Elisa Shearer, *News Use Across Social Media Platforms*, PEW RES. CTR. 1, 2 (2016).
[10] Amy Mitchell & Dana Page, *The Evolving Role of News on Twitter and Facebook*, PEW RES. CTR. 1, 2 (2015) [herein after Mitchell & Page, *The Evolving Role*].
[11] Mitchell & Page, *The Evolving Role*, *supra* note 10 at 3, 8.
[12] Gottfried & Shearer, *supra* note 9 at 3.
[13] AM. PRESS INST., *How Millennials Get News: Inside the Habits of America's First Digital Generation* (Mar. 16, 2015 12:01 AM), https://www.americanpressinstitute.org/publications/reports/survey-research/millennials-news/

Pew Research Center reported finding political news on Facebook in a given week,[14] and 24% of those surveyed said at least half of the posts they see on the site related to politics.[15] One study found that for twenty-four separate news and information topics probed, Facebook was the primary way millennials learned about thirteen of them, and the secondary gateway for seven more.[16] Further research found younger users placed greater importance on social media for news, with 49% of Twitter users and 49% of Facebook users under thirty-five years old describing the platforms as their most important news source, compared with 31% and 34% of those thirty-five or older for these platforms respectively.[17]

However, this is not to say the influence of social media is without outer limitations. One study found online news consumption still primarily consists of individuals directly visiting the websites of mainstream news organizations.[18] Another found no platform had an unrivalled position, with over 50% of those surveyed saying they get news from more than three social media platforms.[19] Other research found that across the five social media sites with the biggest news audiences, between 20-30% of users also get news from network or local television.[20] Similarly, research looking into the uses and gratifications of social media has found that people primarily use online news out of convenience, alongside other forms of media.[21]

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[14] Amy Mitchell & Dana Page, *Millenials & Political News*, PEW RES. CTR. 1, 2 (2015) [herein after Mitchell & Page, *Millenials & Political News*].
[15] Mitchell & Page, *Millenials & Political News*, *supra* note 14 at 3.
[16] Media Insight Project, The Personal News Cycle (Mar. 2014), http://www.mediainsight.org/Pages/the-personal-news-cycle.aspx.
[17] Mitchell & Page, *The Evolving Role*, *supra* note 10 at 13.
[18] Seth Flaxman, Sharad Goel & Justin M. Rao, *Filter Bubbles, Echo Chambers, and Online News Consumption*, 80 PUB. OPINION Q. 298, 301 (2016).
[19] Media Insight Project, *supra* note 16.
[20] Gottfried & Shearer, *supra* note 9 at 8.
[21] Kaye, B. K., & Johnson, T. J., *Online and in the Know: Uses and Gratifications of the Web for Political Information*, 46 J. OF BROAD. & ELEC. MEDIA 52, 72 (2002).

Further, The Pew Research Center found that 60% of people described social media as an unimportant news source; with only 9% of Twitter users and 4% of Facebook users describing it as their most important source. This level of importance has not increased since 2013, so while more users are accessing news on social media than they did two years' ago, the portals' relative importance as a news source has not changed.[22] Similarly, Barthel found only 5% of respondents in 2017 said they had a lot of trust in information from social media, holding steady from the 4% in 2016 who said the same.[23]

B: Echo Chambers Online

Echo chambers are closed communities in which individuals associate themselves with people they view to be like them and whose views mirror their own. This preference is known as "homiphily" and results from a cognitive tendency to prefer to receive information and interact with people who validate one's preexisting views.[24] This process has been labeled "selective exposure to information"; also known as "confirmation bias", because of the proclivity to seek confirming information.[25]

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[22] Mitchell & Page, *The Evolving Role of News on Twitter and Facebook*, *supra* note 10 at 12.
[23] Michael Barthel & Amy Mitchell, *Americans' Attitudes about the News Media Deeply Divided Along Partisan Lines*, PEW RES. CTR. 1, 12 (2017).
[24] Catherine Grevet, Loren Terveen & Eric Gilbert, *Managing Political Differences in Social Media*, SOC. MEDIA AND POL. 1400, 1400 (2014); Q. Vera Liao & Wai-Tat Fu, *Beyond the Filter Bubble: Interactive Effects of Perceived Threat and Topic Involvement on Selective Exposure to Information*, 2359, 2359 (2013). *See also* Paul D. Sweeney & Kathy L. Gruber, *Selective Exposure: Voter Information Preferences and the Watergate Affair*, 46 J. OF PERSONALITY & SOC PSYCHOL. 1208, 1208 (1984).
[25] *See, e.g.*, Donsbach W., *Exposure to Political Content in Newspapers: The Impact of Cognitive Dissonance on Readers' Selectivity*. 6 EUR. J. OF COMM. 155 (1991); L. Festinger, *A Theory of Cognitive Dissonance*, STANFORD UNIV. PRESS (1957); Frey, D., Schulz-Hardt S., & Stahlberg D., *Information Seeking Among Individuals and Groups and Possible Consequences for Decision-Making in Business and Politics*, *in* UNDERSTANDING GROUP BEHAVIOR: VOL. II. SMALL GROUP PROCESSES AND INTERPERSONAL RELATIONS (E. Witte & J. Davis eds., 1996). Eva Jonas et al., *Confirmation Bias in Sequential Information Search After Preliminary Decisions: An Expansion of Dissonance Theoretical Research on Selective Exposure to Information*, 80 J. OF PERSONALITY AND SOC. PSYCHOL. 557 (2001); Schulz-Hardt et al., *Biased Information Search in Group Decision Making*, 78 J. OF PERSONALITY AND SOC. PSYCHOL. 655 (2000).

The idea that individuals' prefer exposure to arguments supporting their own position over others is well-established.[26] In controlled experiments, Garrett found people tended to choose online news articles from outlets aligned with their political opinions and who confirmed their own views.[27] Slater proposed the "reinforcing spirals framework" to explain the mutually reinforcing processes of media selection and viewpoint orientation, wherein people select media which affirms their beliefs, those beliefs strengthen, and then they select more content which reaffirms those beliefs.[28] Likewise, Gergen refers to these bubbles of ideological consistency as ''monadic clusters,'' that reinforce already existing values and beliefs.[29] "Cyberbalkanization" refers to the idea that users will self-segregate into smaller and smaller online communities with homogenous perspectives, that become increasingly averse to conflicting views.[30] This echo chamber effect was evident on Twitter during the 2016 election; see Appendix I.

It should be noted at this point that a preference for view-reinforcing information does not necessarily imply an aversion to view-contradicting information. Although, Bakshy found only 17% of conservatives and 6% for liberals were likely to click on content which contradicted their views;[31] separate analyses by Garrett and Frey both found people's tendency to seek out

[26] R. Kelly Garrett, *Echo Chambers Online? Politically Motivated Selective Exposure among Internet News Users*, 14 J. OF COMPUTER-MEDIATED COMM. 265 (2009) [herein after Garrett, *Echo Chambers Online?*]; Shanto Iyengar & Kyu S. Hahn. *Red Media, Blue Media: Evidence of Ideological Selectivity in Media Use*, 59 J. OF COMM. 19, 39 (2009); Sean A. Munson & Paul Resnick, *Presenting Diverse Political Opinions: How and How Much*, PROC.'S OF THE SIGCHI CONF. ON HUMAN FACTORS IN COMPUTING SYS.'S 1457 (2010).
[27] Garrett, *Echo Chambers Online?*, *supra* note 26 at 279.
[28] Michael D. Slater, *Reinforcing Spirals: The Mutual Influence of Media Selectivity and Media Effects and their Impact on Individual Behavior and Social Identity*, 17 COMM. THEORY 281, 285 (2007).
[29] Gergen, K. J., *Mobile Communication and the Transformation of the Democratic Process*, in HANDBOOK OF MOBILE COMMUNICATION STUDIES 297 (J. Katz ed., 2008).
[30] Bozdag & van den Hoven, *supra* note 5 at 249; Flaxman, Goel & Rao, *supra* note 18 at 317.
[31] Eytan Bakshy, Solomon Messing & Lada A. Adimic, *Exposure to Ideologically Diverse News and Opinion on Facebook*, 348 SCI. 1130, 1131 (2015).

view-confirming information significantly outweighed their dissuasion from engaging with view-opposing information.[32]

Echo chambers on social media result from a combination of choices made by individuals and filtering conducted by platforms in order to make feeds more appealing to their audiences. Some have hypothesized that this feed manipulation will place users in ‘‘filter bubbles’’ and as a result they won't even be aware of the information they are missing.[33] The so-called "resonance effect", by which suggested content is tailored to each individual's taste, reinforces the filter bubble by continually reflecting a user's views back at them.[34] .[35] Moreover the format of online content, as compared to a broadsheet or broadcast news, means individuals are less likely to encounter both views and topics serendipitously.[36]

Flaxman found that as a result of these phenomena, almost all users were exclusively exposed to only one side of the political spectrum. Political campaigns have capitalized on this situation, tailoring and marketing campaign advertisements to individuals' preexisting preferences at a micro level.[37] "Computational politics" is the process by which political actors

[32] R. Kelly Garrett, *Politically Motivated Reinforcement Seeking: Reframing the Selective Exposure Debate*, 59 J. OF COMM. 265, 267 (2009); Frey D., *Recent Research on Selective Exposure to Information*, 19 ADVANCES IN EXPERIMENTAL SOC. PSYCHOL. 41, 80 (1986).
[33] ELI PARISER, THE FILTER BUBBLE: WHAT THE INTERNET IS HIDING FROM YOU (2011).
[34] Dirk Helbing et al., *Will Democracy Survive Big Data and Artificial Intelligence?*, SCI. AM. (2017), https://www.scientificamerican.com/article/will-democracy-survive-big-data-and-artificial-intelligence/. *See also* Flaxman, Goel & Rao, *supra* note 18 at 311, Fig. 3.
[35] Flaxman Goel & Rao, *supra* note 18 at
[36] CASS SUNSTEIN, #REPUBLIC 19, 20 (2017).
[37] Sunstein, *supra* note 36 at 90; Young Mie Kim, *Algorithmic Opportunity: Digital Advertising and Inequality in Political Involvement*, 14 THE FORUM "voter manipulation in order to create and maintain inequality in political access and involvement is a distinct strategic goal of such advertising: "digital advertising limits algorithmic opportunity to access and acquire political information. Voters are strategically defined, and information inequality is created between the arbitrarily defined 'strategically important' and 'strategically unimportant.' Discriminately defined by campaigns, different voters receive different information, thereby engaging differently in politics."

use large datasets, derived from online and offline data sources, to interact at an individual level with voters in order to further a political outcome.[38]

The echo chamber effect is not uniform across users or discursive content. Barbera et al. found polarization varied significantly as a function of time and topic; "hot button issues", such as the government shutdown or marriage equality, were more likely to be discussed only within self-contained ideological groups.[39] Similarly, Liao & Fu found that when users were discussing topics that they felt less involved with, they were more willing to interact with oppositional views; whereas if they were facing what they perceived to be a personally or ideologically threatening situation, they were more likely to seek view-affirming content.[40]

The effect is also more pronounced for certain types of individuals. The Pew Research Center found users were less likely to be exposed to views contrary to their own if they self-identify as consistently ideologically: 47% of consistent conservatives and 32% of consistent liberals reported seeing opinions that were mostly or always in line with their own views.[41] They further found that 50% of consistent conservatives, along with 28% of those with mostly conservative political values, only conversed about politics with other conservatives; and 31% of consistent liberals and 9% of those with mostly liberal views only conversed with other liberals about politics.[42] Interestingly, consistent liberals were more likely to engage with the opposition; a finding supported elsewhere. Barbera et al. found that liberals were significantly more likely to engage in cross-ideological retweeting than were conservatives, regardless of topic;[43] and

[38]Zeynep Tufekci, *Engineering the Public: Big Data, Surveillance, and Computational Politics*, 19 FIRST MONDAY (2017), http://firstmonday.org/ojs/index.php/fm/article/view/4901/4097 (last accessed 1 Jul., 2017).
[39] Pablo Barbera et al., *Tweeting from Left to Right: Is Online Communication More than an Echo Chamber?*, 26 PSYCHOL. SCI., 1531, 1536-37 (2015).
[40] Liao & Fu, *supra* note 24 at 2367.
[41] Amy Mitchell & Rachel Weisel, *Political Polarization & Media Habits*, PEW RES. CTR. 1, 29 (2015).
[42] *Id.* at 37.
[43] Barbera et al., *supra* note 39 at 1537.

Mitchell & Weisel observed that consistent liberals sought out an average of 1.3 more news sources per week than consistent conservatives.[44]

This new world in which people select their information, as opposed to interacting with information as they encounter it, has led to concerns about the commodification of ideas and of facts. Fiss compares cyberspace to a virtual marketplace in which users shop for news that aligns with their positions.[45] On the demand side, people seek information which reinforces their preexisting views. Simultaneously on the supply side, media sources become more biased over time because they recognize that consumers perceive sources which confirm with what they already "know to be true" as more credible; thus, by biasing its content a source may ironically increase its reputation for accuracy.[46] Sunstein analogizes the aggregate effects of these individual shopping choices as akin to market failure.[47]

It is worth noting that some scholars believe the echo chamber effect is not as definite as feared. First, there are intuitive reasons why we might maintain online relationships with people whose views differ from our own, such as familial or professional connections. One study found 73% of social media users reported having disagreed with a friend's post.[48] Another found over 20% of an individual's Facebook friends who report an ideological affiliation will be from the opposing party to the individual.[49] Goel, Mason, & Watts also found that a substantial proportion of ties in online social networks are between individuals on opposite sides of the aisle.[50]

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[44] Mitchell & Weisel, *supra* note 41 at 21.
[45] Owen Fiss, *In Search of a New Paradigm*, 104 YALE L. J. 1613, 1617 (1997).
[46] Matt Gentzkow & Jesse M. Shapiro, *Media Bias and Reputation*, 114 J. OF POL. ECON. 280, 310 (2006) [herein after Getzkow & Shapiro, *Media Bias*].
[47] Sunstein, supra note 36 at 27, 158, 166. *See also* ANDREW L. SHAPIRO, THE CONTROL REVOLUTION 198, 199 (1999).
[48] Grevet, Terveen & Gilbert, *supra* note 24 at 1401.
[49] Bakshy, Messing & Adimic, *supra* note 26 at 1131.
[50] Sharad Goel, Winter Mason, & Duncan J. Watts, *Real and Perceived Attitude Agreement in Social Networks*, 99 J. OF PERSONALITY & SOC. PSYCHOL. 611, 621 (2010).

Second, some argue that empirically echo chambers are not all that prevalent. Garrett found empirical evidence that ideological segregation has in fact decreased in the era of online news.[51] Survey results by the Pew Research Center found that of those who see posts about politics on Facebook, only about a quarter of people reported that the posts they always see (2%) or mostly see (21%) posts in line with their own political views; whereas 62% of these users see political content in line with their views just "some of the time".[52] Similarly, in the Media Insight Project's survey, 70% of millennials said that their social media feeds were comprised of diverse viewpoints and 16% said their feeds contained mostly viewpoints which differed from their own. Moreover, 73% claimed they investigate others' opinions at least some of the time, and over 25% said they did so always or often.[53]

Gentzkow & Shapiro give some theoretical grounding for this skepticism. In their isolation index model, they found that the level of conservatives who were only exposed to conservative sites was equal to 7.5 percentage points: "[t]he data clearly rejects the view that liberals only get news from a set of liberal sites and conservatives only get news from a set of conservative sites".[54] They pointed to two economic limitations on the echo chamber effect: the position of leading, long-standing market players means that most online news consumption is concentrated to a small number of relatively centrist sites which are often less ideologically extreme, and most users get news from multiple outlets. This was especially true for visitors to small, extreme sites: visitors of highly conservative sites such as rushlimbaugh.com and glennbeck.com are more likely than a typical online news reader to have visited nytimes.com.

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[51] Garrett, *Echo Chambers Online?*, *supra* note 24.
[52] Mitchell & Weisel, *supra* note 41 at 29.
[53] Media Insight Project, *supra* note 16. *See also* Bakshy, Messing, & Adimic, *supra* note 31 at 1131 "Among friendships with individuals who report their ideological affiliation in their profile, the median proportion of friendships that liberals maintain with conservatives is 0.20, interquartile range (IQR) [0.09, 0.36]. Similarly, the median proportion of friendships that conservatives maintain with liberals is 0.18, IQR [0.09, 0.30].
[54] Gentzkow & Shapiro, *Ideological Separation*, *supra* note 2 at 1813.

Conversely, visitors of very liberal sites such as thinkprogress.org and moveon.org are more likely than a typical online news reader to have visited foxnews.com.[55] This perhaps suggests that people who care most about politics are also the ones who will take their time to investigate opposing views, however it does not imply they were ever convinced by those opposing views.

Also in tension with the echo chamber thesis is that researchers have found that the growth in political polarization in recent years is "largest for the demographic groups least likely to use the internet and social media."[56] Given most of Trump's voters for example were rural, less educated whites who are less likely to spend large amounts of time reading news online, the echo chamber thesis seems like a poor explanation of that specific political outcome.[57]

C: Risks to Democratic Discourse

1. View Extremity & Attitude Strength

The first risk most often pointed to of echo chambers is that when people are only exposed to views which corroborate their own their positions, without the moderating influence of contrary perspectives, they become more ideologically extreme. Moscovici & Zavalloni first described the phenomenon of "group polarization" whereby the post-discussion opinion of a group (i.e., the mean opinion of all group members' opinions) was more extreme than the mean pre-discussion opinion, if all of the group's members agreed with one another before the discussion.[58] This extremity should not just be understood in terms of increasingly extreme

[55] *Id.* at 1802.
[56] Kelly Born, *The Future of Truth: Can Philanthropy Help Mitigate Misinformation?,* HEWLETT FOUND. (June 8, 2017), http://www.hewlett.org/future-truth-can-philanthropy-help-mitigate-misinformation/.
[57] Nate Cohn, *Why Trump Won: Working Class Whites*, THE N.Y. TIMES (Nov. 9, 2016); Jim Tankersley, *How Trump Won: The Revenge of Working Class Whites*, THE WASH. POST (Nov. 9, 2016).
[58] Serge Moscovini & Marisa Zavalloni, *The Group as a Polarizer of Attitudes*, 12 J. OF PERSONALITY & SOC. PSYCHOL. 125 (1969).

position on a political spectrum, but also a contagion of exceedingly extreme moral and emotional reactions to the same information.[59] Abelson's psychological testing found that even when members of groups held moderate positions initially, after discussions with people holding their same views, their views became more extreme post-discussion.[60] Also drawing on cognitive psychology, Isenberg found this increased attitudinal extremity resulted from group members wanting to appear more socially desirable to other members of the homogenous group.[61] Feldman et al. recently tested this theory by exposing respondents to two consecutive waves of information about global warming. They found that those who were subjected to views which aligned with their own upon Wave 1 were more likely to seek out viewpoint-confirming information and exhibit strengthened policy preferences around global warming upon Wave 2.[62] Binder et al. similarly found that within ideologically aligned groups, "that political talk was the major driver behind attitude extremity as the (2016) campaign progressed".[63]

This relationship, between homogenous view exposure and attitude strength, varies in line with levels of prior certainty, knowledge, and issue importance. Similarly to the tendency to seek view-affirming information, the threat presence, wherein an individual perceives their "self-

[59] *See e.g.* Sunstein, supra note 36 at 16, 17; Paul Baker, *Moral Panic and Alternative Identity Construction in Usenet*, 65 J. OF COMPUTER-MEDIATED COMM. (2001); Adam D. I. Kramer, Jamie E. Guillory, & Jeffrey T. Hancock, *Experimental Evidence of Massive-Scale Emotional Contagion Through Social Networks*, 111 PNAS 8788 (2014).
[60] Sunstein, *supra* note 36 at 9; Abelson R. P, *Attitude Extremity*, *in* ATTITUDE STRENGTH: ANTECEDENTS AND CONSEQUENCES (R. E. Petty & J. A. Krosnick eds., 1995).
[61] Isenberg D. J., *Group Polarization: A Critical Review and Meta-Analysis*, J. OF PERSONALITY & SOC. PSYCHOL. 1141, 1151 (1986).
[62] Lauren Feldman et al., *The Mutual Reinforcement of Media Selectivity and Effects: Testing the Reinforcing Spirals Framework in the Context of Global Warming*, 64 J. OF COMM. 590, 591 (2014). *See also* Benjamin Warner, *Segmenting the Electorate: The Effects of Exposure to Political Extremism Online*, 61 COMM. STUD. 430, 440-41 (2010) finding that conservatives increased their attitude strength after being exposed to attitude confirming information about Iran. This phenomenon was not replicated with liberals. However, they suggest this is likely because the subject matter was better tailored towards preexisting views of conservatives on an issue highly salient to them.
[63] Andrew R. Binder et al., *The Soul of a Polarized Democracy: Testing Theoretical Linkages between Talk and Attitude Extremity during the 2004 Election*, 36 COMM. RES. 315, 331 (2009).

interest is at stake in the issue (. . .) might ultimately yield extremity, intensity, expanded latitudes of rejection, and certainty."[64]

Further, not only do people's views become more extreme, but their convictions in those views strengthen, thus becoming more inflexible. This is understandable given discussing one's views with other people who share those views, provides one with the opportunity to adopt the other person's arguments in favor of those views, and find even more persuasive means of expressing and arguing in favor of one's views later.[65]

The obverse, that exposure to contrary points of view leads to consideration, flexibility, and moderation also has empirical weight; especially with topics people are only casually interested or feel less well-versed in.[66] By contrast, moderation is less likely to result from exposure to opposing views when individuals perceive threats or when they feel greatly involved in or attached to a topic.[67] However, Lord et al. found attitudinal extremity could result from opposing information regardless of topic, due to biases in interpretative mechanisms.[68]

2. The Post-Truth World of Alternative Facts

This tendency, to become more convinced of one's own perspective over time because of ideologically homogenous discussion, leads to people experiencing increasing doubt over the veracity and legitimacy of contradicting points of view. Many scholars have discussed the relationship between the echo chamber effect and this distrust, and the development of a paradigm in which one's ideology dictates the truths one ascribes to. This draws on the concept of "cultural cognition" whereby one's socio-political identity conditions the acceptance of

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[64] Jon A. Krosnick et al., *Attitude Strength: One Construct or Many Related Constructs?*, 65 J. OF PERSONALITY & SOC. PSYCHOL. 1132, 1151 (1993).
[65] Sunstein, *supra* note 36 at 13, 74; Binder et al., *supra* note 63 at 334.
[66] Liao & Fu, *supra* note 24 at 2367.
[67] *Id.* at 2359, 2365.
[68] Lord, C. G., Ross, L., & Lepper, M. R., *Biased Assimilation and Attitude Polarization: The Effects of Prior Theories on Subsequently Considered Evidence*, 37 J. OF PERSONALITY & SOC. PSYCHOL. 2098, 2109 (1979).

facts.[69] Lord et al. found people were more likely to describe research supporting their prior beliefs as "convincing" and "better done."[70] Likewise, Koehler found that scientists viewed experimental results as more likely to be accurate when they conformed to the scientists' preexisting beliefs about controversial issues.[71]

It is crucial to bear in mind the cultural backdrop all of this is taking place against. In 2016, Americans' confidence overall in the mass media "to report the news fully, accurately and fairly" precipitated to 32% - its lowest level in Gallup polling history - a decrease from 40% in 2015.[72] This trust has also been trending downwards.[73]

Notably, this trend is not symmetrical. In a study of right-sources, Benkler et al. found that this distrust is greater among conservatives.[74] Similarly, Barthell & Mitchell found 53% of Democrats believed the media was biased, whereas 87% of Republicans thought the same.[75] This obviously varies by source. The Pew Research Center found **c**onsistent conservatives expressed greater distrust of 67% of news sources, including 62% who distrusted MSNBC and NBC, 50% who distrusted the New York Times, and 61% who distrusted CNN (compared to 88% of them who trusted Fox News; 47% of which cited it as their main source of news). On the other side of the aisle, 75% of consistent liberals distrust Rush Limbaugh, 59% distrust Glenn Beck and 54% distrust Sean Hannity - the most trusted sources by consistent conservatives.[76] During the 2016

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[69] Daniel Kreiss, *The Problem of Citizens: E-Democracy for Actually Existing Democracy*, SOC. MEDIA + SOC'Y, 1, 6 (2009).
[70] Lord, C. G., Ross, L., & Lepper M. R., *supra* note 68.
[71] Jonathan J. Koehler, *The Influence of Prior Beliefs on Scientific Judgments and Evidence Quality*, 56 ORG. BEHAV. & HUMAN DECISION PROCESSES 28, 54 (1993).
[72] Art Swift, GALLUP, *Americans' Trust in Mass Media Sinks to New Low* (Sept. 14, 2016) http://www.gallup.com/poll/195542/americans-trust-mass-media-sinks-new-low.aspx
[73] *Id.*
[74] Yochai Benkler, Robert Faris, Hal Roberts, & Ethan Zuckerman, *Study: Breitbart-Led Right-Wing Media Ecosystem Altered Broader Media Agenda*, COLUM. JOURNALISM REV. (Mar. 3, 2017), https://www.cjr.org/analysis/breitbart-media-trump-harvard-study.php
[75] Barthel & Mitchell, *supra* note 23 at 10-11.
[76] Mitchell & Weisel, *supra* note 41 at 16; also finding that "notably, sources distrusted by majorities of consistent conservatives are among the most trusted sources overall".

election, Benkler et al. found pro-Clinton audiences trusted traditional media outlets, while pro-Trump were less likely to, and turned to sources which have mostly developed since President Obama's first presidential election.[77] Trust levels vary by source and age.[78] For more information see Appendix II.

Given conservatives have less trust in the media, there are likely political forces, beyond the effects of technology, which have contributed to the current political backdrop. .[79] Jamieson & Cappella argued that "conservative media creates a self-protective enclave hospitable to conservative beliefs" by "portray[ing] themselves as the reliable, trustworthy alternative to mainstream media, while at the same time attacking 'liberals' and dismissing or reframing information that undercuts conservative leaders or causes."[80] Most recently, it is likely that this conservative distrust has been exacerbated by now President Trump's routine beratement of the press. Gallup polling found Republican trust in the media plummeted from 32% to 14% between 2015 and 2016, coinciding with Trump's campaign.[81] This was the lowest rate of confidence polled among Republicans in twenty years.

It is also worth noting the strong overlap, which I cannot discuss in detail here, between partisan and factually incorrect news, especially amongst right-wing sources.[82] In particular, it is relevant to the fake news phenomenon that echo chambers lessen people's abilities to critically interrogate information which affirms their views or is provided by sources they trust, as one

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[77] Benkler, Faris, Roberts, & Zuckerman, *supra* note 74.
[78] Swift, *supra* note 72.
[79] *Id.*
[80] KATHLEEN HALL JAMIESON, & JOSEPH N. CAPPELLA, ECHO CHAMBER: RUSH LIMBAUGH AND THE CONSERVATIVE MEDIA ESTABLISHMENT (2008).
[81] Swift, *supra* note 72.
[82] Benkler, Faris, Roberts, & Zuckerman, *supra* note 74 "Of the 20 top-performing false election stories identified in the analysis, all but three were overtly pro-Donald Trump or anti-Hillary Clinton. Use of disinformation by partisan media sources is neither new nor limited to the right wing, but the insulation of the partisan right-wing media from traditional journalistic media sources, and the vehemence of its attacks on journalism in common cause with a similarly outspoken president, is new and distinctive."

develops critical abilities from interacting with challenging propositions.[83] In other words, echo chambers make people more susceptible to propaganda. This is particularly troubling as evidence suggests ex-post corrections of fake stories seldom reverse their political traction,[84] and evidence demonstrates that the most misinformed audiences are the ones least likely to heed subsequent factual corrections.[85]

3. Macro Effects

This development, on both sides of the political fence, towards exceedingly extreme, stringently held views which are inflexible to challenge, combined with differing underlying conceptions of the objective facts, and thus diverging constructions of reality, may pose serious risks to social cohesion.[86] Selnow theorized that the internet would displace the basis for common community discussions: "for nearly two decades, television was the community hearth. It delivered the news and told the stories that fed conversations around office coffeepots and dining room tables. For a brief period, television provided a common information currency that could be traded anywhere in the nation".[87] This analysis may be less convincing in the era of cable news, but the premise, that common sources of information are more likely to lead to effective civic debate, is still salient.

[83] Sunstein, *supra* note 36 at 11, 76 (2017); Bozdag & van den Hoven, *supra* note 5 at 253.
[84] Christopher Paul & Miriam Matthews, *The Russian "Firehose of Falsehood" Propaganda Model*, RAND 1, 9 (2016) "We are not optimistic about the effectiveness of traditional counterpropaganda efforts. Certainly, some effort must be made to point out falsehoods and inconsistencies, but the same psychological evidence that shows how falsehood and inconsistency gain traction also tells us that retractions and refutations are seldom effective. Especially after a significant amount of time has passed, people will have trouble recalling which information they have received is the disinformation and which is the truth. Put simply, our first suggestion is don't expect to counter the firehose of falsehood with the squirt gun of truth."
[85] Born, *supra* note 56.
[86] Helbing, *supra* note 34.
[87] GARY W. SELNOW, ELECTRONIC WHISTLE-STOPS: THE IMPACT OF THE INTERNET ON AMERICAN POLITICS, 184 (2008).

There may also be exogenous effects of polarization. A deliberative republic with effective cross-cutting discourse makes a society better able to cope with unexpected, exogenous shocks and improves economic performance.[88] It engenders tolerance, by requiring people to consistently interact civilly with people with whom they disagree.[89]

Some have argued these risks are overexaggerated, and that the interpretative mechanisms people apply to information are vastly more important than what information they are exposed to or how frequently; such as their bayesian and non-bayesian interpretative mechanisms,[90] the strength of their preexisting opinions,[91] or their level of political sophistication.[92] Moreover, arguably all new sources have some degree of market incentive to maintain a reputation for honesty and accuracy; after all, that is the essence of their product. [93]

Others argue that echo chambers may also have positive corollaries. Mutz found that ideological enclaves correlated with increased levels of political engagement.[94] Flipping Fiss's concern about users shopping for views, Benkler argued that this could lead to increased choices

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[88] Helbing, *supra* note 34.
[89] Hardin R., *Deliberative Democracy*, *in* CONTEMPORARY DEBATES IN POLITICAL PHILOSOPHY (T. Christiano & J. Christman eds., 2009).
[90] Daron Acemoglu, Victor Chernozhukov, & Muhamet Yildiz, *Fragility of Asymptotic Agreement under Bayesian Learning,* (Mass. Inst. Of Tech., Working Paper, 2009); Gentzkow & Shapiro, *Ideological Separation*, *supra* note 2 at 1820; Lord, C. G., Ross, L., & Lepper, M. R., *supra* note 68 at 2098.
[91] Selnow, *supra* note 86 at 9. *See also* Michael F. Meffert, et al., *The Effects of Negativity and Motivated Information Processing During a Political Campaign*, 56 J. OF COMM. 27, 45 (2006) "Our findings suggest that it is critical to distinguish between attention to messages and their persuasive impact. There is overwhelming evidence both in the research reviewed above and in the present study that negative information attracts attention, whether automatically or consciously. Attention, however, does not necessarily lead to persuasion."
[92] Political sophistication in this sense referring to how politically active an individual is, how willing and able they are to critically interrogate political messaging, how much they are able to analyze policy options in line with their own interests, and how susceptible they are to elite manipulation. For a general analysis *see* Robert C. Luskin, *Explaining Political Sophistication*, 12 POL. BEHAV. 331 (1990).
[93] Getzkow & Shapiro, *Media Bias*, *supra* note 40 at 285 (2006). *Compare with* S. Mullainathan & A. Schleifer, *The Market for News*, 95 AM. ECON. REV. 103, 1053 (2005) arguing that the market incentivizes outlets to increasingly cater to the ideological predispositions of their audiences.
[94] Mutz D. C., *The Consequences of Cross-Cutting Networks for Political Participation*, 46 AM. J. OF POL. SCI. 833, 855 (2002).

for consumers and more exposure to diverse ideas.[95] Marginalized communities, whose views and subject are less likely to be prioritized by mainstream outlets, benefit from the ability to develop niche online communities.[96] Furthermore, much of the earlier analysis presupposes ideological extremity is undesirable, which may seem intuitive, but is an assumption nonetheless, usually held by those with relatively privileged positions in the status quo.

PART II: UNIQUE ASPECTS OF THE ONLINE FILTER BUBBLE

Filtering one's environment is nothing new. We feel more comfortable around people who agree with us, whose interests and values align with ours, who validate our previous choices, so we find ways to be around those people more.[97] People have had the ability to self-select into communities of similar socio-economic class, race, and who were more likely to share their political convictions by where they chose to live for generations. Fox and other cable television news stations have had distinct ideological leanings, and correspondingly inclined audiences, for years as well.[98] Jamieson & Capella found segregation in online and offline news consumption to be comparable.[99] Boyd argues that the segregation we see online is merely the continuation of an ongoing trend towards greater social stratification in the United States.[100] So why should we be more concerned about this new form of filtering? Why is it any less likely that productive democratic discourse will endure?

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[95] Yochai Benkler, THE WEALTH OF NETWORKS: HOW SOCIAL PRODUCTION TRANSFORMS MARKETS AND FREEDOM (2006); Hartmut Obendorf et al., *Web Page Revisitation Revisited: Implications of a Long-Term Click-Stream Study of Browser Usage*, PROC.'S OF THE SIGCHI CONF. ON HUMAN FACTORS IN COMPUTING SYS.'S 597, 606 (2007).
[96] Sunstein, *supra* note 36 at 27, 86, 87.
[97] Grevet, Terveen & Gilbert, *supra* note 24 at 1400.
[98] Iyengar & Hahn, *supra* note 26 at 20, 22; Lin C. A., *Selective News Exposure, Personal Values, and Support for the Iraq War*, 57 COMM. Q. 18, 34 (2009) linking the ideologically consistent messages of cable news with ideological polarization; Mitchell & Weisel, *supra* note 41 at 23.
[99] Gentzkow & Shapiro, *Ideological Separation*, *supra* note 2 at 1810.
[100] Danah Boyd, *Why America Is Self-Segregating,* POINTS (Jan. 5, 2017), https://points.datasociety.net/why-america-is-self-segregating-d881a39273ab

First and foremost, social media is thought to be a uniquely concerning arena for echo chambers because of the invisible presence of algorithms filtering our information; acting as an even more sophisticated and insidious iteration of the British licensing regime the Framers were so deeply concerned with.[101] Epstein's seminal model found that even if only 60% of a population had internet access, and only 10% of voters were undecided, search engine optimization could still control of the outcome of an election with variable margins of up to 1.2%.[102] The precision of these algorithms is also increasing over time;[103] and simultaneously users often do not perceive the risk. For instance, the Edelman Trust Barometer found 59% of global respondents would rather trust a search engine than a human editor.[104] This imbues actors like Google with unprecedented powers as conduits of our information.

A great deal of other work has hypothesized various other reasons why online political information processing might be unique; including works pointing to the decline of the old guard of the media empire,[105] political microtargeting,[106] the effects of anonymity,[107] the presence of

[101] GEOFFREY R. STONE ET AL., THE FIRST AMENDMENT (Erwin Chemerinsky et al., eds.) (5th ed. 2016).
[102] Robert Epstein & Ronald E. Robertson, *supra* note 3 at E4520. *See also* Robert M. Bond et al., *A 61-Million-Person Experiment in Social Influence and Political Mobilization*, 489 NATURE 295 (2012) showing a statistically significant effect on voting resulting from Facebook's Go Vote message. *See also* Tufekci, *supra* note 38 arguing that the power of search engines will likely increase the influence of wealthy elites who have access to information technology.
[103] Eugene Agichtein, Eric Brill, & Susan Dumais, *Improving Web Search Ranking by Incorporating User Behavior Information*, 29 PROC. OF THE ANN. INT'L ACM SIGIR CONF. ON RES. AND DEV. IN INFO. RETRIEVAL 19, 19 (2006).
[104] Edelman Trust Barometer, 2017 (Jan. 17, 2017) http://www.edelman.com/global-results/.
[105] *See* Nathaniel Persily, *Can Democracy Survive the Internet?*, 28 J. OF DEMOCRACY 63, 64 (2017) [herein after Persily, *Can Democracy Survive?*] linking the erosion of the influence of mainstream media gatekeepers to the rise of populist political movements globally.
[106] EITAN D. HERSCH, HACKING THE ELECTORATE: HOW CAMPAIGNS PERCEIVE VOTERS (2015).
[107] *See, e.g.*, Daniel Halpern & Jennifer Gibbs, *Social Media as a Catalyst for Online Deliberation? Exploring the Affordances of Facebook and YouTube for Deliberation*, 29 COMPUTERS IN HUM. BEHAV. 1159, 1161 (2009).

conspiracy theories,[108] the rise of bots, trolling and the contagion of moral panic,[109] the sophistication of artificial intelligence,[110] all of which I cannot discuss in detail here.

I turn to two ways in which individuals develop their identity through their participation in political discourse online, and why these behaviors make individuals more likely to self-select into echo chambers, and become more entrenched and extreme in their political views as a result.

A: Identity Construction Online

Social media can be conceived of as having three main functions: first, it is a means of communication, second, it is a portal to external content, and third, it is a platform upon which people construct virtual projections of themselves they export to the world. This third function, the creation of an online persona, which is developed and archived over time, means that now more than ever, people are wearing their political views on their sleeves, and more importantly, becoming stuck in those views.

In his pivotal works, Habermas described one of the necessary preconditions for the ideal form of civic discourse as being the deliberation of ideas on their own merit between "status–free" individuals.[111] Obviously this Rawlsian ideal does not exist - there is no discrete realm of civic participation divorced from preexisting self-interests and identities such as party affiliation.[112] However, Tufecki argues we are even further from this ideal political discourse

[108] Sunstein, *supra* note 36 at 9-11.
[109] *See, e.g.*, Onur Varol et al., *Online Human-Bot Interactions: Detection, Estimation, and Characterization*, (2017) https://arxiv.org/pdf/1703.03107.pdf (last accessed 9:10PM EST, Jul. 2 2017).
[110] Berit Anderson, *The Rise of the Weaponized AI Propaganda Machine*, MEDIUM (Feb. 12, 2017) https://medium.com/join-scout/the-rise-of-the-weaponized-ai-propaganda-machine-86dac61668b
[111] JŰRGEN HABERMAS, BETWEEN FACTS AND NORMS (1962).
[112] Sunstein, *supra* note 36 at 132; Kreiss, *supra* note 69 at 5.

when we interact online, because identity information, such as group affiliations, is made so conspicuous by platforms.[113]

Social identity theory discusses how group identification, through the formation of in-groups and out-groups, triggers a tendency towards otherization and consequently polarization. Furthermore, it argues that people derive positive conception of self from ascribing positive traits to the groups with whom they identify.[114] Given groups can only be considered visa vie other groups or non-members, individuals only understand the characteristics of their group through comparisons to, and thus denigrations of, out-groups' members.[115] "Deindividuation", a psycho-sociological model of behavior by anonymously labelled individuals, also found that participants in anonymous online collectives develop strong in-group identities, which have similarly negative essentializing effects on perceptions of non-group members.[116]

It is therefore likely that social media, by attaching us more prominently to our views and group labels, makes us less willing to consider opposing views on their merits, both because to do so would risk the validation we receive from our own group being correct, but also because of the negatively skewed way we interact from the outset with information provided by individuals online whose identities as out-groups members we can clearly perceive.

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[113] Sunstein, *supra* note 36 at 78. *See also* Tufekci, *supra* note 38 discussing how this makes campaign microtargeting easier: "given enough data, most profiles end up reducing to specific individuals; date of birth, gender and zip code positively correlate to nearly 90% of individuals".

[114] Dan M. Kahan, *Ideology, Motivated Reasoning & Cognitive Reflection*, 8 JUDGEMENT & DECISION-MAKING 407 (2013) describing the subconscious tendency of people to interpret information to conform to their preexisting views and affirm their positive sense of identity.

[115] For a thorough review of social identity theory, *see* HORNSEY M. J., SOCIAL IDENTITY THEORY AND SELF-CATEGORIZATION THEORY: A HISTORICAL REVIEW (2008). *See also* BENEDICT ANDERSON, IMAGINED COMMUNITIES (1983) on the interaction between the advent of mass communications media and the perpetuation of socially constructed nationalist identities.

[116] Halpern & Gibbs, *supra* note 107 at 1160.

B: Affirmation as the Currency of Truth

The psycho-social phenomenon of people thinking a view is more likely to be true if other people subscribe to it is well-documented.[117] Regardless of content, if a view is seen to have mass support, people encountering that view will be more likely to assume it is valid, purely by virtue of it being widely adhered to. Social media, with its seen by, like, retweet, and similar functions, makes it painstakingly clear which content is well-subscribed to.

Furthermore, not only do users apply this fallacy to content they see; they are more likely to see content which invites this fallacy, because search engine algorithms prioritize content according to its popularity, conferring almost a first-mover style advantage to content which initially generates interest.[118] Sunstein describes the phenomenon of "informational cyber cascades" wherein a piece of information can rapidly attract attention and buy-in online, because of how social media feeds prioritize popular content.[119] Hence these algorithms make us more likely to conflate popularity with legitimacy.[120]

Moreover, approval does not just drive the decisions made by portals and algorithms, it also affects the behaviors of users themselves. Social media's emphasis on mass approval encourages individuals to trade in content they believe their audience are more likely to subscribe to.[121] In the context of echo chambers, wherein people have already selected a circle of people with an artificially narrow set of ideological views, this encourages users to cater to those, and only those views, for esteem and validation. The Pew Research Center found these affirmation-seeking behaviors are exaggerated when discussions are driven by people whose

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[117] Sunstein, *supra* note 36 at 99.
[118] *Id.* at 101, 102; The Omidyar Group, *supra note 5 at* 5 (2017).
[119] Sunstein, *supra* note 36 at 57, 98. *See also* Sinan Aral, Lev Muchnik, & Sean Taylor, *Health Information & the Like*, 342 SCI. 1315 (2013) finding that information which initially received "upvotes" perpetually acquired more upvotes.
[120] Sunstein, *supra* note 36 at 104; The Omidyar Group, *supra* note 1 at 5.
[121] Sunstein, *supra* note 36 at 13, 74.

validation we perceive as especially desirable, known as "influentials".[122] These influentials are often people who frequently talk about politics and initiate political conversations.[123] They also tend to have stronger ideological leanings and be present within more politically extreme online communities; of the only 19% of respondents the research classified as influentials, 39% self-described as consistent conservatives and 29% as consistent liberals.[124] This means people are more likely to seek validation from individuals who adopt the more extreme positions within their echo chambers.

Beyond individuals' positive incentives to engage in affirmation-seeking behaviors, they are also disincentivized to exhibit diverging views by social and reputational risks.[125] Grevet, Terveen & Gilbert found that those with the minority opinion in their group of friends were more likely to exit conversations, or abandon their views during the course of an opinion conflict.[126] This can reach particularly pernicious extremes. For example, some have argued the affirmation-based social media environment on social media breeds the harassment of and hate of those whose opinions are outnumbered, resulting in many users, especially those from minority groups, self-censoring or exiting conversations or platforms altogether.[127] Thus social media exacerbates two age-old democratic risks: that people will choose to conform rather than express dissent, and that majorities will crowd out the views of those they find disquieting.

[122] Mitchell & Weisel, *supra* note 41 at 41.
[123] *Id.*
[124] *Id.*
[125] Sunstein, *supra* note 36 at 101. For a general analysis, *see* Elizabeth Noelle-Neumann, *The Spiral of Silence: A Theory of Public Opinion*, 24 J. OF COMM. 43 (1974).
[126] Grevet, Terveen & Gilbert, *supra* note 24 at 1406.
[127] The Omidyar Group, *supra* note 1 at 2.

PART III: POTENTIAL SOLUTIONS

Before discussing potential avenues for counteracting the democratic risks posed by echo chambers, it is worth reiterating that the hypodermic needle construction of political media, as all-powerful over the views of consumers, is not only unfounded in empirical evidence, but also as a normative theory denies people exercise individual agency and moral responsibility over the information they receive.[128]

A: Legislative Measures

It is clear that Google, Facebook, Twitter, and other portals wield an enormous influence over political discourse. Balkin described such actors as "information fiduciaries", analogizing them to lawyers or doctors, whose relative position and access to significant amounts of confidential and valuable information implies they have special duties to act in ways which do not harm the interests of the people whose information they have access to. This fiduciary position justifies their being treated differently under the First Amendment.[129] Shapiro also argued that gatekeepers possess heightened civic and moral responsibilities in a democratic society by virtue of their power over the resource of information.[130] However, it is notable at this interval that market failure has never been found to be a sufficient justification for limitations on speech.[131]

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[128] Selnow, *supra* note 86 at 7. *See also* Nathaniel Persily, *The Campaign Revolution Will Not Be Televised*, 11 THE AM. INTEREST, (Oct. 10, 2015) [herein after Persily, *The Campaign Revolution*] discussing the limited role mass communications have on political opinions, as originally advanced by Paul Lazarsfeld discrediting the hypodermic needle conception of political media.

[129] Jack M. Balkin, *Information Fiduciaries and the First Amendment*, 49 U. CAL. DAVIS L.R. 1183, 1187, 1209, 1229 (2016). *See also* Tufekci, *supra* note 38 "By holding on to the valuable troves of big data, and by controlling of algorithms which determine visibility, sharing and flow of political information, the Internet's key sites and social platforms have emerged as inscrutable, but important, power brokers of networked politics."

[130] Shapiro, *supra* note 47 at 22, 52.

[131] *See, e.g.*, Turner Broadcasting System Inc. v. F.C.C., 512 U.S. 622, 640-41 (1994).

Persily described numerous types of potential regulations of online political speech, including those of "disclosure, restrictions on sources and amounts of spending, misrepresentation, tone, and fairness".[132] Others argued for stronger defamation and libel laws to protect individual reputations as well as guard against misinformation online.[133] Another argument could be made along the lines of speakers having a right to try and convince people and listeners, whilst concurrently having a right to access information that has not been manipulated ex ante.[134]

Sunstein proposed regulations which force opposing points of views alongside content.[135] However, it is unclear whether this would have Sunstein's desired effect. Being exposed to differing viewpoints may strengthen or weaken a person's own stance. Binder et al. found that although such information may convince people to reconsider their position, they may simply utilize it to strengthen their own initial views.[136] Even more skeptically, Boyd argued that exposing people to content that challenges their perspective does not necessarily make them more agreeable to those views, but may in fact polarize them further. He posited that the only means by which people become more empathetic to contrasting points of view is through having relationships based on other factors with people who hold those opposing views.[137]

Multiple constraints exist regarding the law as the vehicle for change in this arena. First, the law presumes that when people engage in public discourse, either as speakers or as listeners,

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[132] Persily, The Campaign Revolution, *supra* note 128.
[133] The Omidyar Group, *supra* note 1 at 10.
[134] Kovacs v. Cooper, 336 U.S. 77, 87 (1949) "The right of free speech is guaranteed every citizen that he may reach the minds of willing listeners and to do so there must be opportunity to win their attention". *See also* First Nat'l Bank of Boston v. Bellotti, 435 U.S. 765, 783 (1978) holding that citizens have a right to an unfiltered informational landscape.
[135] *See* Persily, *The Campaign Revolution, supra* note 128 on why this is unlikely given the advertising-based business model of these platforms.
[136] Binder, *supra* note 63 at 334-35.
[137] Boyd, *supra* note 99.

they are free, independent, and autonomous. First Amendment doctrine rarely tolerates paternalistic restrictions on the dissemination of ideas and opinions, even if that freedom of information may lead to people making suboptimal choices. Balkin described this, in line with the Darwinist conception of the battles of ideas, as speakers and listeners being left to fend for themselves in the realm of public discourse.[138] Under this laissez-faire jurisprudence, and particularly following *Citizens United*, disclosure requirements are most likely the regulations to be found constitutional, as they do not constrain speech.[139]

Second, the extension of current jurisprudence to online political communication may be undesirable. Many have argued that current First Amendment doctrine is outmoded in light of new technologies.[140] Persily noted that current regulations of campaign finance and political advertising are based on the assumption that television is still the primary mode of political communication.[141] This poses the risk that current jurisprudence will simply be extrapolated to the online communications, even if it is ill-suited to this new medium.[142] In response to these concerns, Logan argued for the replacement of current, scarcity-oriented media analysis, with the treatment of cyberspace as a public forum, the virtual public street, and thus afford it the First Amendment protections we do other spaces we recognize as crucial to democratic discourse, such as parks and highstreets.[143] However, this argument is weakened by the idea that we select

[138] Balkin, *supra* note 122 at 1215 (2016). *See also* Persily, *The Campaign Revolution, supra* note 121 on the difficulty of evaluating truth in the political context.
[139] Citizens United v. Federal Election Commission, 558 U.S. 310 (2010); Persily, The Campaign Revolution, *supra* note 128.
[140] Fiss, *supra* note 39 at 1615. *See also* Sunstein, *supra* note 36 at 151.
[141] Persily, The Campaign Revolution, *supra* note 128.
[142] *Id*.
[143] Charles W. Logan, *Getting Beyond Scarcity: A New Paradigm for Assessing the Constitutionality of Broadcast Regulation*, 85 CAL. L. R. 187, 1709 (1997); Sunstein, *supra* note 36 at 13, 35. *See also* The Omidyar Group, *supra* note 1 at 9 arguing social media platforms are essentially the public square of the twenty-first century.

content volitionally online, and it therefore lacks the serendipity of encounter present in spaces traditionally considered public fora.[144]

Third, the advertising-based revenue of portals means that regulations are likely to be loose to allow for advertising from a range of sources.[145] Benkler warned that the hegemons of the information economy use their influence to tailor copyright, broadcast, spectrum management, domain-name management, and other related law to their own economic interests. He therefore argued for an "open commons" communications environment of non-hierarchical structures and cooperative information production, as an alternative to proprietary models.[146] Similarly, Shapiro argued for a public cyberinfrastrucure with in-built randomness features as an alternative to private cyberspace.[147]

B: Portals

Persily argued portals themselves are likely to be better positioned to preserve democratic values than government.[148] Algorithms could be designed to expose people to more diverse information and sources thereof.[149] This could take the form of algorithm changes in line with generalized industry standards and partnerships with factchecking and other similar organizations.[150] Moreover, platforms could highlight past interactions or other points of

[144] Shapiro, *supra* note 47 at 204.
[145] Persily, The Campaign Revolution, *supra* note 128.
[146] Yochai Benkler, *Freedom in the Commons: Towards a Political Economy of Information*, 52 DUKE L. J. 1245, 1272-73 (2003). *See also* Tufekci, *supra* note 38 "Hence, fear–mongering messages can be targeted only to those motivated by fear. Unlike broadcast, such messages are not visible to broad publics and thus cannot be countered, fact–checked or otherwise engaged in the shared public sphere the way a provocative or false political advertisement might have been. This form of big data–enabled computational politics is a private one. At its core, it is opposed to the idea of a civic space functioning as a public, shared commons. It continues a trend started by direct mail and profiling, but with exponentially more data, new tools and more precision."
[147] Shapiro, *supra* note 47 at 205.
[148] Persily, The Campaign Revolution, *supra* note 128.
[149] Grevet, Terveen & Gilbert, *supra* note 24 at 1400.
[150] The Omidyar Group, *supra* note 1 at 9. Algorithmic changes could also potentially be utilized to address the problem of false information online, *see* Born, *supra* note 56.

common ground between users to deescalate conflicts of views online, thus encouraging people to continue engaging with people they disagree with.[151]

C: Self-Help Remedies

There are reasons to caution any top-down solutions to the echo chamber phenomenon. Berman & Weitzner argued that user-controlled restrictions on content are the only ones which normatively and historically align with the values of the First Amendment.[152] Thus, they suggested the adoption of decentralized mechanisms that allow users to screen the information and programming they receive over regulation of any kind.[153] Lessig also advised restraint, emphasizing that we do not yet understand the mechanisms and contours of free speech and association online. He argued that given the nascent state of this technology, we should defer to the more flexible common law process, warning that otherwise we might undermine the as-yet unrealized, expressive and associational potential of cyberspace.[154]

Moreover, external solutions may not be necessary: many Americans are already demanding solutions to this problem as market participants. In response, programmers are designing "bubble-busting tools" to expose people to diverse information, such as "Red Feed/Blue Feed", "Outside Your Bubble," "Escape Your Bubble", and Vubble.[155] However some have warned that tools like these are likely to be insufficient, as programmers' values and biases will be inhered in any such products.[156] Shapiro argued individuals should use

[151] Grevet, Terveen & Gilbert, supra note 24 at 1406.
[152] Jerry Berman & Daniel J. Weitzner, *Abundance and User Control: Renewing the Democratic Heart of the First Amendment in the Age of Interactive Media*, 104 YALE L. J., (1995). *See also* Bakshy, Messing & Adimic, *supra* note 26 at 1132 "our work suggests that the power to expose oneself to perspectives from the other side in social media lies first and foremost with individuals."
[153] Berman & Weitzner, *supra* note 144.
[154] Lawrence Lessig, *The Path of Cyberlaw*, 104 YALE L. J. 1743 (1995).
[155] Born, *supra* note 56.
[156] Bozdag & van den Hoven, *supra* note 5 at 254.

their purchasing power to demand more accurate journalism, so regardless of the sources we choose to consume, we will have a common basis of objective facts underlying our collective discussions.[157] Boyd argued for a more cooperative social project wherein people come together with the intention of entering into civic discourse informed by a variety of differing perspectives.[158] More radically, Pariser proposed that users should sabotage the efficacy of feed algorithms by erasing their web histories and cookies, using incognito mode, varying the search engines they use, making fake search queries, or liking every piece of content produced by their friends. However, these options are tedious, time-consuming, and they mean the technology less beneficial to the user.[159]

CONCLUSION

Discourse which transgresses group bounds and does not stagnate is the lifeblood of a pluralistic society and a deliberative republic. It is vital we guard against the risks of echo chambers, by maintaining a common social fabric, and not allowing discourse to trend towards hegemony or uniformity of opinion. The democracy envisioned by the Founders was not one which shied from diversity, but one that recognized its epistemic value.[160] They thought our society would be strengthened by its internal differences, not fractured by them, and we have a duty to fulfill that ideal.

[157] Shapiro, *supra* note 47 at 188-93.
[158] Boyd, *supra* note 100.
[159] Pariser, *supra* note 33.
[160] Sunstein, *supra* note 36 at 49.

WORKS CITED

1. Abelson, R. P, *Attitude Extremity*, *in* ATTITUDE STRENGTH: ANTECEDENTS AND CONSEQUENCES (R. E. Petty & J. A. Krosnick eds., 1995).
2. Daron Acemoglu, Victor Chernozhukov, & Muhamet Yildiz, *Fragility of Asymptotic Agreement under Bayesian Learning*, (Mass. Inst. Of Tech., Working Paper, 2009).
3. Eugene Agichtein, Eric Brill, & Susan Dumais, *Improving Web Search Ranking by Incorporating User Behavior Information*, 29 PROC. OF THE ANN. INT'L ACM SIGIR CONF. ON RES. AND DEV. IN INFO. RETRIEVAL 19 (2006).
4. AM. PRESS INST., *How Millennials Get News: Inside the Habits of America's First Digital Generation* (Mar. 16, 2015 12:01 AM), https://www.americanpressinstitute.org/publications/reports/survey-research/millennials-news/.
5. BENEDICT ANDERSON, IMAGINED COMMUNITIES (1983).
6. Berit Anderson, *The Rise of the Weaponized AI Propaganda Machine*, MEDIUM (Feb. 12, 2017), https://medium.com/join-scout/the-rise-of-the-weaponized-ai-propaganda-machine-86dac61668b.
7. Sinan Aral, Lev Muchnik, & Sean Taylor, *Health Information & the Like*, 342 SCI. 1315 (2013).
8. Eytan Bakshy, Solomon Messing & Lada A. Adimic, *Exposure to Ideologically Diverse News and Opinion on Facebook*, 348 SCI. 1130 (2015).
9. Jack M. Balkin, *Information Fiduciaries and the First Amendment*, 49 U. CAL. DAVIS L. R., 1183 (2016).

10. Pablo Barbera, John T. Jost, Jonathan Nagler, Joshua A. Tucker & Richard Bonneau, *Tweeting from Left to Right: Is Online Communication More than an Echo Chamber?*, 26 PSYCHOL. SCI. 1531 (2015).

11. Michael Barthel & Amy Mitchell, *Americans' Attitudes about the News Media Deeply Divided Along Partisan Lines*, PEW RES. CTR. 1 (2017).

12. Yochai Benkler, *Freedom in the Commons: Towards a Political Economy of Information*, 52 DUKE L. J. 1245 (2003).

13. YOCHAI BENKLER, THE WEALTH OF NETWORKS: HOW SOCIAL PRODUCTION TRANSFORMS MARKETS AND FREEDOM (2006).

14. Yochai Benkler, Robert Faris, Hal Roberts, & Ethan Zuckerman, *Study: Breitbart-Led Right-Wing Media Ecosystem Altered Broader Media Agenda*, COLUM. JOURNALISM REV. (Mar. 3, 2017), https://www.cjr.org/analysis/breitbart-media-trump-harvard-study.php

15. Jerry Berman & Daniel J. Weitzner, *Abundance and User Control: Renewing the Democratic Heart of the First Amendment in the Age of Interactive Media*, 104 YALE L. J. 1619 (1995).

16. Jerry Berman & Daniel J. Weitzner, *Technology and Democracy*, 64 SOC. RES. (1997).

17. Andrew R. Binder, Kajsa E. Dalrymple, Dominique Brossard & Dietrem A. Scheufele, *The Soul of a Polarized Democracy: Testing Theoretical Linkages between Talk and Attitude Extremity during the 2004 Election*, 36 COMM. RES., (2009).

18. Robert M. Bond, Christopher J. Fariss, Jason J. Jones, Adam D. I. Kramer, Cameron Marlow, Jaime E. Settle, & James H. Fowler, *A 61-Million-Person Experiment in Social Influence and Political Mobilization*, 489 NATURE 295 (2012)

19. Kelly Born, T*he Future of Truth: Can Philanthropy Help Mitigate Misinformation?*, HEWLETT FOUND. (June 8, 2017), http://www.hewlett.org/future-truth-can-philanthropy-help-mitigate-misinformation/.

20. Danah Boyd, *Why America Is Self-Segregating*, POINTS (Jan. 5, 2017), https://points.datasociety.net/why-america-is-self-segregating-d881a39273ab

21. Engin Bozdag & Jeroen van den Hoven, *Breaking the Filter Bubble: Democracy and Design*, 17 ETHICS INFO. TECH. 249 (2015).

22. Nate Cohn, *Why Trump Won: Working Class Whites*, N.Y. TIMES (Nov. 9, 2016).

23. Donsbach, W., *Exposure to Political Content in Newspapers: The Impact of Cognitive Dissonance on Readers' Selectivity*. 6 EUR. J. OF COMM. 155 (1991).

24. Edelman Trust Barometer 2017, (Jan. 17, 2017) http://www.edelman.com/global-results/.

25. Robert Epstein & Ronald E. Robertson, *The Search Engine Manipulation Effect (SEME) and its Possible Impact on the Outcomes of Elections*, 112 PROC. OF THE NAT'L ACAD. OF SCI. E4512 (2015).

26. Lauren Feldman, Teresa A. Myers, Jay D. Hmielowski & Anthony D. Leiserowitz, *The Mutual Reinforcement of Media Selectivity and Effects: Testing the Reinforcing Spirals Framework in the Context of Global Warming*, 64 J. OF COMM. 590 (2014).

27. LEON FESTINGER, A THEORY OF COGNITIVE DISSONANCE (1957).

28. Owen Fiss, *In Search of a New Paradigm*, 104 YALE L. J. 1613 (1997).

29. Seth Flaxman, Sharad Goel & Justin M. Rao*, Filter Bubbles, Echo Chambers, and Online News Consumption*, 80 PUB. OPINION Q. 298 (2016).

30. Frey, D., *Recent Research on Selective Exposure to Information*, 19 ADVANCES IN EXPERIMENTAL SOC. PSYCHOL. 41 (1986).

31. Frey, D., Schulz-Hardt, S., & Stahlberg, D., *Information Seeking Among Individuals and Groups and Possible Consequences for Decision-Making in Business and Politics*, *in* UNDERSTANDING GROUP BEHAVIOR: VOL. II. SMALL GROUP PROCESSES AND INTERPERSONAL RELATIONS (E. Witte & J. Davis, eds., 1996).

32. R. Kelly Garrett, *Echo Chambers Online? Politically Motivated Selective Exposure among Internet News Users*, 14 J. OF COMPUTER-MEDIATED COMM. 265 (2009).

33. R. Kelly Garrett, *Politically Motivated Reinforcement Seeking: Reframing the Selective Exposure Debate*, 59 J. OF COMM. 676 (2009).

34. Matt Gentzkow & Jesse M. Shapiro, *Ideological Separation Online and Offline*, 126 THE Q. J. OF ECON. 1799 (2011).

35. Matt Gentzkow & Jesse M. Shapiro, *Media Bias and Reputation*, 114 J. OF POL. ECON. 280 (2006).

36. Gergen, K. J., *Mobile Communication and the Transformation of the Democratic Process*, *in* HANDBOOK OF MOBILE COMMUNICATION STUDIES (J. Katz ed., 2008).

37. Jeffrey Gottfried & Elisa Shearer, *News Use Across Social Media Platforms*, PEW RES. CTR. 1 (2016).

38. Catherine Grevet, Loren Terveen & Eric Gilbert, *Managing Political Differences in Social Media*, 2014 SOC. MEDIA AND POL. 1400.

39. JŰRGEN HABERMAS, BETWEEN FACTS AND NORMS (1962).

40. JŰRGEN HABERMAS, THE STRUCTURAL TRANSFORMATION OF THE PUBLIC SPHERE: AN INQUIRY INTO A CATEGORY OF BOURGEOIS SOCIETY (1989).

41. KATHLEEN HALL JAMIESON, & JOSEPH N. CAPPELLA, ECHO CHAMBER: RUSH LIMBAUGH AND THE CONSERVATIVE MEDIA ESTABLISHMENT (2008).

42. Daniel Halpern & Jennifer Gibbs, *Social Media as a Catalyst for Online Deliberation? Exploring the Affordances of Facebook and YouTube for Deliberation*, 29 COMPUTERS IN HUM. BEHAV. 1159 (2009).

43. Hardin, R., *Deliberative Democracy*, *in* CONTEMPORARY DEBATES IN POLITICAL PHILOSOPHY (T. Christiano & J. Christman eds., 2009).

44. Dirk Helbing, Bruno S. Frey, Gerd Gigerenzer, Ernst Hafen, Michael Hagner, Yvonne Hofstetter, Jeroen van den Hoven, Roberto V. Zicari, & Andrej Zwitter, *Will Democracy Survive Big Data and Artificial Intelligence?*, SCI. AM. (2017), https://www.scientificamerican.com/article/will-democracy-survive-big-data-and-artificial-intelligence/.

45. EITAN D. HERSCH, HACKING THE ELECTORATE: HOW CAMPAIGNS PERCEIVE VOTERS (2015).

46. HORNSEY, M. J., SOCIAL IDENTITY THEORY AND SELF-CATEGORIZATION THEORY: A HISTORICAL REVIEW (2008).

47. Shanto Iyengar & Kyu S. Hahn, *Red Media, Blue Media: Evidence of Ideological Selectivity in Media Use*, 59 J. OF COMM. 19 (2009).

48. Dan M. Kahan, *Ideology, Motivated Reasoning & Cognitive Reflection*, 8 JUDGEMENT & DECISION-MAKING 407 (2013).

49. Kaye B. K., & Johnson, T. J., *Online and in the Know: Uses and Gratifications of the Web for Political Information*. 46 J. OF BROAD. & ELEC. MEDIA 52 (2002).

50. Adam D. I. Kramer, Jamie E. Guillory, & Jeffrey T. Hancock, *Experimental Evidence of Massive-Scale Emotional Contagion Through Social Networks*, 111 PNAS 8788 (2014).

51. Daniel Kreiss, *The Problem of Citizens: E-Democracy for Actually Existing Democracy*, 2015 SOCIAL MEDIA + SOC'Y 1.

52. Jonathan J. Koehler, *The Influence of Prior Beliefs on Scientific Judgments and Evidence Quality*, 56 ORG. BEHAV. & HUMAN DECISION PROCESSES 28 (1993).

53. Jon A. Krosnick, David S. Boninger, Yao C. Chuang, Matthew K. Berent, & Catherine G. Carnot, *Attitude Strength: One Construct or Many Related Constructs?*, 65 J. OF PERSONALITY & SOC. PSYCHOL. 1132 (1993).

54. Lawrence Lessig, *The Path of Cyberlaw*, 104 YALE L. J. 1743 (1995).

55. Q. Vera Liao & Wai-Tat Fu, *Beyond the Filter Bubble: Interactive Effects of Perceived Threat and Topic Involvement on Selective Exposure to Information* (2013).

56. Lin, C. A. *Selective News Exposure, Personal Values, And Support for the Iraq War*, 57 COMM. Q. 18, 34 (2009)

57. Charles W. Logan, *Getting Beyond Scarcity: A New Paradigm for Assessing the Constitutionality of Broadcast Regulation*, 85, CAL. L. R., (1997).

58. Lord C. G., Ross L., & Lepper, M. R., *Biased Assimilation and Attitude Polarization: The Effects of Prior Theories on Subsequently Considered Evidence*, 37 J. OF PERSONALITY & SOC. PSYCHOL. 2098 (1979).

59. Robert C. Luskin, *Explaining Political Sophistication*, 12 POL. BEHAV. 331 (1990).

60. Eva Jonas, Stefan Schultz-Hardt, Dieter Frey, & Norman Thelen, *Confirmation Bias in Sequential Information Search after Preliminary Decisions: An Expansion of Dissonance Theoretical Research on Selective Exposure to Information*, 80 J. OF PERSONALITY AND SOC. PSYCHOL. 557 (2001).

61. Media Insight Project, The Personal News Cycle (Mar. 2014), http://www.mediainsight.org/Pages/the-personal-news-cycle.aspx

62. Michael F. Meffert, Sungeun Chung, Amber J. Joiner, Leah Waks & Jennifer Garst, *The Effects of Negativity and Motivated Information Processing During a Political Campaign*, 56 J. OF COMM. 27 (2006).

63. Young Mie Kim, *Algorithmic Opportunity: Digital Advertising and Inequality in Political Involvement*, 14 THE FORUM 4 (2016).

64. Amy Mitchell & Dana Page, *Millenials & Political News*, PEW RES. CTR. 1 (2015).

65. Amy Mitchell & Dana Page, *The Evolving Role of News on Twitter and Facebook*, PEW RES. CTR. (2015).

66. Amy Mitchell & Rachel Weisel, *Political Polarization & Media Habits*, PEW RES. CTR. 1 (2015).

67. Serge Moscovini & Marisa Zavalloni, *The Group as a Polarizer of Attitudes*, 12 J. OF PERSONALITY & SOC. PSYCHOL. 125 (1969).

68. S. Mullainathan & A. Schleifer, *The Market for News*, 95 AM. ECON. REV. 103 (2005).

69. Sean A. Munson & Paul Resnick, *Presenting Diverse Opinions: How and How Much*, PROC.'S OF THE SIGCHI CONF. ON HUMAN FACTORS IN COMPUTING SYS.'S 1457 (2010).

70. Diana C. Mutz, *The Consequences of Cross-Cutting Networks for Political Participation*, 46 AM. J. OF POL. SCI 833 (2002).

71. Nic Newman, Richard Fletcher, Antonis Kalogeropoulus, & Rasmus Kleis Nielsen, *Digital News Report 2017*, REUTERS INST. 1 (2017).

72. Elizabeth Noelle-Neumann, *The Spiral of Silence: A Theory of Public Opinion*, 24 J. OF COMM. 43 (1974).

73. Hartmut Obendorf, Harald Weinreich, Eelco Herder, & Matthias Mayer, *Web Page Revisitation Revisited: Implications of a Long-Term Click-Stream Study of Browser Usage*, PROC.'S OF THE SIGCHI CONF. ON HUMAN FACTORS IN COMPUTING SYS.'S 597 (2007).

74. The Omidyar Group, *Key Risks of Social Media for Democracy*, 1 (2017).

75. ELI PARISER, THE FILTER BUBBLE: WHAT THE INTERNET IS HIDING FROM YOU (2011).

76. Christopher Paul & Miriam Matthews, *The Russian "Firehose of Falsehood" Propaganda Model*, RAND 9 (2016).

77. Nathaniel Persily, *Can Democracy Survive the Internet?*, 28 J. OF DEMOCRACY 63 (2017).

78. Nathaniel Persily, *The Campaign Revolution Will Not Be Televised*, 11 THE AM. INT. (2015), https://www.the-american-interest.com/2015/10/10/the-campaign-revolution-will-not-be-televised/.

79. Schulz-Hardt, D. Frey, Lűthgens C., & S. Moscovici, *Biased Information Search in Group Decision Making*, 78 J. OF PERSONALITY AND SOC. PSYCHOL. 655 (2000).

80. GARY W. SELNOW, ELECTRONIC WHISTLE-STOPS: THE IMPACT OF THE INTERNET ON AMERICAN POLITICS (2008).

81. ANDREW L. SHAPIRO, THE CONTROL REVOLUTION (1999).

82. Sharad Goel, Winter Mason, & Duncan J. Watts, *Real and Perceived Attitude Agreement in Social Networks*, 99 J. OF PERSONALITY & SOC. PSYCHOL. 611 (2010).

83. Aaron Shaw & Yochai Benkler, *A Tale of Two Blogospheres: Discursive Practices on the Left and Right*, 56 AM. BEHAV. SCI. 459 (2012).

84. Michael D. Slater, *Reinforcing Spirals: The Mutual Influence of Media Selectivity and Media Effects and Their Impact on Individual Behavior and Social Identity*, 17 COMM. THEORY 281 (2007).

85. GEOFFREY R. STONE, LOUIS M. SEIDMAN, CASS R. SUNSTEIN, MARK V. TUSHNET & PAMELA S. KARLAN, THE FIRST AMENDMENT (Erwin Chemerinsky et al., eds.) (5th ed. 2016).

86. CASS SUNSTEIN, #REPUBLIC (2017).

87. Paul D. Sweeney & Kathy L. Gruber, *Selective Exposure: Voter Information Preferences and the Watergate Affair*, 46 J. OF PERSONALITY & SOC. PSYCHOL. 1208 (1984).

88. Art Swift, GALLUP, *Americans' Trust in Mass Media Sinks to New Low* (Sept. 14, 2016) http://www.gallup.com/poll/195542/americans-trust-mass-media-sinks-new-low.aspx.

89. Jim Tankersley, *How Trump Won: The Revenge of Working Class Whites*, THE WASH. POST (Nov. 9, 2016).

90. Zeynep Tufekci, *Engineering the Public: Big Data, Surveillance, and Computational Politics*, 19 FIRST MONDAY (2017), http://firstmonday.org/ojs/index.php/fm/article/view/4901/4097 (last accessed 1 Jul., 2017).

91. Onur Varol, Emilio Ferrara, Clayton A. Davis, Filippo Menczer, & Allesandro Flammini, *Online Human-Bot Interactions: Detection, Estimation, and Characterization*, https://arxiv.org/pdf/1703.03107.pdf (2017) (last accessed 9:10PM EST Jul. 2 2017).

92. Benjamin Warner, *Segmenting the Electorate: The Effects of Exposure to Political Extremism Online*, 61 COMM. STUD. 430 (2010).

APPENDIX I

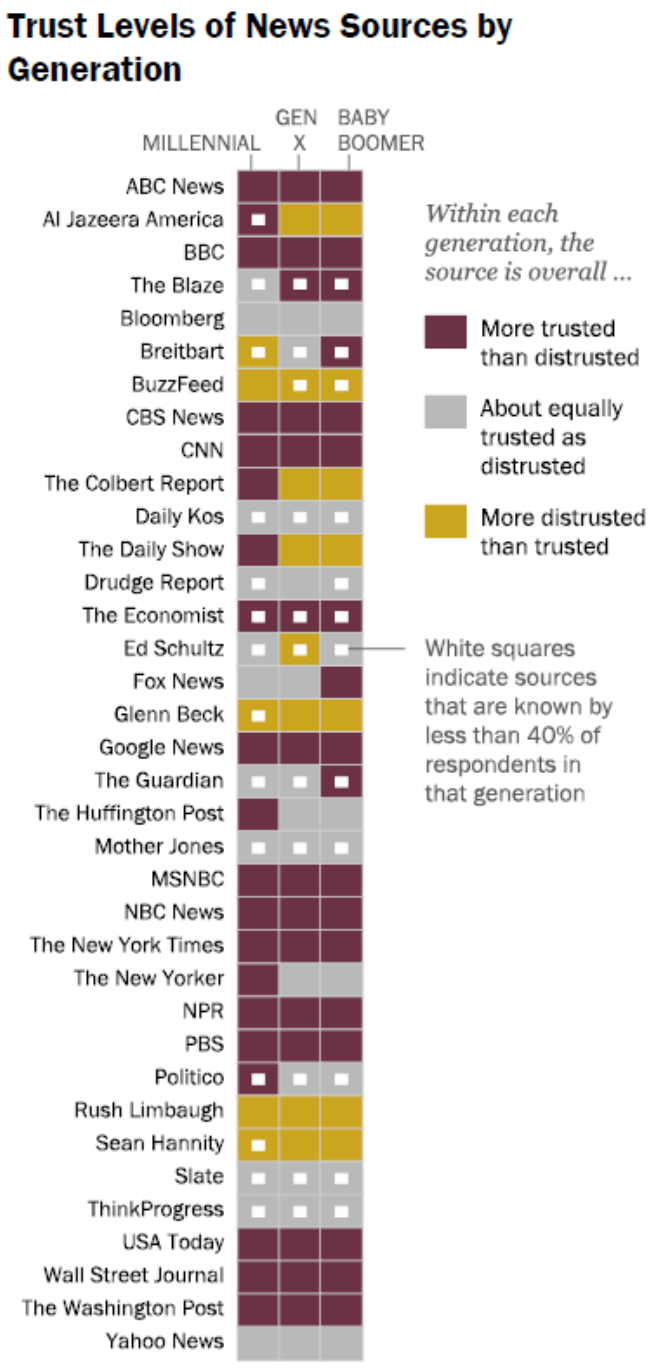
Top retweeters of 2016 Presidential Candidates:

@realDonaldTrump retweeters	@HillaryClinton retweeters
Breitbart	Washington Post
The Hill	Huffington Post
Fox News	New York Times
Gateway Pundit	The Hill
Politico	CNN
Washington Examiner	Politico
Daily Caller	Politicus USA
CNN	Daily Kos
Washington Post	Raw Story
New York Times	hillaryclinton.com
donaldjtrump.com	MSNBC
Conservative Treehouse	Salon
Infowars	Think Progress
Daily Mail	Daily Newsbin
Truthfeed	Mother Jones
New York Post	Talking Points Memo
Investors	Daily Beast
The Right Scoop	Media Matters
statespoll.com	NBC News
Conservative Tribune	Vox

[161]

[161] Benkler, Faris, Roberts, & Zuckerman, *supra* note 74.

APPENDIX II

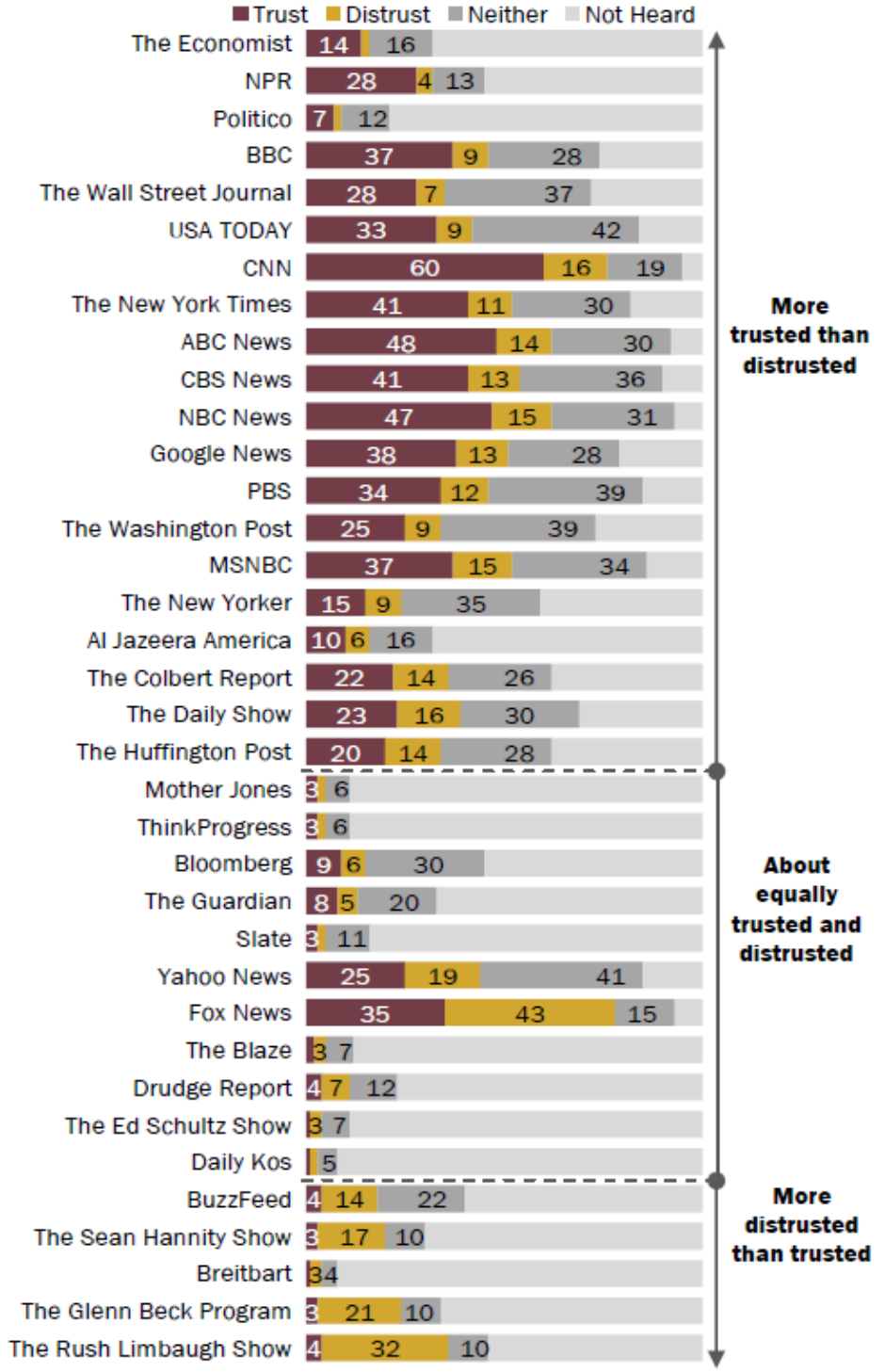


162

[162] Mitchell & Page, *Millenials & Political News*, *supra* note 14 at 15, 16.

Trust and Distrust of News Sources Among Millennials

% who trust or distrust each source for news about government and politics



[163]

[163] *Id.*