
Bursting Your (Filter) Bubble: Strategies for Promoting Diverse Exposure

Paul Resnick

University of Michigan
School of Information
presnick@umich.edu

R. Kelly Garrett

Ohio State University
School of Communication
garrett.258@osu.edu

Travis Kriplean

University of Washington
Computer Science & Engineering
travis@cs.washington.edu

Sean A. Munson

Department of Human Centered
Design & Engineering; dub group
University of Washington
smunson@uw.edu

Natalie Jomini Stroud

University of Texas at Austin
Department of Communication
Studies; Annette Strauss Institute
for Civic Life
tstroud@austin.utexas.edu

Abstract

Broadcast media are declining in their power to decide which issues and viewpoints will reach large audiences. But new information filters are appearing, in the guise of recommender systems, aggregators, search engines, feed ranking algorithms, and the sites we bookmark and the people and organizations we choose to follow on Twitter. Sometimes we explicitly choose our filters; some we hardly even notice. Critics worry that, collectively, these filters will isolate people in information bubbles only partly of their own choosing, and that the inaccurate beliefs they form as a result may be difficult to correct. But should we really be worried, and, if so, what can we do about it? Our panelists will review what scholars know about selectivity of exposure preferences and actual exposure and what we in the CSCW field can do to develop and test ways of promoting diverse exposure, openness to the diversity we actually encounter, and deliberative discussion.

Author Keywords

Selective exposure; filter bubble; personalization; diversity; news; deliberative discourse.

Copyright is held by the author/owner(s).

CSCW '13 Companion, Feb. 23–27, 2013, San Antonio, Texas, USA.

ACM 978-1-4503-1332-2/13/02.

ACM Classification Keywords

K.4.3 [Computers and Society]: Organizational Impacts.

Selective Exposure

Media policy in the United States has long had a focus on promoting audiences' exposure to diverse information. One rationale is that development of accurate beliefs requires some degree of exposure to information that challenges one's existing beliefs and opinions [1, 2]. Partisan selective exposure correlates with higher levels of attitudinal polarization and greater fragmentation in issue priorities (see, e.g., [3-5]). Moreover, there is a natural tendency for people, particularly those in the minority, to think that their own views are more broadly shared than they actually are [6, 7]. Having a better assessment of the true popularity of one's opinions may lead people to accept the legitimacy of disagreeable outcomes in the political sphere, rather than concocting conspiracy theories to explain how the supposed majority will was thwarted. There is one potential positive effective of selective exposure, however: likeminded media use can inspire greater rates of political participation (see, e.g., [4, 8]).

In the Internet era, with large media providers no longer serving a gatekeeping function, the diversity of individual exposure will turn on the choices of individual users (what sites we visit; who we friend and follow) and the choices of algorithms (search engines; news aggregator; feed ranking algorithms). Negroponte coined the phrase "The Daily Me" to refer to personalized news aggregators [9]. Pariser coined the phrase, "Filter Bubble" [10] to capture the idea that people may not be aware of the personalized filtering that is per-

formed on their behalf, and thus not know what they are missing or even that they are seeing a very different set of things than other people see.

A preference for politically likeminded media sources has been widely demonstrated in the United States [3, 4, 11, 12] (Iyengar & Hahn, 2009; Knobloch-Westerwick & Meng, 2009; Stroud, 2008, 2011). There is some evidence, however, of individual differences: some people prefer collections of news articles that include some counter-attitudinal articles over collections of purely agreeable items [13]. In addition, the draw of likeminded messages is far stronger than the repelling power of counter-attitudinal messages [14, 15]. The best evidence is that, actual ideological isolation in people's online news exposure is lower than many feared and lower than their day-to-day face-to-face interactions, but higher than their ideological isolation for most offline news sources [16-18]. And even those who prefer like-minded media may be open to exposure to some counter-attitudinal messages, if those messages convey some other utility, such as scoring high on other quality dimensions the user cares about [19].

Thus, it may be possible to develop systems that nudge people toward more diverse exposure. One approach is to provide diversity-aware news aggregators. For example, Park et al. demonstrated that displaying multiple articles about the same news event, divided into clusters that emphasize different aspects of the event, causes people to read more diverse news stories than a simple random list [20]. Or, a news aggregator might set a higher "quality" threshold for counter-attitudinal stories, but still show the best of them.



The Balancer extension displays the bias in a user's online news reading over time.



Creating a pro/con list, pro half of the screen. Drag and drop others' arguments, or author your own.

A second approach is to provide subtle nudges that encourage individuals to choose diverse exposure. For example, Munson has implemented a browser extension that displays feedback about the left-right balance of news articles viewed (see sidebar). The stick-figure primes the norm of balanced exposure, and the feedback may create accountability. Initial analysis of experimental data suggests a small but noticeable change in reading behavior, toward more balanced exposure, among users seeing the feedback, as compared to a control group.

Motivated Information Processing

In addition to *selecting* information in a motivated way, people can also *process* information in a motivated way. Contradictory information exposure doesn't always promote thoughtful consideration of oppositional messages. Indeed, counter-attitudinal information can amplify attitudinal polarization (see, e.g., [21]). Complete solutions, therefore, must involve something more than exposure to alternative views.

Is it possible, when people encounter divergent opinions to nudge people them towards more deliberative behavior, such as weighing tradeoffs and trying to see an issue from someone else's perspective? Mackuen [22] has shown that the communicative styles that people adopt are context sensitive. And interface design can play a large role in shaping this context [23].

Studies have begun analyzing the circumstances under [22, 24, 25]. These perspectives have informed interventions into the framing of messages encouraging diverse exposure and the creation of interactive polling tools used in online newsrooms to inspire mindful en-

agement with alternative perspectives (Stroud, in progress).

ConsiderIt [26] invites users to develop personal pro/con lists for an issue. An unbalanced list challenges users to reflect on whether they are missing something. A user can browse other people's pro/con lists to identify items they might want to include in their own, encouraging people to listen to others. The reuse of items allows the system to aggregate choices. Users can see ranked lists of items that were popular on pro or con lists of both supporters and opponents of a proposition, thus facilitating perspective taking. Related approaches involve mapping argument structure or evaluating arguments [27, 28].

Reflect [29] more directly encourages listening and perspective taking. It modifies the comment sections of webpages by adding a listening box next to every comment, where other users are encouraged to succinctly restate the points that the commenter is making. This is a nudge to listen to other users. Other readers can then read the original comment and the listeners' interpretations of what was said, supporting broader understanding of the discussion.

OpinionSpace [30] plots on a two-dimensional map the individual comments in a web forum, based on the commenters' responses to a short value-based questionnaire. By navigating this space, readers are better able to seek out a diversity of comments as well as prime themselves for engaging the perspective of someone with different values. When users interrogate an individual comment, they are prompted to rate comments for how much they agree with and respect it. The size of the comment's dot on the map then

grows when people with different values than the speaker respect and/or agree with it, facilitating users in seeking out comments that resonate widely.

Participant Bios

Paul Resnick (moderator) is a Professor at the University of Michigan School of Information. His current projects include making recommender systems resistant to manipulation through rater reputations, nudging people toward politically balanced news consumption and health behavior change, and crowdsourcing fact-correction on the Internet. He was a pioneer in the field of live filtering or social filtering). The GroupLens system he helped develop was awarded the 2010 ACM Software Systems Award. He co-authored a book (with Robert Kraut), titled "Building Successful Online Communities: Evidence-based Social Design" [31].

R. Kelly Garrett is an Assistant Professor in the School of Communication at the Ohio State University. His research interests include the study of online political communication, online news, and the ways in which citizens use new technologies to shape their engagement with contentious political topics. He is the recipient of a CAREER Award for his research on how social media and personalized communication technologies are altering Americans' exposure to news and shaping their beliefs.

Travis Kriplean earned his PhD in Computer Science & Engineering at the University of Washington in 2012, and is now a Postdoc at the same institution. He created discussion on the web, including the Living Voters Guide (<https://wash.livingvotersguide.org>) and Reflect (see <http://abstract.cs.washington.edu/~travis/>). Travis is currently starting a company to develop these

technologies further. In the past, he has contributed to the development of UrbanSim (<http://www.urbansim.org>), conducted research on how Wikipedians work together, and led the technical effort at Flash Volunteer (<http://www.flashvolunteer.org>).

Sean Munson is an Assistant Professor at the University of Washington's Department of Human Centered Design and Engineering and a member of the dub group. He studies the use of software to support positive behavior changes. His work focuses on the domains of political news and opinion access and health and wellness. He has been a political blogger and is one of the designers of the *Balancer* (<http://balancestudy.org/>), a Chrome extension that helps people track the bias in their news.

Dr. Natalie (Talia) Jomini Stroud is an Associate Professor of Communication Studies and Assistant Director of the Annette Strauss Institute for Civic Life at the University of Texas at Austin. She is broadly interested in how the media affect our political behaviors and attitudes and how our political behaviors and attitudes affect our media use. Her recent book, *Niche News: The Politics of News Choice* (Oxford University Press, 2011) [4] explores the causes, consequences, and prevalence of partisan selective exposure, the preference for likeminded political information. *Niche News* recently received the International Communication Association's 2012 Outstanding Book Award.

Acknowledgements

Resnick's contribution is based upon work supported by the National Science Foundation under Grant No. IIS-0916099. Garrett's contribution is based upon work

supported by the National Science Foundation under Grant No. IIS-1149599. Kriplean's contribution is based upon work supported by the National Science Foundation under Grant No. IIS-0966929. Stroud was supported by a grant from the Omidyar network.

References

- [1] Frey, D., *Recent Research on Selective Exposure to Information*, in *Advances in Experimental Social Psychology*. 1986. p. 41-80.
- [2] Hart, W., D. Albarracín, et al., *Feeling validated versus being correct: a meta-analysis of selective exposure to information*. *Psychological bulletin*, 2009. **135**(4): p. 555.
- [3] Knobloch-Westerwick, S. and J. Meng, *Reinforcement of the political self through selective exposure to political messages*. *Journal of Communication*, 2011. **61**(2): p. 349-368.
- [4] Stroud, N.J., *Niche News: The Politics of News Choice: The Politics of News Choice*. 2011: Oxford University Press, USA.
- [5] Stroud, N.J., *Polarization and partisan selective exposure*. *Journal of Communication*, 2010. **60**(3): p. 556-576.
- [6] Ross, L., D. Greene, and P. House, *The False Consensus Effect: An Egocentric Bias in Social Perception and Attribution Processes*. *Journal of Experimental Social Psychology*, 1977. **13**: p. 279-301.
- [7] Sanders, G.S. and B. Mullen, *Accuracy in perceptions of consensus: Differential tendencies of people with majority and minority positions*. *European Journal of Social Psychology*, 1982. **13**(1): p. 57-70.
- [8] Dilliplane, S., *All the news you want to hear: The impact of partisan news exposure on political participation*. *Public Opinion Quarterly*, 2011. **75**(2): p. 287-316.
- [9] Negroponte, N., *Being Digital*. 1996: Vintage.
- [10] Pariser, E., *The Filter Bubble: What the Internet Is Hiding from You*. 2011, London: Penguin.
- [11] Iyengar, S. and K.S. Hahn, *Red media, blue media: Evidence of ideological selectivity in media use*. *Journal of Communication*, 2009. **59**(1): p. 19-39.
- [12] Stroud, N.J., *Media use and political predispositions: Revisiting the concept of selective exposure*. *Political Behavior*, 2008. **30**(3): p. 341-366.
- [13] Munson, S.A. and P. Resnick, *Presenting diverse political opinions: how and how much*, in *Proceedings of the 28th international conference on Human factors in computing systems 2010*, ACM: Atlanta, Georgia, USA. p. 1457-1466.
- [14] Garrett, R.K., *Politically motivated reinforcement seeking: Reframing the selective exposure debate*. *Journal of Communication*, 2009. **59**(4): p. 676-699.
- [15] Garrett, R.K., *Echo chambers online?: Politically motivated selective exposure among Internet news users*. *Journal of Computer-Mediated Communication*, 2009. **14**(2): p. 265-285.
- [16] Garrett, R.K., D. Carnahan, and E. Lynch, *A turn toward avoidance? Selective exposure to online political information, 2004-2008*. *Political Behavior*, 2011. **Online First**: p. 1-22.

- [17] Gentzkow, M. and J.M. Shapiro, *Ideological Segregation Online and Offline*. Quarterly Journal of Economics, 2011. **126**(4): p. 1799-1839.
- [18] Holbert, R.L., J.D. Hmielowski, and B.E. Weeks, *Clarifying relationships between ideology and ideologically oriented cable TV news use: A case of suppression*. Communication Research, 2012. **39**(2): p. 194-216.
- [19] Garrett, R.K. and P. Resnick, *Resisting political fragmentation on the Internet*. Daedalus, 2011. **140**(4): p. 108-120.
- [20] Park, S., S. Kang, et al., *NewsCube: delivering multiple aspects of news to mitigate media bias*, in *Proceedings of the 27th international conference on Human factors in computing systems2009*, ACM: Boston, MA, USA. p. 443-452.
- [21] Meffert, M.F., S.E. Chung, et al., *The Effects of Negativity and Motivated Information Processing During a Political Campaign*. Journal of Communication, 2006. **56**: p. 27-51.
- [22] MacKuen, M., J. Wolak, et al., *Civic engagements: Resolute partisanship or reflective deliberation*. American Journal of Political Science, 2010. **54**(2): p. 440-458.
- [23] Sukumaran, A., S. Vezich, et al. *Normative influences on thoughtful online participation*. in *PART 5-----Proceedings of the 2011 annual conference on Human factors in computing systems*. 2011. ACM.
- [24] Cohen, G.L., D.K. Sherman, et al., *Bridging the partisan divide: Self-affirmation reduces ideological closed-mindedness and inflexibility in negotiation*. Journal of Personality and Social Psychology, 2007. **93**(3): p. 415-430.
- [25] Kim, Y.M., *How intrinsic and extrinsic motivations interact in selectivity: Investigating the moderating effects of situational information processing goals in issue publics' Web behavior*. Communication Research, 2007. **34**: p. 185-211.
- [26] Kriplean, T., J. Morgan, et al., *Supporting reflective public thought with considerit*, in *Proceedings of the ACM 2012 conference on Computer Supported Cooperative Work2012*, ACM: Seattle, Washington, USA. p. 265-274.
- [27] Schneider, J., T. Groza, and A. Passant, *A review of argumentation for the Social Semantic Web*. Semantic Web, 2012.
- [28] Murakami, K., E. Nichols, et al. *Statement map: reducing web information credibility noise through opinion classification*. in *Proceedings of the fourth workshop on Analytics for noisy unstructured text data*. 2010. ACM.
- [29] Kriplean, T., M. Toomim, et al., *Is this what you meant?: promoting listening on the web with reflect*, in *Proceedings of the 2012 ACM annual conference on Human Factors in Computing Systems2012*, ACM: Austin, Texas, USA. p. 1559-1568.
- [30] Faridani, S., E. Bitton, et al. *Opinion space: a scalable tool for browsing online comments*. in *Proceedings of the 28th international conference on Human factors in computing systems*. 2010. ACM.
- [31] Kraut, R.E., P. Resnick, et al., *Building Successful Online Communities: Evidence-Based Social Design*. 2012, Cambridge, MA: The MIT Press.