

CS 6474/CS 4803 Social Computing: Polarization and Selective Exposure

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A background on polarization

Dynamic Debates: An Analysis of Group Polarization Over Time on Twitter

Bulletin of Science, Technology & Society
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Sarita Yardi¹ and Danah Boyd²

Abstract

The principle of homophily says that people associate with other groups of people who are mostly like themselves. Many online communities are structured around groups of socially similar individuals. On Twitter, however, people are exposed to multiple, diverse points of view through the public timeline. The authors captured 30,000 tweets about the shooting of George Tiller, a late-term abortion doctor, and the subsequent conversations among pro-life and pro-choice advocates. They found that replies between like-minded individuals strengthen group identity, whereas replies between different-minded individuals reinforce in-group and out-group affiliation. Their results show that people are exposed to broader viewpoints than they were before but are limited in their ability to engage in meaningful discussion. They conclude with implications for different kinds of social participation on Twitter more generally.

Echo chambers online?: Politically motivated selective exposure among Internet news users¹

R. Kelly Garrett [Author Notes](#)

Journal of Computer-Mediated Communication, Volume 14, Issue 2, 1 January 2009, Pages 265–285, <https://doi.org/10.1111/j.1083-6101.2009.01440.x>

Published: 01 January 2009



PDF

■ Split View

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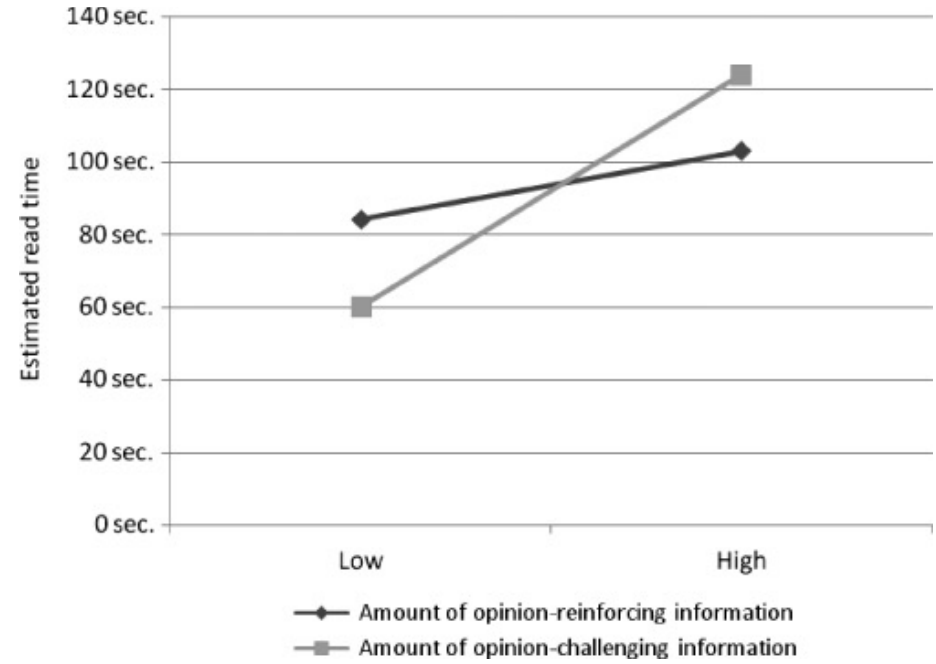
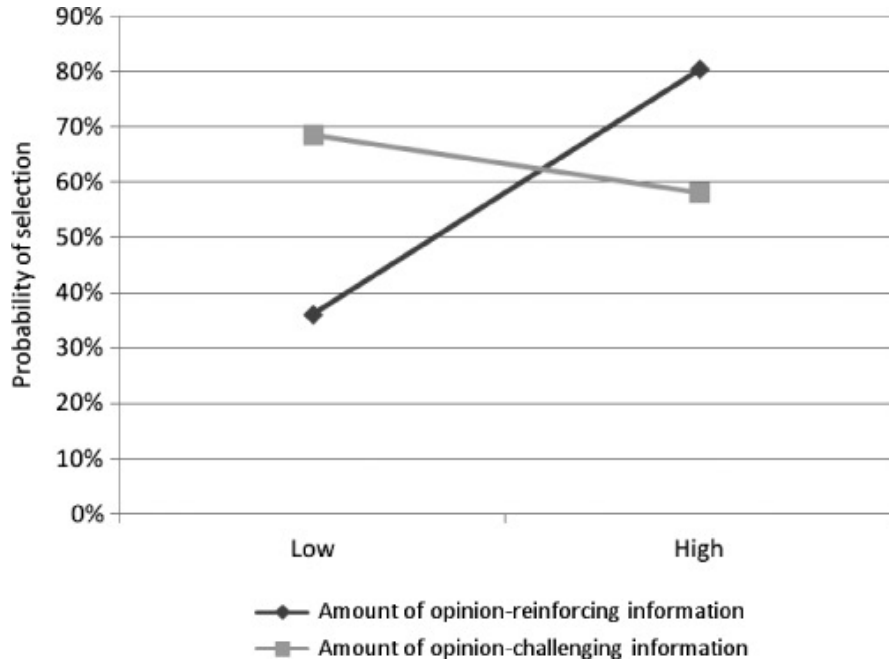


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Abstract

A review of research suggests that the desire for opinion reinforcement may play a more important role in shaping individuals' exposure to online political information than an aversion to opinion challenge. The article tests this idea using data collected via a web-administered behavior-tracking study with subjects recruited from the readership of 2 partisan online news sites ($N = 727$). The results demonstrate that opinion-reinforcing information promotes news story exposure while opinion-challenging information makes exposure only marginally less likely. The influence of both factors is modest, but opinion-reinforcing information is a more important predictor. Having decided to view a news story, evidence of an aversion to opinion challenges disappears: There is no evidence that individuals abandon news stories that contain information with which they disagree. Implications and directions for future research are discussed.

Summary



Bubble Trouble

Is Web personalization turning us into solipsistic twits?

By *Jacob Weisberg*



Eli Pariser

The first conversation I ever had about the Internet was in 1993 with Robert Wright, who was then a colleague at the *New Republic*.

This "Net" thing was going to be a big deal, I remember Bob telling me, but it could create a few problems. One was that it was going to empower crazies, since geographically

diffuse nut jobs of all sorts would be able to find each other online. Another was that it could hurt democratic culture by encouraging narrow-minded folk to burrow deeper into their holes. Wright spelled out those concerns in an **article** that stands as a model of prescience and a delightful time-capsule. ("People who 'post' on the Net's many different bulletin boards—its 'newsgroups'—know that their words can be seen from just about any chunk of inhabited turf on this planet.")



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Eli Pariser at TED2011

Beware online "filter bubbles"



Details

About the talk

Transcript

41 languages

Comments

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As web companies strive to tailor their services (including news and search results) to our personal tastes, there's a dangerous unintended consequence: We get trapped in a "filter bubble" and don't get exposed to information that could challenge or broaden our worldview. Eli Pariser argues powerfully that this will ultimately prove to be bad for us and bad for democracy.

This talk was presented at an official TED conference, and was featured by our editors on the home page.

4,081,649 views

Filmed

March 2011 at TED2011

Related tags

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ABOUT



Eli Pariser · Organizer and author

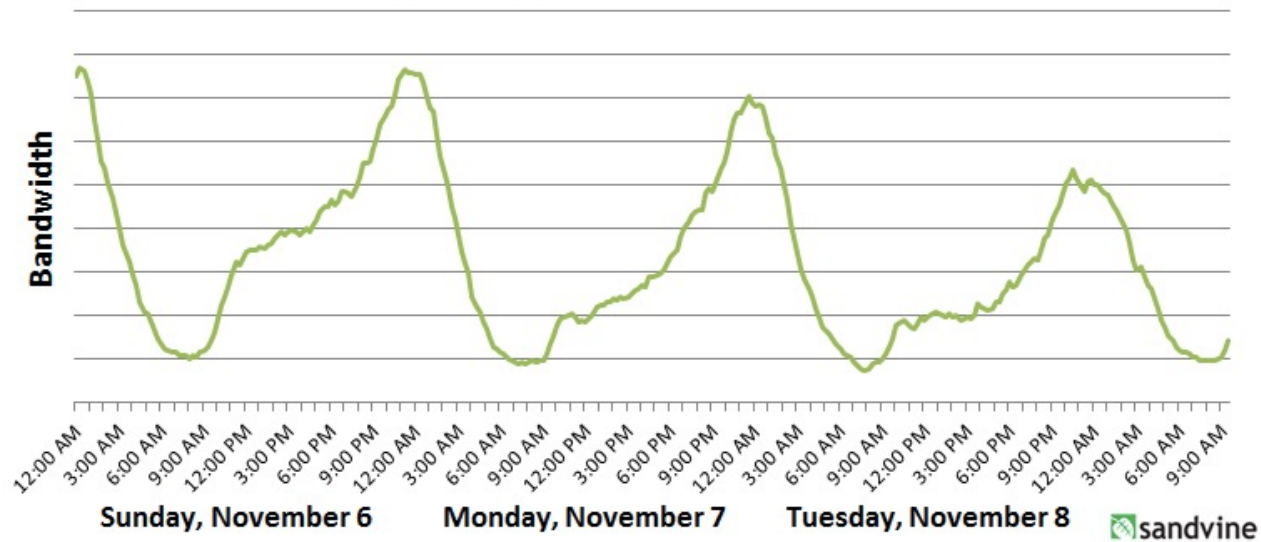
Pioneering online organizer Eli Pariser is the author of "The Filter Bubble," about how personalized search might be narrowing our worldview.

https://www.ted.com/talks/eli_pariser_beware_online_filter_bubbles

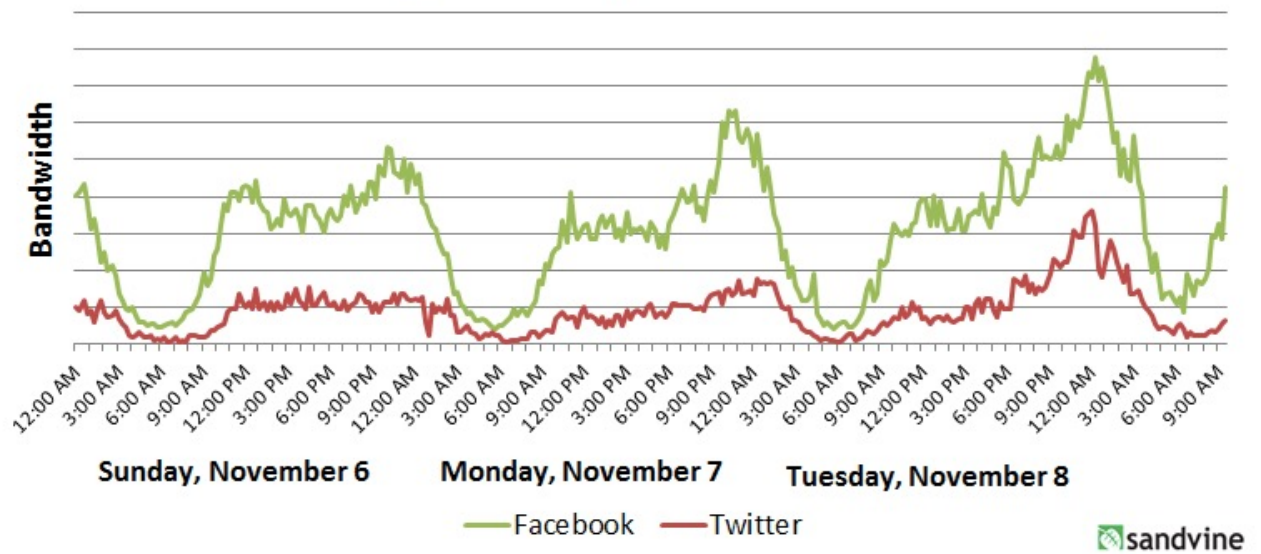
How did we get here? What do you think was the reasoning behind online platforms promoting/encouraging polarization or selective exposure?

Influence in the political sphere: 62% of adults in the US use social media to consume news, and 18% of adults are frequent consumers – Pew Internet

Netflix Traffic - Sample N. American, Fixed Network



Social Networking Traffic - Sample N. American, Fixed Network



POLITICS



Did Social Media Ruin Election 2016?

November 8, 2016 · 5:00 AM ET



SAM SANDERS



One happens on Facebook all the time. Just about all of your friends are posting about the election, nonstop. And there are a few who brag about deleting friends, or who urge friends to unfriend them over their political leanings: "Just unfriend me now." Or something like "If you can't support candidate X/Y, we don't need to be friends anymore." Or "Congrats, if you're reading this, you survived my friend purge!"

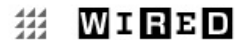
And then on Twitter, there's the public shaming of those who dare disagree with or insult you. Someone tweets at you with something incendiary, bashing the article you just shared or the point you just made, mocking something you said about politics, calling you stupid. You quote the tweet, maybe sarcastically, to prove it doesn't affect you. But it does! You tweeted it back, to all of your followers. It's an odd cycle. A rebuttal of nasty political exchanges by highlighting nasty political exchanges.

Facebook

Facebook's failure: did fake news and polarized politics get Trump elected?

The company is being accused of abdicating its responsibility to clamp down on fake news stories and counter the echo chamber that defined this election

Advertisement



Your Filter Bubble is Destroying Democracy

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Your Filter Bubble is Destroying Democracy

2016 Presidential Election – Digital Analysis by the Numbers

Hillary Clinton	Criteria	Donald Trump
238.5M	Total Social Media Shares	256.5M
16,633	Average Shares per Post	17,894
8.3M	Facebook Page Likes (Official Page)	12.2M
10.3M	Twitter Following (Official Page)	13.1M
32.9K	Number of Referring Domains	21.4K
1.51M	Number of Backlinks to Website	960K

TECHNOLOGY

Facebook, in Cross Hairs After Election, Is Said to Question Its Influence

By MIKE ISAAC NOV. 12, 2016



**Mark Zuckerberg** ✓[Follow](#)

November 12 at 10:15pm · 🌐

I want to share some thoughts on Facebook and the election.

Our goal is to give every person a voice. We believe deeply in people. Assuming that people understand what is important in their lives and that they can express those views has driven not only our community, but democracy overall. Sometimes when people use their voice though, they say things that seem wrong and they support people you disagree with.

After the election, many people are asking whether fake news contributed to the result, and what our responsibility is to prevent fake news from spreading. These are very important questions and I care deeply about getting them right. I want to do my best to explain what we know here.

Of all the content on Facebook, more than 99% of what people see is authentic. Only a very small amount is fake news and hoaxes. The hoaxes that do exist are not limited to one partisan view, or even to politics. Overall, this makes it extremely unlikely hoaxes changed the outcome of this election in one direction or the other.

That said, we don't want any hoaxes on Facebook. Our goal is to show people the content they will find most meaningful, and people want accurate news. We have already launched work enabling our community to flag hoaxes and fake news, and there is more we can do here. We have made progress, and we will continue to work on this to improve further.

This is an area where I believe we must proceed very carefully though. Identifying the "truth" is complicated. While some hoaxes can be completely debunked, a greater amount of content, including from mainstream sources, often gets the basic idea right but some details wrong or omitted. An even greater volume of stories express an opinion that many will disagree with and flag as incorrect even when factual. I am confident we can find ways for our community to tell us what content is most meaningful, but I believe we must be extremely cautious about becoming arbiters of truth ourselves.

Zuckerberg Has Thought About the Election and Decided Facebook Is Not to Blame



Rhett Jones

Yesterday 12:39pm · Filed to: HOAXES ▾



15.3K



88



6



Exposure to ideologically diverse news and opinion on Facebook

EYTAN BAKSHY, SOLOMON MESSING, AND LADA A. ADAMIC [Authors Info & Affiliations](#)

SCIENCE • 7 May 2015 • Vol 348, Issue 6239 • pp. 1130-1132 • DOI: [10.1126/science.aaa1160](https://doi.org/10.1126/science.aaa1160)

↓ 16,522 🗨️ 1,220



CHECK ACCESS

Not getting all sides of the news?

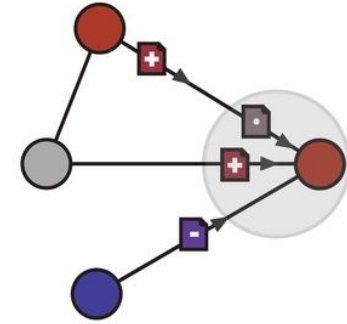
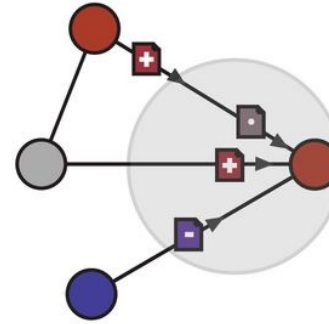
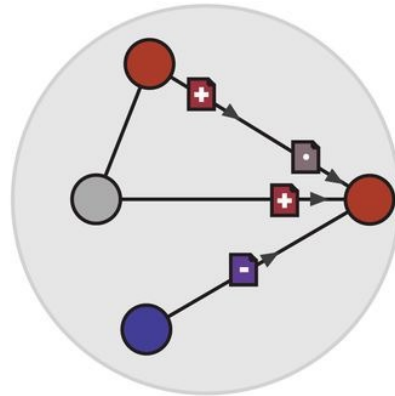
People are increasingly turning away from mass media to social media as a way of learning news and civic information. Bakshy *et al.* examined the news that millions of Facebook users' peers shared, what information these users were presented with, and what they ultimately consumed (see the Perspective by Lazer). Friends shared substantially less cross-cutting news from sources aligned with an opposing ideology. People encountered roughly 15% less cross-cutting content in news feeds due to algorithmic ranking and clicked through to 70% less of this cross-cutting content. Within the domain of political news encountered in social media, selective exposure appears to drive attention.

Science, this issue p. [1130](#); see also p. [1090](#)



A

Stage in media exposure process

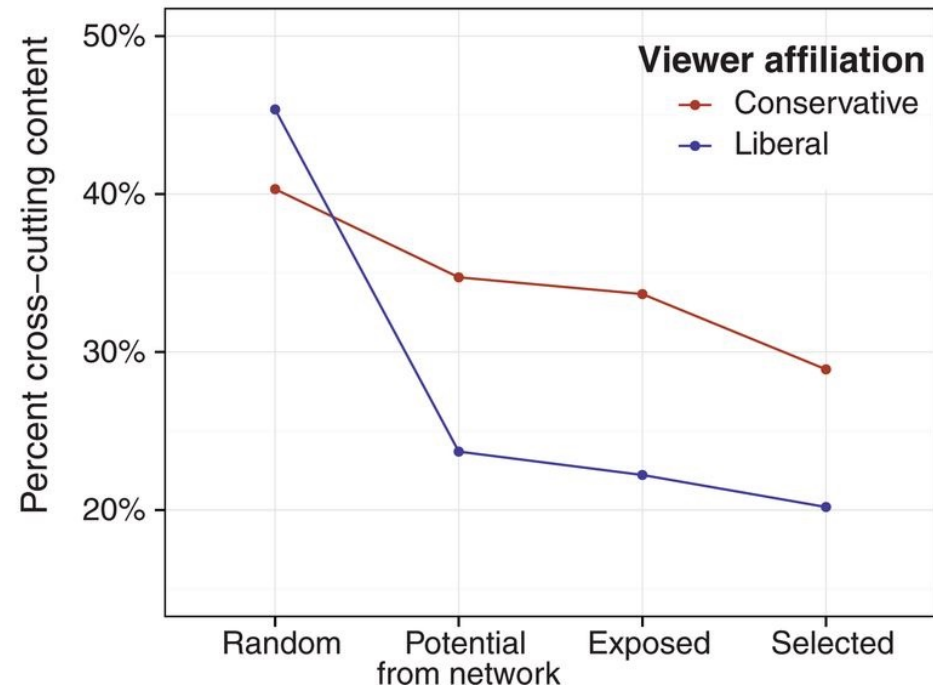
Potential from network**Exposed****Selected**

Proportion of content that is cross-cutting

1/3

1/2

0/1

B

“Zuckerberg defended the News Feed’s progress arguing that the filter bubble isn’t an issue for Facebook. He suggested the real problem is that people by nature engage with content they like and find agreeable, and dismiss things they don’t agree with online as they would in real life.” –Techcrunch

To what extent is it fair to put the responsibility on users?

Like-minded sources on
Facebook are prevalent but
not polarizing

Exposure to opposing views
on social media can increase
political polarization

Reading opinion-reinforcing content can have widespread impact on our perceptions what is real and what is fake. Could this impact our perceptions of what could be misinformation?

– Connection to last week's discussions

Homophily and polarization in the age of misinformation

Alessandro Bessi^{1,2}, Fabio Petroni³, Michela Del Vicario², Fabiana Zollo², Aris Anagnostopoulos³, Antonio Scala⁴, Guido Caldarelli², and Walter Quattrociocchi^{1,a}

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Abstract. The World Economic Forum listed massive digital misinformation as one of the main threats for our society. The spreading of unsubstantiated rumors may have serious consequences on public opinion such as in the case of rumors about Ebola causing disruption to health-care workers. In this work we target Facebook to characterize information consumption patterns of 1.2 M Italian users with respect to verified (science news) and unverified (conspiracy news) contents. Through a thorough quantitative analysis we provide important insights about the anatomy of the system across which misinformation might spread. In particular, we show that users' engagement on verified (or unverified) content correlates with the number of friends having similar consumption patterns (*homophily*). Finally, we measure how this social system responded to the injection of 4,709 false information. We find that the frequent (and selective) exposure to specific kind of

Class Exercise

If you were to re-design a tool that works on social media to reduce polarization, what would that tool look like? What would it do? What data would it use? How would you evaluate if the tool is working?

“Bridging” at the network boundary?

A Measure of Polarization on Social Media Networks Based on Community Boundaries

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Abstract

Polarization in social media networks is a fact in several scenarios such as political debates and other contexts such as same-sex marriage, abortion and gun control. Understanding and quantifying polarization is a long-term challenge to researchers from several areas, also being a key information for tasks such as opinion analysis. In this paper, we perform a systematic comparison between social networks that arise from both polarized and non-polarized contexts. This comparison shows that the traditional polarization metric – modularity – is not a direct measure of antagonism between groups, since non-polarized networks may be also divided into fairly modular communities. To bridge this conceptual gap, we propose a novel polarization metric based on the analysis of the boundary of a pair of (potentially polarized) communities, which better captures the notions of antagonism and polarization. We then characterize

polarizing, polemic issues, specially when new evidences that support one side of the discussion arise, such as the intensity increase associated with the gun control debate after the shootings in Newtown, Connecticut. Social and computer scientists are paying increasing attention to such discussions, seeking for patterns that unveil the dynamics of online debate and the bursts of opinionated content generated in reaction to real-life events. Thus, identifying whether a topic induces polarization on individuals is important for at least three reasons:

1. It is a relevant question from the sociological point of view, since polarization causes segregation and political conflict in the society, as a consequence of the increase of extreme opinions over time and the high degree of bias of polarized opinions (Paul DiMaggio 1996; Mouw and Sobel 2001).

Minimizing Polarization and Disagreement in Social Networks

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Abstract

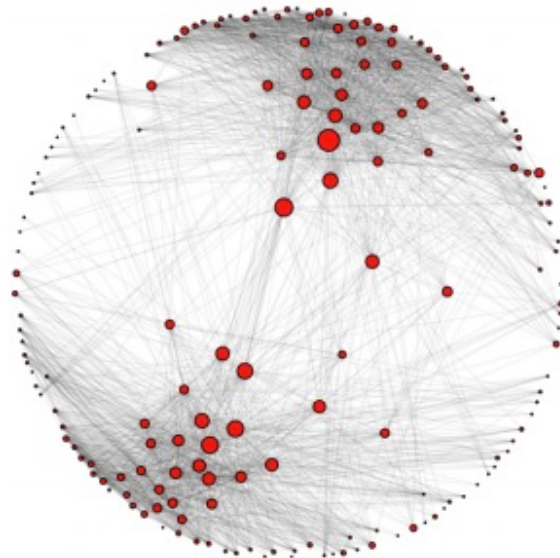
The rise of social media and online social networks has been a disruptive force in society. Opinions are increasingly shaped by interactions on online social media, and social phenomena including disagreement and polarization are now tightly woven into everyday life. In this work we initiate the study of the following question:

Given n agents, each with its own initial opinion that reflects its core value on a topic, and an opinion dynamics model, what is the structure of a social network that minimizes *polarization* and *disagreement* simultaneously?

This question is central to recommender systems: should a recommender system prefer a link suggestion between two online users with similar mindsets in order to keep disagreement low, or between two users with different opinions in order to expose each to the other's viewpoint of the world, and decrease overall levels of polarization? Such decisions have an important global effect on society [51]. Our contributions include a mathematical formalization of this question as an optimization problem and an exact, time-efficient algorithm. We also prove that there always exists a network with $O(n/\epsilon^2)$ edges that is a $(1 + \epsilon)$ approximation to the optimum.

How to Burst the "Filter Bubble" that Protects Us from Opposing Views

Computer scientists have discovered a way to number-crunch an individual's own preferences to recommend content from others with opposing views. The goal? To burst the "filter bubble" that surrounds us with people we like and content that we agree with.



The term "filter bubble" entered the public domain back in 2011 when the internet activist Eli Pariser coined it to refer to the way recommendation engines shield people from certain aspects of the real world.

Pariser used the example of two people who googled the term

WSJ's Blue and Red Feed

LIBERAL ⓘ

SHOWING POSTS ABOUT:

"HEALTH CARE"

CONSERVATIVE ⓘ



AlterNet ✓
9 hours ago



"Take inside the United States — for the large majority of the population, the principle is you've got to 'let the market prevail.' Cut back entitlements, cut back or destroy Social Security, cut back or reduce the limited health care — just let the market run everything. But not for the rich. For the rich, the state is a powerful state, which is ready to move in as soon as you get into trouble and bail you out."



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ALTERNET.ORG



National Review ✓
10 hours ago



When GOP representative [Congressman Tom MacArthur](#) of attempted to tell a rowdy town hall audience about health-policy insights he gained caring for his special-needs daughter, Gracie, who passed away at age 11, he was booed.

[Michelle Malkin](#) reports on this and more incidents and threats.



Liberals at Townhalls Mercilessly Harass Those ...

Here is what happens if you try to tell health-care stories that defy big-go...

NATIONALREVIEW.COM

👍 145 💬 151 ➦ 111

What makes reducing polarization in social computing systems challenging to resolve?

A deeper question: Why would
[Facebook/Meta] want to change?
And are people even ready for a fair
social media feed?