

How Homophily in social networks can increase political polarization

Social media sites like Facebook and twitter makes it easier than ever to connect us to the people around us. Facebook have algorithms to personalize content for each user based on what the user's interests and what they are browsing. This makes it easy for us to find other people with similar opinions, views and interests. There are concerns that these factors can lead to "echo chambers" and increased political polarization.

First, we need to understand how echo chambers appear what homophily is and what echo chambers are. Homophily is the principle that we tend to connect to other people like ourselves (*Easley & Kleinberg, 2010*). We can use this principle to explain how people connect on social media sites. On the Internet and especially social media it is easy to connect to likeminded people.

We can define an echo chamber as a group where beliefs or opinions are amplified and repeated inside a closed group like an echo in a cave. This can prevent individuals from being exposed to opposing beliefs and opinions and radicalize them in the process. This can result in making the political divide between groups of individuals even bigger.

There are different kinds of echo chambers. Filter bubbles can be classified as a type of echo chamber crated by the algorithms on social media platforms. Filter bubbles uses algorithms to show content based on your interests, and hides content you do not like (*Goodwill Community Foundation, 2019*). These algorithms can isolate you from information that you have not explicitly showed interest in.

We often tend to agree more with people who shares the same opinions as us which is why echo chambers occur. *Boutyline & Willer (2015)* measured the levels of homophily in ego networks of people who followed different hubs which could be either major political actors or non-profit organizations. The number of ego networks that were analysed where 238,943.

The researchers used $o(f, H)$ to measure homophily. Where f is a user and H is the hub where f follows H . The homophily will then be the percentage of other users followed by f which also follows H . For example, if f follows 4 people and 2 of those people follow H then $o(f, H) = \frac{2}{4} * 100 = 50\%$.

$$o(f, H) = \frac{\sum_{g \in V} T_{fg} T_{gH}}{\sum_{g \in V} T_{fg} - 1} * 100$$

A measure for reciprocity was also used $r(f, H)$ which was used to measure the tendencies of reciprocity between users who followed the same hub. An example for this measure can be if H has 5 followers and 3 of those users follow f , where f follows 2 of them back, then $r(f, H) = \frac{2}{3} = 0,67$. (Boutyline & Willer. 2015, p. 18-19).

$$r(f, H) = \frac{\sum_{g \in V} T_{gH} T_{fg} T_{gf}}{\sum_{g \in V} T_{gH} T_{gf}}$$

The researchers found that the average homophily rate of all the users analysed were 11 percent, where people with conservative or extreme views had a higher level of homophily in their ego networks than people with more liberal views. With people having extreme political views having the highest level of homophily in their networks. People with conservative or extreme views were also more likely to make ties to other people who followed the same hub, essentially exposing them to more of the same information they already knew and exposing them to less new information, making it more likely to form echo chambers. (Boutyline & Willer. 2015, p. 24 - 27).

The researchers show that homophily has some influence on political polarization in social media and the creation of echo chambers. Not only is it influencing who you talk to and follow on social media, but also how you view the opinions of others. Not only do we want to connect to people we are like, but the social media platforms will also make sure we only see the content we are interested in and agree with, effectively creating a filter bubble. The researchers found that groups of people with conservative views had higher levels of homophily and thus had more tendencies to avoid conflicting views and encountering similar

ones, while liberals were more accepting. The results may also suggest that when the levels of homophily increases the more amplified the polarization will become.

A solution to the problem of political polarization might not be entirely clear. One solution might be to expose the different political groups to other political views than their own, forcing them to see things from a different perspective. Another solution might have the social media algorithms expose us new information we have not encountered before, effectively eliminating the problem of filter bubbles.

To conclude homophily in social networks has some influence on who we talk to and how we take to us political viewpoints from others. It seems that the more extreme people become, the more homophily will play a greater role in how they see opinions from others. This can then result in people only following, talking to or befriending likeminded people. The algorithms on social media also contribute to what you see and who you talk to. Factors like these can make people fall into clusters with other people with the same political views as themselves, isolating them from opposing views, cause even more polarization and end up creating political echo chambers.

References

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Easley. D, Kleinberg. J. (2010). *Network, Crowds and Markets*.

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