

A summary (12 lines, 367 words)

adapted from the chapter

Polarization in Twitter, a Social Media Platform

of thesis

Collective Behaviour in Digital Societies

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Polarization in social media: Joint roles of Homophily in communication and Credibility of fake information

Producer-consumer business models is at the heart of several social networking sites. Activities on such sites range from meeting friends, exchanging messages, propagating messages, advertisements, and others. Lack of regulations on information posting and limitations of computer-assisted information checks therefore provide opportunities for people's beliefs to be polarized due to the spread of fake information in such social networks.

Homophily in communication creates groups of people or agents with bounded beliefs about the reality, and hence can polarize a society. Such homophily in digital media has been termed as echo chambers which intuitively promotes the notion that people hear nothing more than what they already believe.

Using evidence from 11 years of Twitter conversations on the climate change topic, an empirical analysis is conducted on the effect of homophily in communication patterns on the polarization of beliefs about the reality of climate change. The analysis reveals a counter-intuitive result that increasing levels of homophily in communication predicts decreasing levels of polarization in beliefs in the long run.

To understand better the mechanism of the effect of homophily on polarization, a model is developed that shows how polarization can emerge due to the joint effects of precision of misinformation propagating in a social network and homophily in communication among agents in the social network with differing beliefs.

Credibility of fake news, modelled as precision of misinformation, circulating in the social network can lead to acceptance of the fake news (depending on agents' susceptibility to it), thereby changing beliefs and creating polarization. The model shows that fake news can not polarize the society unless it has a minimal level of credibility, irrespective of the level of homophily in communication patterns. This throws a light on perhaps the most intuitive but usually the forgotten factor of information – credibility.

While the results show that the climate change sceptic exchanges of messages on the social media Twitter do not carry enough credibility to create large scale polarization in society, they also provide useful indications to directly or indirectly quantify the emergence of credibility of information in digital platforms, and also to shift attention of technology from detecting fake stories to detecting fake stories which the society might find them to be credible.