

Sociotechnical Synthesis

The overall problem that connects with my STS and technical research is bot and compromised accounts affecting discourse by exacerbating political polarization on social media, which can affect the way we treat each other even beyond social media. In my STS research I studied how the design of social media affects political polarization on social media sites, and for my technical report I looked at different methods of integrating cybersecurity development into existing development practices. With polarization on social media being such a major issue, having accounts that are controlled by bots can further exacerbate existing polarization. More secure development practices could help prevent legitimate accounts from being compromised and therefore limit the effect bots have on the already polarized discourse on social media.

My technical paper analyzes two different methods of implementing cybersecurity development into existing frameworks. The first paper, by Salin & Lundregan (2022), focuses on a method called *Risk Refinement*. This method is focused on adapting agile practices to Cybersecurity development, integrating extra steps into weekly sprint ceremonies to address cybersecurity concerns and make sure any issues get escalated to the right people. The other paper, by Lenhart et al. (2020) focuses on plan-driven development and creating proper documentation for an initial plan. It calls for the creation of new roles, including the Security Architect, Security Manager, Security Engineer, and Data Protection Officer. The roles associated with this don't necessarily have to be new positions, except for the Security Manager. In my investigation, I found merits to both frameworks and would suggest finding a way to harmonize both frameworks to both fit the actual development in an agile framework while maintaining an overarching plan and documentation for cybersecurity challenges that require longer-term planning.

My STS paper uses infrastructure theory to analyze how the design of three social media sites (Twitter/X, Reddit, and Truth Social) impacts political polarization. I take a case study approach, starting with Twitter, then looking at Reddit, then Truth Social. The main problem I identified on Twitter was how the algorithmic feed and following only people one agrees with continuously reinforces one's own opinions. While the system of retweeting and quote tweeting may allow users to see the opinions of others it is already passed through a filter of someone whose opinion they already agree with, which prevents the echo chamber from really being broken. The main problem contributing to polarization I found on Reddit was the subreddit structure that boxes users into certain communities that reinforce their beliefs, the downvote system that deprioritizes comments that go against the grain, as well as the self-moderated aspect of these communities that allow volunteer moderators to silence opposing beliefs on their subreddits. Truth Social in function was very similar to Twitter/X but created much more of its own echo chamber due to the nature of the creation of the site being centered around Donald Trump's initial banning from Twitter. Almost everything on the site is dedicated to right-wing politics, and while there are accounts that disagree and places to post non-politics related things, no matter what you do your feed will be filled with right-wing politics. While it is not necessarily anything in the design itself that creates polarization, Truth Social is a case where the platform's original intent, marketing, and purpose contributes to wider online polarization (even if the site itself is homogenous). Overall, while I was not able to find a specific solution, I found that Social Media companies can try to prevent exacerbating polarization by paying attention to how they connect their users to each other and what content they decide to show them.

Both my Technical and STS papers come together to try to forge a path towards reducing polarization on social media. While they don't come close to providing a definitive solution to

social media polarization, they highlight important steps companies can take to make sure their sites are developed in a secure way so they don't fall victim to bots and hacked accounts that can spread narratives that make polarization worse, as well as ways some current designs of social media can contribute to polarization so that these designs can be reasonably avoided.

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