The Role of Social Media Algorithms in Shaping Political Discourse Democracy in the Age of Algorithms

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Mujtaba Khan

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On my honor as a University Student, I have neither given nor received unauthorized aid on this assignment as defined by the Honor Guidelines for Thesis-Related Assignments

Advisor

Bryn E. Seabrook, Department of Engineering and Society

STS Research Paper

Introduction

Social media plays a crucial role in shaping our political conversations, influencing not just what we talk about but how we think about key issues. Behind this influence lies the power of algorithms. Our individual and unique algorithms determine what news and opinions we see (Brady et al., 2017). My paper aims to explore the relationship between algorithms and political discourse. By examining the interplay between technology and society from Science, Technology, and Society (STS) studies, particularly focusing on how technology is embedded within our social practices (Supovitz et al., n.d.), I seek to understand the broader impact on democracy. The analysis will draw upon theories such as the social construction of technology and actor-network theory (The Politics Watcher, n.d.), examine the ways in which digital platforms influence and shape political engagement and discourse.

Methods

My study uses a mix of methods to explore how social media algorithms influence political conversations. Mainly, I use tools provided by social media companies to gather a lot of data while respecting user privacy and follow platform rules. This approach helps me study how people interact with content, the trends within their interactions, and how political information is seen by different groups of people.

In addition to API data, web scraping techniques are employed where permissible focusing on public forums and social media discussions to capture a broader spectrum of political discourse influenced by algorithms. These digital ethnography methods allow us to collect detailed insights into the social dynamics within the digital political landscape.

I will analyze the data we collect with some smart tools called machine learning and natural language processing (NLP). These tools help figure out what kind of stories are being told, how people feel about them, and if there are any biases in how social media decides what we see or don't see. Then, we'll use what we learn to make a model that shows how these 6 algorithms decide what content gets shown more and how it affects the way people interact with political information online. From this, we can get a closer look at how social media might be influencing political discussions.

This multifaceted methodological framework is designed to provide a comprehensive understanding of social media algorithms role in shaping political discourse. It combines quantitative data analysis with qualitative assessments to uncover the algorithms' underlying mechanisms and their sociopolitical implications. Through this approach, we seek to contribute valuable insights into the ongoing debate surrounding digital democracy and algorithmic transparency.

Research Question

To answer the question, "How do social media algorithms affect political discussions, and what does this mean for democracy?", this study uses a wide-ranging approach. It combines different types of research, both looking at the numbers and understanding the context, and uses a variety of sources to get a complete picture of how algorithms influence what we talk about politically on social media. This approach mainly involves a detailed look at social media data, such as how users interact, what's trending, and how political topics are seen on different platforms (Bakshy, Messing, & Adamic, 2015). It is also important to look at political events closely to see how algorithms affect what is shown and talked about, reflecting on the broader

implications for democracy as outlined by Allcott and Gentzkow (2017). Looking into a lot of research and studies to back up our data. This helps us understand how algorithms might be biased, create echo chambers, or lead to more division in politics on social media. As well as analyzing the content to find out what themes or biases come up and use tools to figure out the mood and division in online political talks. Plus, this also allows us to explore how online political groups are formed and how information spreads showing how algorithms play a part in these processes. Ethical considerations, particularly regarding privacy and data protection guide the research process. The analysis is confined to publicly available data, ensuring anonymity and confidentiality to protect individual privacy. This approach helps us understand how social media algorithms pick and share political content, and also look into what this means for democracy and public discussions (Allcott & Gentzkow, 2017; Bakshy, Messing, & Adamic, 2015). By using these methods together, we can aim to give a detailed answer to how algorithms affect political conversations today, showing how important it is to think about the mix of technology, society, and democracy.

Supportive Background Information

Digital communication's landscape has significantly evolved. With social media being as popular as it is now across all generations, algorithms find their way shaping political discourse. These algorithms are complex, designed to keep users engaged by personalizing the content they encounter based on previous interactions, interests, and likes. For example if you enjoy watching the NBA, you will see a lot of sports related content compared to someone who enjoys watching videos on cooking recipes. This personalization, however, hides the algorithms' workings, leading to concerns such as the creation of echo chambers, where users are mainly exposed to

views that match their own, potentially distorting public opinion and political discussions. (Bakshy, E., Messing, S., & Adamic, L. A., 2015; Robertson, R. E., et al., 2018).

Social media deeply affects political division. It not only sorts content but also finds a way to fuel heated debates or topics, spreading false information, and can also create spaces where only similar opinions are heard. This impact varies by region, influenced by different legislative approaches to free speech and data protection, notably between the US and the EU, thus affecting the platforms' operation and political discourse's nature (Bail, C., 2022; Lewandowsky, S., et al., 2020).

The interaction between technology and society is dynamic with changes in societal norms and behaviors influencing algorithm modifications which in turn, can affect user perceptions and actions. This shows how technology and society grow together, a key idea in Science and Technology Studies (STS). This study uses Actor-Network Theory (ANT) to look at how users, content, algorithms, and rules interact, showing how algorithms play a big role in political discussions. (Naslund, J. A., Bondre, A., Torous, J., & others. 2020).

To understand how these algorithms affect political discussions, it's important to note both the direct and indirect effects of social media on division. For instance, while older age groups which traditionally engage less with social media, exhibit higher levels of division, the influence of social media on public debate and the overall media landscape suggests an indirect yet significant impact on division across all demographics. This highlights the detailed ways social media algorithms can impact democracy and political involvement, emphasizing the need to look at these effects from different angles including technology and politics. (Boxell, L., et al., n.d.; Brady, W., et al., 2017).

STS Framework

In the world of Science and Technology Studies (STS), we're exploring how social media algorithms influence political conversations. We use Actor-Network Theory (ANT) as a tool for this exploration. ANT, developed by thinkers like Bruno Latour, Michel Callon, and John Law, offers a way to understand the connections and influences between people, technology, and society. This theory is crucial for investigating the role of algorithms in shaping political discussions and engagement (Latour, 2007; Callon, 1986; Law, 1992).

Actor-Network Theory suggests that humans, technology, and nature work together to create networks with significant impacts on society. In the world of social media, this perspective reveals that algorithms act as active agents in political discourse, interacting with user-generated content and societal norms to construct the digital environment we engage with (Latour, 2007). This framework helps us closely look at how algorithms sort political information, possibly highlighting some stories while hiding others, which can affect democracy online. (Callon, 1986).

The contributions of ANT pioneers, such as Bruno Latour, Michel Callon, and John Law have been instrumental in understanding the agency of non-human actors, like algorithms, within these networks. Their work underscores the complexity and power of digital systems in the political domain, sparking debates on the extent of algorithmic influence and the implications for accountability and transparency (Law, 1992). Our research navigates these discussions, using ANT to probe how algorithms modify political behavior and discourse, and to consider the diverse perspectives within the ANT community.

The application of ANT to our study of social media algorithms and political discourse is pivotal for several reasons. It not only provides a thorough framework for analyzing the complex relationships among technology, users, and society but also highlights the need to study the 5 socio-technical networks that support algorithmic logic and its effects. Through this lens, we can more effectively evaluate the implications for democracy and political engagement across varied regulatory landscapes, such as those in the US and EU.

In summary, ANT provides a key foundation for our study of social media algorithms in the STS framework. By using ANT, we aim to reveal the complex networks that control digital interactions and their impact on political discussion. This approach enhances our understanding of the technological and social dynamics at play and contributes to wider discussions on algorithms' role in shaping democratic processes (Latour, 2007; Callon, 1986; Law, 1992).

Results and Discussions

In our journey to understand how social media algorithms affect political conversations, we are able uncovered some significant insights, echoing concerns raised by Pariser (2011) about the creation of 'filter bubbles.' At the heart of our findings is the realization that these algorithms play a major role in shaping our views on politics. They do this by pushing content that is more likely to get reactions from us, but this can often lead to promoting more extreme or biased opinions. This process tends to deepen divisions between one another and creates spaces known as "echo chambers," where people are mainly exposed to views that reinforce their own beliefs. An analysis which included looking at social media data and examining how various political events are presented online, showed a clear pattern that algorithms tend to limit the diversity of opinions we encounter. This is not just true for politics but anything we view. This is concerning

for democratic societies because it challenges the foundation of being well-informed and open to differing viewpoints which is crucial for healthy democratic engagement. These algorithms don't just decide what we see but they also influence political discussions overall tone and nature.

Often, the posts that get seen the most are the ones that cause arguments and disagreements, not the ones that help us talk things out nicely. This makes us wonder about how social media sites fit into voting and talking about politics as well as if they're making people argue more. As we talk more about this, we will get into the details of what was found. We can take a look at how social media decides what we see online and what that means for our talks about important issues. There are a few understandings to find a few key things which are how these systems work, how they affect our discussions on important topics, and what all this could mean for how we talk about these things online in the future.

Echo Chambers and Algorithmic Bias

Evidence and Analysis: Research shows that social media algorithms often lead to echo chambers, a phenomenon that Sunstein (2018) deeply explores. This means people mostly see posts and news that they like or with what they already believe. For example, if you take a look at how people interact on social media during big political events, you can find that those with strong political opinions usually saw and interacted with posts that matched their views. They hardly ever came across posts with different opinions. After searching and deep diving into the numbers, like how much people share and comment on these posts, confirmed this. People were more active with posts that lined up with their political beliefs.

STS Framework Application: Using the Actor-Network Theory, or ANT, we look at social media sites and their algorithms as if they're participants, not just tools, in our political

conversations. These algorithms pick posts that people will probably like and interact with, which then leads people to keep seeing similar kinds of posts. This creates echo chambers, where everyone just hears opinions like their own. This shows us how both people and the technology they use work together to shape what political discussions look like on social media, pointing out the complex relationship between technology and society.

Polarization and Content Virality

Evidence and Analysis: A deeper look into what makes certain posts go viral, especially those about politics, aligns with the findings of Vosoughi, Roy, and Aral (2018), who observed that social media algorithms often favor emotionally charged content that isn't necessarily true. Something interesting which is that algorithms on social media sites five often prefer to show us posts that make us feel strong emotions, even if those posts aren't exactly true. This becomes clear around election time when posts that are more about shocking people or spreading rumors get seen a lot more than posts that are careful and fact-based. This way of choosing posts doesn't just make people more divided; it also gets in the way of having real, informed discussions about politics. By focusing on posts that stir up emotions rather than inform, social media can change the whole vibe of political talk, making it more about reacting quickly than thinking deeply.

STS Framework Application: Looking at this situation through the lens of Science, Technology, and Society (STS), a story is revealed where technology and society are deeply connected. It's like they're building each other. The way social media algorithms are made and work can deepen the divides we see in society. These algorithms that help decide what political stuff we see online, show us just how tangled up technology and our actions are, just as the Actor-Network Theory (ANT) suggests.

When diving into how this interaction happens, we realize that algorithms aren't just sitting on the sidelines. Instead, they're right in the middle of the action, influencing what we think is normal and how divided we are on political issues. This isn't by accident; it's built into how these algorithms are designed. They're made to grab our attention and keep us online, so they often push content that gets a big reaction, even if it's not the most helpful for understanding complex issues.

This means we're not just using social media; we're also being shaped by it. Our likes, shares, and comments tell these algorithms what to show us next, creating a feedback loop that can make political divisions seem even wider. It's a cycle where our behavior influences technology, and that technology then influences us back. This back-and-forth shows just how powerful and influential these algorithms can be in setting the tone for political discussions and how we see the world around us.

Once everything is understood, we start to see that social media isn't just for chatting with friends or checking out the news. It's actually playing a big part in shaping what we think and how we interact with each other. Realizing this is super important if we want to deal with the problem of people getting more divided over politics and help make a society where we're better informed and more together.

Algorithmic Transparency and Democratic Engagement

Evidence and Analysis: In the exploration of how transparent social media algorithms are, we ran into a significant hurdle: understanding and reducing their influence on political conversations. This opacity, as Pasquale (2015) emphasizes in The Black Box Society is tricky because it’s not clear how these algorithms sort and highlight political content. Delving into

public policy documents and the information platforms share about their algorithms, we discovered there's a real lack of straightforward explanations. This lack of clarity, or secrecy, makes it challenging to foster a digital environment where a wide variety of views and democratic discussions can thrive freely.

This issue of secrecy acts as a blindfold for us, the users, keeping us in the dark about why we see certain political posts over others. It is almost like navigating a maze without a map, unsure of why the paths are laid out as they are. This lack of clarity not only complicates our exposure to diverse perspectives but also shakes our trust in the platforms as fair mediators of information. Essentially, we're at a disadvantage, participating in a system whose rules and processes remain hidden from view.

The difficulty doesn't stop with just understanding; it extends to solving the problem. Without clear insights into the workings of these algorithms, ensuring that our digital spaces reflect the diversity and vibrancy of democratic dialogue becomes a daunting task. Imagine trying to ensure fairness in a game without knowing how scores are calculated or what moves are allowed. Similarly creating an inclusive online public square is hindered by not knowing how and why certain voices are amplified or muted.

The investigation highlights a critical need for more transparency in how social media platforms operate. If we're to use these platforms as arenas for healthy political discourse, the curtain must be pulled back revealing how decisions about content selection and promotion are made. Shedding light on these processes is the first step toward addressing the biases and barriers present, ensuring the digital realm can serve as a true extension of our democratic aspirations, where diverse voices are heard and valued equally.

STS Framework Application: When we incorporate and use the Science, Technology, and Society (STS) way of looking at things, we see that asking for clear information about how social media 8 algorithms work is really about asking these platforms to be more responsible and open. This fits perfectly with what STS believes: that managing technology, like social media, should be done in a way that everyone can have a say in it. This idea pushes for making algorithms in a way that's clear to everyone and listens to what people say, making sure they're all about being fair, open, and democratic.

This approach means that when new technology is being developed, especially the kind that decides what we see online, it should include voices from all corners of society. About making sure that as these platforms evolve, they do so in a way that everyone can understand and trust. Imagine where the tools we use every day online are built not just by a few people in a tech company but with input from many different types of users, reflecting a wide range of needs and concerns.

By mixing together Science, Technology, and Society (STS) ideas into how we make tech, we're pushing for tech that's not just smart, but also fair and open to everyone. We dream of a future where the people who make technology not only ask if they can make something but also if they should make it, and how it can work well for everyone. Moving towards this kind of thinking, where technology is more inclusive, clear, and fair, can help close the gap between the online world and what different people need and value. This way, as our internet world grows, it does so in a way that's good and easy for everyone to get.

Misinformation and the Role of Algorithms

Research looked into how false information spreads on social media, echoing concerns raised by Lazer et al. (2018). It turns out that the algorithms behind these platforms 9 often push stories that aren't true but are likely to get a lot of attention. This problem is especially big during important events when incorrect information can quickly get around, grabbing more focus than the truth. Spreading false information like this can make people confused and can be harmful by promoting wrong facts. It's similar to a game of telephone where the message gets more distorted each time it's passed on, except these are false news stories reaching thousands or millions.

It is important to find ways to help these algorithms better identify and stop the spread of misinformation. Maybe they can get better at checking facts or understanding when a story is just trying to cause trouble. It's a big challenge, but tackling it could lead to healthier and more truthful conversations online. Understanding how misinformation spreads through algorithms is crucial. We should aim for a social media environment that encourages accurate and meaningful discussions, helping us all stay informed and connected positively.

As we near the conclusion of this exploration into how social media algorithms influence political discourse, it's important to acknowledge the limitations of our study. First and foremost, the opacity of these algorithms themselves poses a significant challenge, as direct access to the inner workings of these complex systems remains out of reach. This means our conclusions are based on observable outcomes and patterns rather than an insider view of the algorithms' decision-making processes. Furthermore, the rapidly evolving nature of technology and social media platforms means that our findings may need to be updated as new developments occur.

Looking forward, there's a rich field of inquiry open for both myself and other researchers interested in the intersection of technology, society, and democracy. One critical area

10 for further research is developing methodologies that can pierce through the veil of algorithmic secrecy, perhaps through closer collaborations with social media companies or innovative uses of data science techniques. There's also a pressing need to expand the scope of research to include a broader diversity of platforms and geopolitical contexts, as the influence of algorithms is not uniform across different cultures and political systems.

Looking ahead, it's a good idea for more research to bring in ideas from different areas like psychology, to really get why and how social media's sorting affects us, and political science, to see what this means for how societies are run and decisions are made. By mixing insights from these and other fields, we can get a fuller picture of what social media algorithms do to us and our world.

It is important to keep digging into how these algorithms work but also expand our view to see all the different ways they touch our lives, shape our communities, and affect our choices. By teaming up across different areas of study, we have a better chance of making the online world more open, fair, and welcoming for everyone.

Conclusion

Study found that social media algorithms really do change how we talk about politics, making us more likely to disagree and see things differently. Gillespie (2014) talks about how important it is for us to know more about how these algorithms work because they have a big role in our conversations and democracy. This means we all need to think more about how we use social media.

After looking at what was found, it's clear to be careful with social media. Zuboff (2019) also points out that we need to understand these algorithms better so we can have more control

over how we're influenced online. By learning how these things work, we can make the internet a place where lots of different opinions can be shared making our chats online richer and more varied.

So, it's really important for everyone, from the people who make these platforms to those of us who use them to work together. This way, we are able to make sure that the internet is a place for sharing and nicely talking about ideas. Keeping in mind what Gillespie (2014) and Zuboff (2019) have said, let's try to be more aware of how social media affects us and our democracy.

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