

A Study on Disinformation, Public Sentiment, and the Significance of Critical Thinking

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Abstract: The vulnerability of the public to the (mis-) information is a matter of concern. We aim to provide a perspective on how people decode information, and what all skill sets are required to decode information accurately as information decoding directly affects public opinion and the ways people practice critical thinking to filter the information they receive. The article describes Indian and Western perspectives about critical thinking and analyzes the psychological factors concerning misinformation and public opinion. The article further examines how external determinants such as radicalization, the filter bubble, and advertisements influence one's pre-existing opinions and have the potential to block the analytical and critical thinking of people. It was found that misinformation spreads through the creation of filter bubbles and personalized advertisements, which exploit the flaws of human cognition. Such spread of misinformation leads to radicalization, where an individual develops an extreme view biased towards just one perspective, thus compromising critical thinking skills. The article concludes that such issues can be circumvented through the individual seeking the opposing viewpoints and developing awareness about how algorithms like online cookies work. Future studies should focus on how news outlets and social media platforms can implement counter measures to crack down on content spreading (mis-)information.

Keywords: Algorithm, Communication, Critical thinking, Misinformation, Network, Public Opinion, social media

I. INTRODUCTION

Misinformation is the information that has been manipulated by any one person or unit in a large system of communication. It has been known to spread like a disease and cause an infodemic, which consists of even the smallest rumor or piece of false information leading to a state of disorientation within a group of people. Importance is not to be placed on the source or origin of this misleading information, but the speed with which the situation escalates. The rapid nature of the spread of misinformation is something that should not be underestimated because it can completely over turn how information is perceived by people and this can have threatening consequences. To illustrate with areal-life example of such consequences, we see the incident of the shooting which took place at a pizza shop in Washington D.C. in broad daylight. This was led on by a string of misleading tweets which claimed that the pizza shop was dabbling in inappropriate affairs involving politician Hillary Clinton. This just goes to show that spreading false information and even believing it has consequences that will affect the way you live, whether they are extreme or moderate.

II. HOW DOES MISINFORMATION TRAVEL?

In this article, we talk about the two networks through which misinformation is most likely to spread. The first, social media, is the most notable cause for the above-mentioned spread. Social media has endless ways to exploit a simple piece of information, through technical means ranging from simple text and video editing to complex photoshop. The rapid dissemination of information in today's world can be attributed to the prominent nature of social media. The second network consists of any form of news, which is not just responsible for the spread of the information but also making sure that people believe whatever they read or hear. This is implemented through senseless debates between politicians or news representatives and showing the same headline repeatedly to a person consuming all this information. This does not have any positive impact; however, it ensures that a specific piece of information is embedded into a person's mind to such an extent that they fully believe in it and endorse it around other people as well, which just continues this cycle of misleading and meaningless information being passed around.

III. PUBLIC OPINIONS, ATTITUDES AND VALUES

The consequences of social media and news as a medium of spreading misinformation led to a large-scale adjustment in public opinion. In this frame of understanding, misinformation is spread with the sole intention

to deceive and manipulate people. Considering the number of people involved for an opinion to be called 'public', this collective opinion is immensely fragile because of the influence a specific group of people has on others. This specific group involves people who are influential in any manner, whether it be socially or politically influential. These are consistent with the two networks of the spread of misinformation talked about earlier. The influential people have such a stronghold over their target crowd that no one questions their reliability or the accuracy of the information they're passing on (Sinha, 2021).

A complete lack of awareness and logic o-analytical thinking can be observed in the general crowds which seem to have blind faith in their leaders or influencers. This is not the only way public opinion gets affected. In a system of communication, certain weak links do not make use of their skills to filter our right and wrong information. These weak links can prove to be a barricade to a morally decent and informationally correct opinion. The people whose attitudes are vulnerable to change are mostly the weak links because they do not have the questioning skills required to stop the spread of misinformation. Attitudes are simply structures that guide people and help people form ideas about other people, objects, and bits of information. It was observed that people with low intelligence are more prone to their attitudes and values being changed easily. Values provide a person with a background and a basis for forming new opinions, but if one's attitude and beliefs are weak, the values are bound to be brought down which leads to low expectations to be able to know what information is logistically correct or incorrect. Such societal expectations are extremely dependent on the cultural context within which a specific society is living and are different for each culture because the concept of critical thinking that is present in each culture has originated from their respective philosophical school of thought.

IV. CRITICAL THINKING: INDIAN AND WESTERN PERSPECTIVES

The scriptures and the philosophers that introduced the core idea of critical thinking enhanced the system of united as well as individualistic logical thinking in a society ("Indian models of critical thinking and media literacy – issues & challenges," 2019). All societies, regardless of the culture they follow, are better of fifth have a pre-existing structure of concepts like critical thinking. There should be hope for positive modifications to pre-existing models, and not deviance from them. The origin of critical thinking can be divided into two schools of thought, Indian and western.

Firstly, talking about the Indian origin of critical thinking, the main ideas were formulated after taking inspiration from the four Vedas as the word Veda itself means knowledge (Doniger, 2021). More specifically, the Rigveda narrowed down and refined the concept even more because it was one of the first scriptures to start talking about the world and its culture from a scientific and logical perspective. One of the characteristics of this perspective was promoting questioning of everything and looking at everything with a critical filter. Other than this, another major contributor was the Nyaya school of thought which emphasized inference, logic, and reasoning. Secondly, the western school of thought for critical thinking placed importance on achieving an end goal through critical thinking which is intellectual in nature. This end goal was centered around reflective thinking (Hitchcock, 2018). This model was mainly formulated by John Dewey, an American philosopher, and psychologist. John Dewey also valued pragmatism above anything else, which essentially meant not believing anything till you've reasonably and practically thought about it.

A combination of values from the Veda and the Nyaya school and contributions of John Dewey are what make up the whole of critical thinking as a required concept in everyone, no

matter what their age or cultural background is. Society no longer values these genuine concepts because, within one system of communication, people consider only their opinions to be truthful which makes every attitude and belief in their life unnecessarily political and extremist.

V. FILTER BUBBLES, RADICALIZATION AND MISINFORMATION

Recommendation and search engines employ the use of cookies which are small pieces of text that a websites ends to the browser assisting the site in remembering information about the visit, making it easier to return to the site. They are also used to predict what information would be relevant to the user.

Google search results for identical search terms vary significantly based on the person, with even people sharing the same perspective on a topic getting different results based on cookies that track an individual's browsing history. Filter bubbles form when algorithms like cookies curate content specific to the user generating a filter bubble where the individual is exposed to new stories and media posts biased to their existing beliefs, barring content from users with opposing viewpoints. News stories containing false or misleading information called 'fake news stories' can be especially susceptible to the algorithm. Fake news

stories typically contain falsified, exaggerated claims to benefit from the algorithm's programming using specific keywords or tags that are favored.

As a result, the content is recommended more often, viewed by more people, shared, liked, commented on, spreading it to more people. Since more traffic is being brought to the article, the search engines recommend similar content with misinformation as they contain the same keywords. Political discourse is particularly saturated with fake news stories that misrepresent events and opinions to push a specific rhetoric (Jett, 2018). Provocative content such as fringe or extreme viewpoints generates more likes and comments, getting an algorithmic boost.

These algorithms can be easily manipulated with fake views and automated comments made by bot accounts. A person's search results and news feeds on social media platforms can quickly be filled with recommendations of these fake news articles, creating an echo chamber. In such an environment all the person encounters are information and opinions that reflect and reinforce their perspective with search engines and algorithms acting as a filter, dictating what the person views. These articles can radicalize a person's viewpoint making them resistant to changing their perspective or opinion. It can unintentionally prey on vulnerability, recommending content that can have grave, harmful consequences on real-life people.

VI. PERSONALIZED ADVERTISEMENTS AND MISINFORMATION

Personalized advertising is a strong technique that boosts marketers' return on investment (ROI) while improving advertising relevance for users.

They are a large contributing factor for the spread of misinformation, advertising products that can be harmful to the user, further creating an echo chamber. The filter bubbles contribute towards the spread of fake news stories in two ways – creating an echo chamber in which members "like" posts from other users that reinforce their views or opinions, and they act as a dissemination tool, in which members share posts made in the group with their own larger social networks.

The influence of personalized advertising can be understood by looking at movements originating from Facebook such as the Anti-Vaxxers Movements. Facebook groups are dedicated to issues such as the anti-vaccination movement spreading misinformation using the platform, to share, comment, and post. The movement uses a study that has since been redacted, claiming the MMR vaccine to be ineffective and a cause of autism in children. Most of the members of such Facebook groups were mothers who believed that natural healthcare like homeopathy, acquired immunity by essential oils and other remedies would be much more beneficial to build a good immune system for their children. These mothers would advertise more and more herbal, natural remedies alongside posts with anti-vaccine content, creating an echo chamber. This has a damaging effect on the child's healthcare and well-being as the parents are not considering the drawbacks or strengths of their child getting a vaccine shot. While Facebook has taken measures to crack down on this spread of misinformation by improving and introducing new elements to the algorithm, however many of the Facebook groups manage to by pass the counter measures by creating new keywords that are attracted to the algorithm and promoted by it.

VII. THE PSYCHOLOGY OF MISINFORMATION

Algorithms in media capitalize on an individual's cognition. The brain is adapted to perform massive amounts of mental processes, taking in, converting, storing, retrieving, and putting data to use (Shane, 2020). This allows an individual to intelligently engage with the environment. Understanding the psychology of misinformation involves the mental shortcuts, confusions, and illusions that lead us to believe things that are untrue to prevent their harmful effects. It is not only important for reporters, fact-checkers, academics, technologists, and influencers dealing with misinformation to understand these distinctions, even the readers of these articles should be able to recognize and circumvent the potentially harmful effects of these cognitive processes. Cognitive bias plays a large role in influencing what information catches a person's attention, what is remembered about past experiences, and which sources are trusted for research. Humans have evolved to use as little mental effort as possible, preferring to use simpler ways of solving problems than solutions requiring more thought and effort. Therefore, if some article mentions sources that look credible people are less likely to fact-check the information due to the phenomenon of cognitive miserliness.

Cognitive dissonance, an important term related to cognitive bias, is a phenomenon pervasive in misinformation. It describes a negative experience that follows an encounter with information that contradicts person's beliefs causing

them to reject relevant information to alleviate the dissonance. This can be exacerbated by confirmation bias which is the tendency to accept information that confirms beliefs and rejects information that contradicts beliefs.

VIII. CONCLUSION AND MEASURES TO MINIMIZE THE IMPACT OF MISINFORMATION

An emphasis is placed on certain nuances of Misinformation by talking about the source of the information and even more importantly, the spread of that information. Generally, there is an attached risk that comes whenever a piece of information travels from one person to another. The implications of the two networks of communication mentioned above should be clearly identified and regulated by people and media outlets especially in times of crisis such as when the pandemic started. This needs to be done because it's very easy for people say one word wrong and have the whole cycle of information crumble but it's more difficult to handle the consequences later. The personality of an individual also plays an important role in this whole arrangement. The more easily persuaded they are, the more they're likely to receive and spread false information. This might be because these people are "weak links" of the communicative system and can be easily influenced. The foundation for this is the working of personal attitudes, values, and opinions and how one has been dealing with them all their life. Relating to these easily persuaded individuals, the Indian and Western origins of critical thinking also appeal to the nature of the mind and how malleable it is. To reiterate, these origins mainly focused on how it's required for people to engage in reflective and reflexive thinking along with enhancing their cognitive processes such as ability to infer and deduce and to think in an objective, logical and analytical manner.

More research into filter bubbles and the algorithms which safe guard the measures that the user can avoid falling prey to misinformation stories, implementing critical thinking skills to minimize exposure to these websites. Additionally, they might become more conscious as consumers of personalized advertisements targeted to them because of the misinformation news that they view due to the filter bubble created. Filter bubbles take advantage of human cognitive limitations, capitalizing off them using algorithms. To overcome these limitations, users must use extensions which remove elements such as cookies and subscribe to news sources which have an opposing view compared to the user. Moreover, it is the user's "ethical" responsibility to make use of their critical thinking skills to recognize misinformation and stop its spread. Future research must focus on the nature of these algorithms, how effective the proposed strategies are for overcoming filter bubbles, and how users can responsibly engage with content that perpetuates the spread of misinformation.

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Authors SCJ, KG, and SM contributed equally to all the components of the article including conceptualization, design, development, and writing.

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