
DECONSTRUCTING FILTER BUBBLE HYPOTHESIS: HOW ALGORITHM MEDIA FUNCTIONS TO CONSTRICT THE OPINION-MAKING

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Abstract

Filter Bubble Hypothesis is a situation in which algorithm based media functions to provide the information and content on the Internet that reiterates or replicates an individuals' belief system, choices and preferences. It reconfirms the individual's pre-existing knowledge and belief leaving lesser scope for newer ideas to penetrate. As the name suggests it creates a 'bubble' around individual choices and way of thinking. It is aimed at personalizing the digital experience of the Internet user, however, it constrains the diversity of opinions and basket of perspectives available on the internet thus leading to a flawed opinion-making process and skewed choices.

Such functioning of the Algorithm based media may harm the political opinion formation where an individual is not encountering critical views, contrasting opinions, and newer perspectives and which may lead to a repetition of electoral choices. The paper attempts to understand the process of the Filter Bubble Hypothesis and Echo chambers in the context of political communication. Echo Chambers is a metaphorical situation where an individuals' own opinion gets enlarged when applied in a closed system.

Keywords: Filter Bubble Hypothesis, Social Media, Opinion Formation process

Deciphering Social Algorithms

Algorithms are a set of rules and calculations that are used to resolve a problem and deliver results. They are used by Social Media platforms like Facebook, Twitter, Instagram to provide customised content to the user based on their past search, interaction with different posts and contextual information location among other factors. Social Algorithms can be defined as the programmes that evaluate the preferences, choices, and needs of a user and then tries to provide a customised and personalised experience to an individual user in terms of the content displayed him or her. Thus, these social algorithms are drawn out of computational choices and try to anticipate what a user of the platform will like to see or being displayed and would like to click on it. Many times, if we are searching for a particular product on Amazon such as a smart phone, we are most likely to see smartphone advertisements on our Facebook Page or Youtube. It is a result of our past search on some other website on the Internet.

Thus, it can be inferred that all the content that we encounter on the social media platforms is not by accident but rather based upon a set of technical elements, usage of intricate logic and analytics. Thus, all the permutations and combinations based on different formulas deliver content to the users on social media platforms. Social Algorithms are complex numbers that are generally beyond the capacity of a single individual to comprehend it. It is a combination of social algorithms and behavior

yield patterns. Teams of software engineers, data scientists, and content strategists are involved in understanding and making sense of the Social Algorithms. Some of the common factors on which Algorithms are based on social media platforms are activity, interests, and interactions of the users. To cite an example, if you follow a particular leader on Twitter than the social networking site will automatically suggest you to follow other political leaders of the same party or atleast who ascribe to the same ideology. It leaves lesser chances for the audience to explore other parties and ideologies that exist with the political landscape. In other words, limiting your choices by providing easier ways to reconfirm your own preference in the first instance.

Different Social Media platforms have different criteria based upon which they curate the content and the hierarchy of the post observed these platforms. Facebook's policy in January 2018 regarding the algorithms was to displays those posts first that would lead users to engage in meaningful conversations between people. Newsfeed with the highest reactions will be shared or posted higher on Facebook. It also takes into consideration the history of the account owners' interaction and engagement with posts done but their friends as well as brands or organisations. Thus, these algorithms become increasingly important for marketing professionals as well as other stakeholders involved at targetting audiences for political messaging. Facebook defines meaningful interactions in terms of any content (article/post/video) which is likely to involve a lot of comments or reactions from the people or prompting to begin a discussion. In simple words, it means that a comment or post that is likely to get more comments or start a debate or is controversial in nature and has the capacity to generate more comments or opinions will be seen first on your Facebook wall such as criticism of the government policy or support for a political party based on your choice of the party.

Meaningful interactions cover interactive posts that covers anyone seeking advice or recommendations or help in their posts are displayed prominently as they higher potential of discussion or comments or reactions. Facebook Live is considered as a high engagement format by the companies to engage the audiences or receiving more reactions than normal video sharing. Instagram functions through relevancy algorithms which means giving higher priority to the posts based on the relationship or interaction with the users. It also takes into account recency algorithms that are based on the timeliness of the posts or feeds. Twitter also applies its algorithms based on the interaction history with the accounts that the user follows. Twitter feeds or timeline is based on reverse chronological order thereby meaning that the latest tweet would appear the first on the twitter feed. Thus, twitter also follows the criteria of relevance over timeliness and even allows users to catch up with the best tweets from the accounts of the people they follow. Twitter has also begun live interactions for better reactions or commentaries or interactions. Twitter's algorithms are a combination of the recommended tweets as well as timely tweets. Social Algorithms is a relatively new phenomenon, however, Google is used to sorting out content for the users earlier as well. However, then it followed the simple deterministic ranking system among websites. But now even Google follows a pattern of personalising results based upon the user's past searches, contextual information location, and physical location as well. (Christine Warner (May 3, 2018) <https://www.skyword.com/contentstandard/this-is-exactly-how-social-media-algorithms-work-today/>)

The larger question that these social algorithms pose is whether such curation of the algorithms that deliver content on social media is healthy in a democratic set-up. Delivering content based on higher interactivity levels or engagement levels and the personal preferences of the users might result in non-accessibility to opposing viewpoints or alternative political ideologies. The social media platforms like Facebook, Twitter and Instagram are increasingly important mediums for political debates, discussions, and full fledged election campaigns.

However, social algorithms might be leading to the amplifying of the own political opinions of the users and their primary and secondary groups only. Since the social algorithms are not based upon democratic ideas like equity and justice they might be deteriorating the quality of debates that take place in a democracy or at best reducing the variety of themes that needs a discussion. The awareness and recognition of the social algorithms remain skewed thus, the user might be completely unaware of how the content is delivered to them and how it could be presenting an incomplete picture of the world to them. It also undermines the credibility of the social media platforms as a deliberative platform in the democracy that provides level playing field to different voices whether the mainstream view or or marginalized voices. Thus, Social Media that was earlier understood as an open and democratic platform without formal gatekeepers for exploring varied ideas might need a relook. However, Social media platforms were increasingly used as platforms for mobilization of people especially for pressing political issues in the last decade. The role of platforms like Facebook in the mobilization of protestors in the Arab Spring at the start of the decade was large and noteworthy. Governments' across the globe recognize the role and importance of Social Networking Sites for expressing the political opinions. Thus, Internet shutdowns before or after a controversial decision are have become a default operating procedure.

Thus, this algorithm-based curation process by the social networking websites has brought forth a concept of 'Filter Bubble Hypothesis' and 'Echo Chambers'. These processes are related to how the algorithm based curation process help to amplify certain opinions of the users that they already believe in or agree with. Thus, further strengthening their beliefs and opinion though it might not be a well-informed opinion after exploring basket of perspectives available in the public domain.

Filter Bubble Hypothesis, Cyber Balkanisation and Echo Chambers

The concept 'Filter Bubble' was given by Eli Pariser in 2010 which he further elaborated in his book titled 'The Filter Bubble: What the Internet is Hiding from You' published in 2011. He describes the concept as a state of intellectual isolation that has resulted from social algorithms or website algorithms that are based upon past searches, frequent clicks, user history of online engagement, preferences, geo-location, affiliations and online behavior patterns. Pariser defined the concept as "that personal ecosystem of information that's been catered by these algorithms." (Pariser, 2011). The concept focuses upon how these algorithms work to give us information that suits our previous online behavior whereas hiding those informational sources that do not match our affiliations, preferences, and choices. Thus, providing an incomplete picture where opposing viewpoints and ideas that might not match with the users' ideology, choices and past Internet usage patterns. He explains that this is a three-step process where the algorithms try to determine the users' like and preferences or how you

are, then they deliver the content and services and in the third step they get the match right thereby meaning that the users' identity shapes his or her media. Though it minimizes the possibility of learning about new ideas, prospects, subjects, and important information.

The author delves upon the idea that how the phenomenon may impact civil discourse in any country and can block views of different groups. The author in the book primarily focussed on Google's personalised search results and Facebook's personalised news stream to rationalise the concept. The functioning of the website algorithms is nontransparent and computational and thus have the potential to harm informed opinion formation in a democratic setup. As filter bubble explains how a user may remain confined his or her own ideological or cultural bubbles as the algorithms deny him or her an opportunity to explore other range of ideas, views, and choices. This might impact the quality of debates and discussions in the democracy where open and rational debates form the cornerstone for free and liberal thinking.

Filter Bubble Hypothesis may limit the accessibility and availability to new information as well thus creating a narrow outlook and perspective. It can polarise the users towards a certain idea or prospect or slogan or personality in the long run. 'Hero Worship' is often seen as a dangerous idea in a democracy. For the same reason, Pariser warns against 'invisible editing of the web' as most users are unaware of the way content is served to them on these mediums and how it may impact their opinions and choices both in short term and long term. However, Filter Bubble is highly beneficial for the marketing and sales professionals as it helps them to target the audiences more efficiently based on the needs and demands of their potential consumers. But it opens the possibilities for propaganda and manipulation and the risks proportionally increase with the proliferation of fake news and misinformation across the globe. The phenomenon can have more impact in the politically charged environment such as widespread protests, elections, debates over important legislation or policies of the government, suppression of certain sections of opposition among others.

The concept of Filter Bubble Hypothesis is also referred by different terms that have a similar meaning such as 'ideological segregation', 'algorithm bias', 'confirmation bias' and 'ideological frames'. A closely related phenomenon to Filter Bubble is that of 'Splinternet' or 'Cyberbalkanisation'.

The term Cyberbalkanisation was first coined by Van Alstyne and Brynjolfsson in their article (1996) to describe segregations and divisions of the virtual space into special interest groups as a result of Information Technology applications. The MIT researchers who coined the term described the threat of Cyberbalkanisation as "Individuals empowered to screen out material that does not conform to their pre-existing preferences may form virtual cliques, insulate themselves from opposing points of view and reinforce their biases. Internet users can seek out interactions with like-minded individuals who have similar values, and thus become less likely to trust important decisions to people whose values differ from their own"

Technopedia defines Cyberbalkanisation as 'the segregation of the Internet into smaller groups with similar interests, to a degree that they show a narrow-minded approach to outsiders or those with contradictory views'. It may be described as a mechanism for reinforcing one's own skewed opinions

due to the user's preference for certain information sources.

Echo Chambers is a metaphorical description of a situation in which beliefs are amplified and reinforced by communication and repetition inside a closed system. Both the Filter Bubble Hypothesis and Echo chambers have to be recognized in debates regarding the political opinion-making, debates, and discussion online. As both, the phenomenon is intrinsically linked to the dynamics of political discourse on the online platforms where citizens interact only to or hear from others of the same ideological proposition. This dynamic is likely to negatively impact democracy and political capacities of the citizens.

The Internet has been viewed as a democratizing platform that has huge potential to elevate the human interactions and bridge the gap between communities that may be geographically, socially and culturally apart. During its inception, the Internet was conceived as a medium where pluralistic voices can co-exist and have deliberations or collaborate. Rise in Internet penetration has closely associated with the idea of 'Global Village'. The foundations of Global village could be found in the advancement of telecommunications, Internet connections worldwide and the rise of networked communication. Global information infrastructure led to the emergence of Internet users that connected irrespective of the geographical boundaries and physical constraints. The Internet helped to transcend the concept of Time, Physical location and national boundaries. However, it now becoming increasingly important to recognize that the Internet can now potentially become a tool for constricting opinion- making, fragmenting society based on their choices, affiliations, and ideologies and even balkanizing them. Thus, the tool which earlier seen as a level playing field for every dimension or thoughts may be restricted due to the computer dictated algorithms based on the profiles of the users. Selective Exposure towards certain already known ideas or opinions on the Internet may lead to reinforcement of one's pre-existing ideas.

The Two mass theories that could be directly linked to this phenomenon are Cognitive Dissonance and Selective Exposure (Festinger, 1957). According to Dissonance theory, self-esteem is threatened by inconsistency. Holding the beliefs that are logically or 'psychologically' inconsistent i.e. dissonant, with another is uncomfortable. Festinger's theory proposes that inconsistency or cognitive dissonance will lead to tension and would lead the individual to restore the status quo or consonance.

Cass Sunstein who has worked on the subject of the Internet and political polarisation and how self-sorting by social media contributes to the process. Sunstein (2007) argued that "[SEP]"The Internet makes it exceedingly easy for people to Read reams of material that support their view...(and) exclude any and all material that argues the other way.... A key consequence of this kind of self-sorting is what we might call enclave extremism. When people end up in enclaves of like-minded people, they usually move towards a more extreme point."

Algorithm Media as the New Gatekeeper

Gatekeeping is the process by which information gets filtered at different levels in an organisation before being published or broadcasted for the larger audiences. It begins at the level of the journalists who are at the scene or site of reporting the event or incident by choosing to talk to certain selected

sources or key stakeholders rather than all available people. Then, even while writing the stories journalists pick and choose certain quotes and pieces of information provided by key stakeholders to be included in the story instead of transcribing the entire conversation with each stakeholder. The 'angle' that a journalist takes upon a story is part of the gatekeeping process. The Gatekeeping process just begins journalists and many other stakeholders are involved in producing the final news such as Sub-Editors, Senior Sub-Editors, Editors, Bureau Chief, Producers, Infographic designers among others. Sub-Editors polish the news stories, bring the important aspects more prominently and sometimes decide the angle or peg of the stories as well. They ensure that the story is written in the format of the Inverted Pyramid style and cross-verify the facts mentioned in the story. This corroboration of the facts and checking their validity helps to provide accurate and precise picture to the audiences and tries to avoid distortion and manipulation. The job of a Sub-Editor is important as he has to judge the veracity of the story filed by the journalists without being at the site or event of reportage and tries to locate loopholes or lacunae if any in the story. This filtration process is important especially in contemporary times as it would help to eliminate fake news or misinformation.

Editors at the top level would decide upon the size of the story, ordering or prominence to be given to the story, whether editorials could be written on the story and even the placement of the story. Newspaper designers may also cut the length of the story according to space allotted, section, page number for print publications. However, the functions of different editors in various organizations may differ from each other but the process more or less remains the same. The audiences view the news bulletins or newspapers but the evolution and processing of each news story remain a long and tedious process.

According to Pamela Shoemaker and Tim Vos, gatekeeping is the "process of culling and crafting countless bits of information into the limited number of messages that reach people every day, and it is the center of the media's role in modern public life. [...] This process determines not only which information is selected, but also what the content and nature of the messages, such as news, will be."^[SEP] Each media organisation has a set of policies based on which they select the stories from a large number of information sources such as own journalists, wire services, press releases by various corporate firms, government departments and other organisations. A news story is selected not just based on newsworthiness but are also judged on the parameters of the taste of the target audiences, organizational policy, financial interests of the organisation and editorial policy among others.

There has been an increased awareness and recognition about the ability of the Algorithm media shaping the social and political decision making of the individual. The term 'Algorithm gatekeepers' has been discussed, interpreted and evolved since its first usage back in 2002. The term means how machines, applications, automated systems, and algorithms function together to determine what news would reach the audiences or attract their attention and which of the news articles would never reach the audiences. Thus, machines are taking over the role of human editors who would otherwise choose the news articles and the hierarchy of news based on news values such as prominence, proximity, conflict, human interest among others. Thus, Algorithm Media has dramatically altered the role of traditional editors, sub-editors and even journalists who were selecting and working upon news stories

based upon their understanding of the civil discourse, democratic values, societal interests, the role of media as a watchdog and public welfare.

The role of traditional gatekeepers was not just confined to selection of the news stories but they also chose the length of the story, its headline size, its placement in the newspaper page or the broadcast bulletin, space provided to the story in the newspaper or the time devoted in a news bulletin and the importance required to be given to the story based on news values. Editors would also decide to amplify certain stories based on their understanding of the importance of the story and it would also have consequences on the number of follow up stories done on the main news story as well as the reporters dedicated by a news organisation to cover a particular story from different dimensions and news angle.

Carlson has referred to gatekeeping functions of the traditional set-up as 'Presentational authority of Journalism' or the ability to generate cultural and social meaning through purposeful ordering, arranging and highlighting of some news items relative to others. With the rise of Online News media, the traditional role of gatekeepers in the news organisations is fast eluding with the digital intermediaries taking over the role. This might impact the 'Agenda Setting' role of the traditional media as envisaged by the Agenda Setting Theory given by Max McCombs and Donald Shaw. The basic argument of the theory is that media has the ability to influence the public agenda by giving more emphasis to certain news stories and covering them more frequently and prominently than others making the audiences believe that it is an important issue to be considered. The theory deals with the presentation of the news reports and the topics taken up by the media and its influence on the human mind. It explains the idea that when a story is taken up prominently by the media organisations and the time or space given to the story concerned the audiences automatically perceive it as an important story. Thus, the theory deals with the priorities set by the media in terms of news stories.

Thus, referring to the Agenda Setting Theory it is often said that Media may or may not influence how the audience thinks about a particular issue/topic concerned but it always influences what the audiences think about. Agenda Setting Theory delves upon the gatekeeping function of the media that controls what the society or the community at large would consider as an important topic/issue.

The idea of 'Priming' in Agenda Setting Theory discusses how media gives more time and space and importance to a particular issue that it seems important to the audiences and they consider it legitimate enough to be the food for thought. This done by selecting the hierarchy of the news items for both print and broadcast media, doing special stories, feature stories, writing editorials and discussing it on prime time shows or debates on news channels. The other important concept discussed in the theory is the idea of 'framing' that means setting the context of the news stories or an important issue. The context would be determined by the 'angle' from which the news stories are done. Traditional gatekeepers provide the context or frame of reference for the news stories which the audiences pick up as the context from which they view the issue. Thus, it is often viewed that media sets the tone or the narrative of how the most important stories are interpreted by the audiences.

But, with the rise of Online Media, there is a certain reduction in the role of traditional news

gatekeepers that included both the editors or the editorial board as well as the state actors in some cases. To an extent, the proliferation of citizen journalism and the ordinary media receivers turning to become 'prosumers' of the news has also impacted this function. The term 'Prosumer' has its roots in marketing and brand building but it is increasingly being used for media users or media audiences. The term effectively means that the media users are not just consuming the news stories done by the professional journalists but are also using, reacting, participating and sometimes creating media content as well. This has been made possible by the easy access to digital platforms to showcase their work, Internet penetration as well as ease of using these platforms to have their say. Nowadays, ordinary users of the media are fast becoming 'secondary gatekeepers'.

However, News feeds are increasingly becoming more and more personalised with the help of Algorithm media. The trend was started by Google News back in 2002 which optimized your daily news dose according to their google search results. With time, other digital platforms such as Facebook, Twitter also began to use algorithms to deliver the news articles based on their preference, search results, affiliations, choices.

Social Media Algorithms and Political Polarisation

Studies related to Political Polarisation and Filter Bubble Hypothesis have been conducted in the USA and have pointed towards their correlation. The studies have shown that there is an increased possibility of political polarisation among the US electorate whose chances further enhance during the election period. Google Trends shows that searches related to political polarisation in the USA were higher in November 2016 than in any other election month since monitoring began in 2004. Pew Research Centre reports that Facebook reaches 67 percent of American adults whereas 40 percent of the adults get their news from the platform.

While analyzing results of American Elections in 2016, Nikki Usher Lasyer, Assistant Professor of Media Studies at George Washington University cited Filter Bubble Hypothesis as an important reason for the victory of President Donald Trump. She had said that 'autonomous decision-making' that governs what we see in our news feeds on the social media platforms leaves little chances for differing viewpoints and opinions. She uses the term 'mass self-communication' for the phenomenon. She emphasized the role of newsroom that tried to provide certain contrasting narratives while agreeing that newsroom has its issues and problems. She also points out that it is difficult to bring out oneself from these filter bubbles. Whereas Cass Sunstein who works upon Group Polarisation often discusses the idea of 'information cocoons' based upon his understanding of social media. He believes that increased information cocoons lead to increase chances of fragmentation, polarization, and extremism. He also conducted Colorado experiments to study group polarization in 2007.

Though, scholars like Bakshy at Facebook research labs argue that individual's own choices are more responsible for their echo chambers rather than Facebook's newsfeed ranking algorithm. Whereas El-Bermawy (2016) believes that the user's past choices and clicks lead to personalisation algorithm, the two mechanisms being mutually exclusive would create deeper echo chambers in the longer run. Though political opinions might not be completely affected by the content delivered by social media

posts. The Two-step flow theory by Paul Lazarsfeld which was later elaborated by Elihu Katz in 1955 deals primarily with the idea that people form their opinions under the influence of opinion leaders who are in turn influenced by the mass media. Thus, it the opinion leaders who interpret and contextualize the news content for the audiences before they formulate an opinion. Thus, it is important to investigate that are there any opinion leaders on the Internet that might affect the understanding and opinion formation process or act as an intermediary. This could be especially true for platforms where people individuals of their preference and belonging to various professions or ideology or affiliations. The professionals whom people follow on Twitter, Facebook and Instagram such as actors, sportspersons, politicians, business leaders, social activists could be considered as opinion leaders in this context considering their mass following. It is often considered that opinion formation is directly not a result of media effect but is channeled through opinion leaders. However, in social media, it might be a difficult task to assess who are opinion leaders and in which context.

Conclusion

Filter Bubble and Echo Chambers are a real-world phenomenon which is a result of automated or computational algorithms based upon personal preferences, history of clicks, likes and share along with interactions and activities online. The reinforcement of one's own choices ideologies and preferences creates an imaginary bubble or risks of confirmation bias. Such information cocoon impacts the opinion formation process and leads to skewed opinion formation. The algorithms reduce the chances of encountering contrasting opinions or alternative ideologies of a user of the social media platform. Though algorithms are made to provide a customised and personalised experience to the user in other ways it reduces his/her chances to access the diversity of perspectives on the online mediums. Understanding these phenomenon leads to further questions of whether these phenomena are helpful for democracy in the long run or whether these algorithms would help to reconfirm our biases and prejudices.

Until now, social media platforms were seen as an important means of mobilization for social and political causes. To an extent, Internet was conceived and perceived as a democratizing medium that allowed space to all kinds of voices, opinions, and perspectives, however, algorithms showcase that it also hides the contradictory views and opposing ideologies. It is often said that democracy is about co-habitation and the free exchange of ideas, expressions, ideologies, and views, thus, the pertinent question remains that whether social media platforms are constricting debates and discussion in a democracy. Some scholars link the phenomenon to 'group polarisation'. The algorithms in that sense have become the new gatekeepers especially when it comes to personalised news feeds based on the relevance analyzed for each particular user. Though, Gatekeeping of the news was the prerogative of professional and trained journalists who have an understanding of the public welfare, democratic values, and civil discourse. Algorithms also encroach upon the role of the mainstream media as they were considered to be setting the 'Agenda' in the public sphere as the fourth pillar.

The most important question that still needs further investigation is that how much the phenomenon impacts opinion formation and impacts voting patterns and behaviors in a democratic set-up. Does the personalized bubbles eliminate the chances of unplanned or unanticipated encounters which leads to

dissonance or some kind of irritation as they may be contrary to an individual user's belief system. The information bubbles may lead to missing out on shared experiences of the citizenry that are important in a democratic set-up. The filter bubble may also have an impact on the quality of debates that take place in a democratic society. Furthermore, it may impact the deliberative nature of social media platforms. The investigation of such questions requires rigorous research as they may have a dramatic effect on the image of social media platforms itself.

In contemporary times, Mainstream media is trying to challenge the proliferation of fake news and misinformation that spreads quickly on social media platforms. It remains to be deciphered that what role do these algorithms play in spreading such manipulated news items. It is common knowledge that political parties are targetting potential voters through social media platforms. Thus, there are chances that social media platforms are used as a polarisation tool by the political parties who have a deep understanding of the way it functions and might be facilitating the better targeting of their support base or voter base. Both the phenomenon points out that the perception of social media as a fair medium in comparison to elite media and powerful lobbies functioning within mainstream media may not be true.

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