

# Burst the Bubble:

## *How to defend freedom of expression from algorithmic personalization*

Anna Zanathy

Eötvös Loránd University – Faculty of Law and Political Science

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**Abstract-** 44% of the general population – or 62% of US adults – get news from social media<sup>1</sup> as it has become the most important forum where we share, consume and discuss news. Social media platforms, however, use some kind of artificial intelligence or algorithm to show people the stories that are most relevant to them.

Social media websites, however, optimize content not (or at least not only) because they wish to provide a better service for their users but because they are financially interested in targeting consumers as precisely as possible on the basis of individualized preferences. On one hand, platforms display personalized advertisement to each and every user in order to increase the number of clicks the ad receives and therefore to charge the advertisers with a higher advertising fee. On the other hand, platforms' algorithms optimize the content in order to generate a higher traffic, so that the platform can sell the place of the advertisement for a higher price at ad auctions.

Content personalization eventually and inevitably force the user into information bubbles. Moreover, since humans (as irrational creatures) are not incited to seek complete information especially data that contradict their beliefs, platforms' personalizing algorithms create echo chambers, parallel but separate universes that coexist without even being aware of the other's presence. Algorithmic personalization, therefore, is a direct threat to the freedom of expression, especially to its aspect to freely seek, receive and impart information and ideas of all kinds, regardless of frontiers, either orally, in writing or in print, in the form of art, or through any other media of one's choice.

On the other hand, content personalization is just a nudge, an aspect of the choice architecture that alters people's behaviour in a predictable way without forbidding any options or significantly changing their economic incentives. The problem of filter bubbles, therefore can be easily fixed by reorganizing the architecture in a way that "nudge the users for diversity" by giving information that both supports and challenges the users' belief systems.

**Index Terms-** filter bubble, echo chamber, nudge theory, freedom of expression

### I. INTRODUCTION

On 8 April 2018 the national news announced that Fidesz–KDNP alliance won the Hungarian parliamentary election with a landslide victory and gained two-thirds majority in the parliament. 5.732.283 valid votes were counted, 50% of which voted for the Fidesz–KDNP alliance. After the announcement, while my friends were discussing the worst scenarios that could happen in the following four years, I could not help but wonder: who are these almost three million voters who re-elected our current government. And how is it even possible that me, who follow the news on a daily basis and have a thousand friends on Facebook, have never ever heard about their point of view. Three million voters and I have not seen at least one article or one comment that supported the Fidesz for four years.

### II. THE "FILTER BUBBLE"

The reason behind the above is that me, just like 44% of the general population – or 62% of US adults – get news from social media<sup>1</sup> as it has become the most important forum where we share, consume and discuss news.<sup>2</sup> Social media platforms, however, use some kind of artificial intelligence or algorithm to "show people the stories that are most relevant to them."<sup>3</sup> Facebook, for instance, uses a so called ranking process that personalizes the order of the posts on the users' news feeds on the basis of several circumstances such as (i) similarity to contents a user often interacts with; or (ii) the frequency of the user's interactions with the author.<sup>4</sup>

Consequently, if a user interacts with a comment, in my case, for instance, by clicking on a liberal article, the algorithm will –

regardless of the user's real interest or initial intention – most likely select and promote similar content. Therefore, a vicious circle begins which will eventually force the user into an information bubble right before he or she could even realize it. In her book – *The Filter Bubble: What the Internet is Hiding from You* – Eli Pariser called this phenomenon the “filter bubble” which refers to the concept that platform's personalization algorithms, on the basis of the result of profiling the user's online activities (e.g. likes, search history), filter the information available for the user which eventually leads to a form of online isolation from a diversity of opinions.<sup>5</sup>

### III. WHY DOES "FILTER BUBBLE" EXIST?

Personalization, however, is not an evil thing and it has its own advantages. The amount of information available online is so enormous that without proper filtering a user would be completely lost on the websites. In case of Facebook, for instance, every 60 seconds 510,000 comments are posted<sup>6</sup> whereas on Twitter over 350,000 tweets sent in average in a minute.<sup>7</sup>

But do not be mistaken, social media websites optimize content not (or at least not only) because they wish to provide a better service for their users but because they are financially interested in targeting consumers as precisely as possible on the basis of individualized preferences. By now, it is an open secret that platforms beside “bringing the world closer together,”<sup>8</sup> or “giving everyone a voice and showing them the world”<sup>9</sup> are the main beneficiaries of the digital advertisement market. For instance, just in the final quarter 2018, Facebook's reported advertising revenue was \$16.6 billion,<sup>10</sup> whereas Twitter earned a total of \$791 million from advertisement.<sup>11</sup>

Advertisers are – usually – charged for the number of clicks or the number of impressions their ads receive.<sup>12</sup> Further billable actions could include promoting the ad to maximize their reach, placing the ad to increase its popularity in front of the right audience and putting the video content in front of highly relevant publisher content as pre-roll videos.<sup>13</sup> The other source of platforms' advertising revenue is the automated ad auctions. Since advertisers' targeted audiences usually overlap and since the spaces for commercials are limited advertisers must bid on the places of the page where the users could see their ad.<sup>14</sup> While the factors that determine the minimum bid varies on the basis of the platform's policy, the strategic location or the popularity of the content the advertisement is linked to are always decisive aspects.

The benefits of personalization in terms of advertising therefore are clear. On one hand, platforms display personalized advertisement to each and every user in order to increase the number of clicks the ad receives and therefore to charge the advertisers with a higher advertising fee. On the other hand, platforms' algorithms optimize the content in order to generate a higher traffic, so that the platform can sell the place of the advertisement for a higher price at ad auctions.

### IV. THE PROBLEM WITH FILTER BUBBLE

Humans are not rational. People rarely have access to complete information, nor do they seek complete information. They do not aim to maximise the relative utility of their behaviour, nor do they wish to calculate the risk before acting in the online environment. Instead they rely on limited number of heuristic principles. This means that they rather use simple rules (rules of thumb) to make decisions than thoroughly examine all available information.<sup>15</sup>

Platforms' filtering technologies take advantage of three of our main mental shortcomings:

1. people tend to believe in stories that they often hear as repetition validates the authenticity (*repetition heuristic*);<sup>16</sup>
2. people tend to ignore attitude-threatening information as they are more motivated to confirm their established attitude and to seek like-minded information than to reach accurate conclusion;<sup>17</sup> and
3. people tend to perceive the information that is coming from the online community they closely identify themselves with as more reliable.<sup>18</sup>

Platforms' personalizing algorithm, therefore, not only shuts the user in an information bubble, but it also constantly confirms and therefore validates the idea the bubble was initially built on since the user, by nature, is not incited to seek complete information especially data that contradict his belief. As a result of people cutting themselves off from opinion and information that challenge their belief system, echo chambers have been formed.<sup>19</sup> These echo chambers are basically parallel but separate universes that coexist without even being aware of the other's presence.

The main problems with such ideological segregation are that:<sup>20</sup>

1. unlike the exposure to diversity, it will not increase the tolerance for attitudes and beliefs that differ from one's own;
2. it will inevitably distort the true popularity of an opinion and therefore people, especially those in the minority, who tend to overestimate the popularity of their views, will have trouble to accept the legitimacy of an outcome which is not in align with their belief; and
3. it will result in polarization and people might end up with more extreme views than they originally started with.

Filter bubble, therefore, is a direct threat to the freedom of expression, especially to its aspect to freely seek, receive and impart information and ideas of all kinds, regardless of frontiers, either orally, in writing or in print, in the form of art, or through any other media of one's choice.<sup>21</sup> Personalization and its dangers to democracy have been pointed out in the academic literature for more than a decade. In 2001, legal scholar, Cass Sunstein, for instance, highlighted in his book, *Republic.com*, that personalization would escalate into fragmentation which would eventually create a negative impact on the democratic debate.<sup>22</sup>

What scholars, however, failed to explain is that the personalization of content is a "nudge" as it was defined by Richard Thaler and Cass Sunstein in their book, *Nudge: Improving Decisions about Health, Wealth and Happiness*. According to the authors a nudge is "any aspect of the choice architecture that alters people's behaviour in a predictable way without forbidding any options or significantly changing their economic incentives."<sup>23</sup> Consequently, under Thaler's and Sunstein's "nudge theory" social media platforms should be considered as choice architects that create individualized behavioural and decision making contexts (choice architectures) which incite the users to constantly interact on the websites by providing content that they are mostly interested in.

Since the personalization of content is a nudge, it is also, by definition, a manipulation of people's choices as it was admitted by Thaler and Sunstein.<sup>24</sup> The main issue with algorithmic personalization, however, is that it cannot be described as a "good nudge" since it does not meet the requirements Thaler and Sunstein prescribed in their book:

1. Social media platforms do not organize the architecture in a way that it influences the choices and behaviours of the users in accordance with their interests. Instead, the decision-making contexts are determined by profit, as they were created with the intention to increase the traffic on the website and consequently the advertisement revenue;
2. The personalization of the content is not transparent as the true intention behind it, as well as, the means by which behavioural change is pursued is not clear;<sup>25</sup> and
3. The personalization of the content is not liberty preserving as users do not have the option not to be a subject of profiling and therefore not to be forced into an individualized filter bubble.

Another concern with algorithmic personalization is that it also poses an indirect threat to other fundamental rights such as freedom of thought, conscience and religion, freedom of assembly and association and freedom of choices. According to the dual process theory, one of the two kinds of human thinking is reflective thinking which is "associated with deliberate and conscious processing of information."<sup>26</sup> But if people can see only a small, individualized slice of truth that was algorithmically created to validate their initial ideas, then how can they make well-founded decisions in other areas of their life? Limited information will inevitably result in distorted decisions. This can be already pinpointed in the case of "fake news." Evidence reveals that "fake news" is capable of influencing elections,<sup>27</sup> it can lead to wiping out USD 130 billion in stock value<sup>28</sup> or it can even result in mass-shootings (pizzagate).<sup>29</sup>

## V. THE SOLUTION: BURST THE "FILTER BUBBLE"

In order to propose an effective solution on how to defend freedom of expression from the filter bubble, the following principles should be considered:

1. The four modalities of regulation in cyberspace are: law, social norms, market and architecture (code).<sup>30</sup> These four modalities regulate together. A regulation, therefore, is a trade-off between these four regulatory tools. Regulators select their tool depending upon what works best.<sup>31</sup>
2. In cyberspace the strongest regulatory constrain is the code since the users are incapable of not following the rules established by the way the online architecture was built (coded) ('code is law');<sup>32</sup> and
3. "There is no such thing as a neutral design"<sup>33</sup> since every behavioural and decision making context influences people's choices in one way or another.

As "the anti-nudge position is a literal nonstarter"<sup>34</sup> and the architecture is the most coercive constraint to users' behaviour, the foundation of the solution must be to "nudge for diversity." Social media platforms, as choice architects, must take social responsibility and must redesign their choice architectures in accordance with the requirements laid down by Thaler and Sunstein. The newly reorganized decision-making context, therefore must promote diversity, as well as, it must be transparent and liberty preserving.

In order to blow the filter bubble, the reorganized architecture must give information that both supports and challenges the users' belief systems. This could be guaranteed, for instance by recoding platforms' personalization algorithms. The retrained algorithm would firstly, focus on identifying the topic (e.g. climate change, foreign politics and economy) the user is interested in, and then, instead of providing similar content on the subject, the algorithm would provide pro-attitudinal information followed by counter-attitudinal news. Another solution could be to enable users to reorganize the order of the posts on their news feed for instance by switching from personalized order to chronological order of content. And finally, platforms should also introduce "tagging the content" in order to warn users if the provided content is one-sided or lack credibility.

As architecture is only one of the modalities of regulation, the solution should also rely on the other three constraints. Lawmakers, for

instance, should prohibit profiling and automated- decision making (providing content on the basis of the outcome of automated data processing) in case of certain subjects of public debate. Furthermore, in order to increase transparency, platforms should be obligated to provide information on algorithmic personalization in a concise, transparent, intelligible and easily accessible form, using clear and plain language. The economic incentive behind personalization should be also removed, for instance, by regulating ad auctions or by switching from click-based charging to fixed fees. Finally, education should be supported to increase the population's eliteracy.

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