The Filter Bubble

p204 – Final Paper – ECS 188 – Fall 2011

Diana Hsu and Liz Shigetoshi

November 29, 2011

Word count: 2502

In *The Filter Bubble: What the Internet is Hiding from You* (2011), author Eli Pariser describes society's collective entrapment in what he calls the *filter bubble*. Each person has their own *bubble*, which functions as a customized universe that collects information through daily encounters via the internet. Pariser informs the readers that many web companies use algorithms to tailor results for their users. As a consequence, users are actively confined to what exists in their bubble. On December 4, 2009, Google publicly announced a modification to their patented PageRank algorithm. The updated Google Web Search processed user information and constructed results based on prior interactions and presumed user preferences. This event is what Pariser considers to be the beginning of the personalization era. User-specific customization has since then expanded and is now conducted by many other internet giants like Amazon, Facebook, Netflix, Yahoo!, and YouTube. Although these companies believe that the era of personalization, the creator of the filter bubble, gives the users what they want and makes their lives better, Pariser argues that this is not the case. In his book, Pariser attempts to expose the flaws of personalization by revealing how it influences what the user sees, how it manipulates their thoughts and actions, and how it gives excessive power to entrepreneurs and computer scientists.

The Race for Relevance

Google Web Search can be simplified into three steps: read, analyze, and answer. First, the search engine takes in information the user inputs. Then using an algorithm, it attempts to refine what the user inputted.

Finally it outputs data relevant to what was entered by the user. This process repeats every time the user inputs a new query.

Prior to finding Google, Larry Page created the algorithm known as PageRank, which is now the ingenious algorithm used in Google Web Search. PageRank added an extra feature to the analyzing step of the Google search bar. It ranked the importance of a particular web page depending on how many clicks that page had received. Larry Page did not stop there: he continued to progress his work by collaborating with another founder named Larry Brin. Page and Brin realized that "the key to relevance, the solution to sorting through the mass of data on the Web was…more data" (32). The two were not only interested in which pages linked together, but they were also interested in the position, size, and age of the page; these factors were known as "data signals". As a result of Page and Brin's efforts to bring relevant results to the users, Google Web Search is now one of the most popularly used search engines to this day. Google continues to monitor every obtainable "data signal" in order to make the data returned even more relevant than before.

To show how powerful this search engine is, take for instance a typical bicoastal traveler. Google sees that this person logs in from New York and then from San Francisco, so it knows that this person travels from coast to coast. By knowing what web browser this person uses, along with their geographical location, Google can already make assumptions about their age, gender, and political beliefs. This illustrates how the tiniest trace of input through the Google search bar can provide an abundant amount of data about the user.

Similar to Page and Brin's work, Facebook created EdgeRank, which is an algorithm that updates the Top News Feed by ranking every interaction on the site. The Top News Feed includes new posts, comments, and pictures that users upload; each of these is called an *object*. Whenever a user interacts with an object,

they are creating an *Edge*. The EdgeRank algorithm is based on three components. First, there's an affinity score. To illustrate this component, take for instance that there is a user, a Friend A, and a Friend B. If the user sends Friend A a lot of Facebook messages and checks Friend A's profile more often than Friend B's, then the user will have a higher affinity score for Friend A than for Friend B. Second, there's a weight given to each type of Edge. For example, a comment has more importance than a "like" from another user. Third, there is time. The older the Edge is, the less important it becomes. To find an object's Edge ranking, multiply the affinity score, the weight, and the time for each Edge, and then add up the Edge's total score. This final value determines where the object appears on the user's news feed. The higher the Edge ranking is, the more likely the object is to appear at the top of the user's feed.

Pariser expresses his concern for these technological advancements over the internet. These algorithms were created by the drive for personalization and have become extraordinarily complex due to the mass amounts of information being analyzed. To explain this statement better, Pariser describes how EdgeRank "demonstrates the paradox at the core of the race for relevancy" (38). In order to have relevance, EdgeRank needs more data. But the more data there is, the more complex the filtering algorithms must become to organize it. The push for relevancy has created and motivated internet giants, like Google and Facebook, and many other companies to gather more and more user information. Consequently, personalization demands relevancy, and thus it impacts how society views the world, how society consumes information, and how society makes decisions, making their escape out of their filter bubble all the more difficult.

These internet giants argue that the world of personalization gives internet users more control over their future, but Pariser argues that it is just the opposite. In the filter bubble, the control over what users are exposed to is limited, leaving less room for unexpected encounters. They become locked into a harshly

judged "you loop" and lack open-mindedness in a world that strives for "out of the box" ideas to promote innovation and a democratic exchange of ideas.

Incorrect Presumptions

Pariser explains that "[we] are more than the bits of data we give off as we go about our lives" (115). Taking into account that Google uses "click signals" and Facebook uses shared profile information, he reveals the "bad theory of you" that most internet giants comparably assume. It is defined as "you are what you click and you are what you share" (114). This theory creates what the author calls the "you loop."

The "you loop" is where "[you] click on a link, which signals an interest in something, which means you're more likely to see articles about that topic in the future, which in turn prime the topic for you" (125). Some argue that users may be curious and click on embarrassing or awkward topics that may not reflect their personal interests or actions to begin with. Within the split second that they have selected a link, they are instantly given web browser cookies; these cookies become the messenger to the algorithm, which then categorizes and defines who the user is and what they are most likely to do next. Others can also argue that what users share or pay attention to on Facebook when they're 15 should not represent who they are when they are 25. People constantly age and levels of maturity can differ from when someone is a teenager and when someone is an adult. This goes the same for a person's interests, geography, and relationships. With companies like Google and Facebook, the filter bubble, endorsed by the "bad theory of you," can become a unique universe that is based on mild curiosities and past decisions.

Lack of Serendipity

According to Pariser, "The ability to…adjust to the demands of different environments and modalities… is one of human cognition's most astonishing traits" (84). Inside the filter bubble, the lack of open-mindedness is a factorable threat. The internet user's view of the world becomes biased. People become "surrounded with ideas with which are already familiar (and already agree), making [them] over confident in [their] mental framework" (84). Pariser notes the presidential campaign for Barack Obama in 2008, where rumors circulated around the internet and in the media that Obama was a follower of Islam, though he claimed to be a practicing Christian. Throughout the election, the campaign attempted to set the facts straight, but the number of people who held the false belief continued to incline. In Pariser's interview with *New Republic*'s John Chait, Chait emphasizes that the media is the one that people should be wary of with the statement, "Partisans are more likely to consume news sources that confirm their ideological beliefs…People with more education can actually become mis-educated" (89). With personalization, content that validates a person's beliefs increases and perspectives that challenge their thoughts are not as frequently consumed.

Discouraging Curiosity and Learning

Alongside the drawback of open-mindedness, personalization causes a blockage to learning. It is believed that "some of the key prompts that make [users] want to learn…[are] removed from [their] environment" (84). In an interview with Pariser, psychologist George Lowenstein says that "curiosity is aroused when we're presented with an 'information gap'" (91). For someone to learn, Pariser suggests that there should be a sense of curiosity, and for there to be curiosity, there needs to be a consciousness that something is hidden or missing. In the filter bubble, concepts and ideas are concealed unnoticeably and that alone prevents people from recognizing that there is anything being hidden to begin with. Pariser reveals that learning inside the filter bubble is constrained to what is already known. The world of personalization may decently predict correlating and adjacent relevancies for the users, but in the end, it may prevent them from obtaining entirely new sides of information.

Essentially the user is at a disadvantage in the world of personalization. Internet users aren't aware of the filter bubble since itself and the algorithm designs behind it are practically invisible. They can't control personalization when they can't even see what is happening in the first place. As a result, Pariser reasons that internet users will struggle with breaking out of their "you loop," let alone their bias confirmations or learning blockade, if filtering awareness isn't brought to their attention.

Powerful Entrepreneurs and Programmers

There are many actors in the world of personalization. There are the users, and then there are those who are manufacturing the algorithms behind the filter bubble. It's easy to forget that software entrepreneurs and computer scientists have a huge impact on the everyday lives of the internet users. More often than enough, some may not even associate the masses of data they collect to the amount of power that internet giants acquire. In his book, Pariser claims that with so much power comes a great deal of social responsibility.

Google's founders tend to argue, "People come to Google because they choose to. We don't trick them" (178). Pariser finds Google's argument troubling to follow and exposes it as a flaw, in response to the consequences of personalization within the filter bubble. He notes that this argument "minimizes the responsibility [they] might have to the billions of users who rely on the service Google provides and in turn drive the company's billions in advertising revenue" (178). Behind Google's coy words, is a driving force that is pressuring the technology industry to set course on a road to bulk success and riches, leaving its users behind, trapped in their own filter bubble. If software entrepreneurs like Google can profit off of their users' banks of data, along with the user's lack of open-mindedness and lack of curiosity for new information as a result of personalization, it is unlikely that these companies have no responsibility that

pertains to the filter bubble. Pariser translates the internet giants' heavy desire to monetize their services as advantage for them and a disadvantage for the user.

Behind the profiting algorithms and entrepreneurs, exist the programmers who develop and design the services internet users consume. They are the creators of the algorithms that formulate personalization within the user's filter bubble. Pariser explains, "If code is law, software engineers…are the ones who get to write it…without any judicial system or legislators…. [Their code is] enforced nearly perfectly and instantly" (175). Inherently, they have the power to shape the technological world, in which they build through code and computer. Pariser emphasizes the problematic intentions amongst many computer scientists. They are capable of helping society with their intelligence to "solve large-scale problems— poverty, disease, and education—or they can… make a better farting app" (188). In other words, they can create code alongside the motive of benefitting their users and society itself, or they can create alongside the motive of personal benefit. With entrepreneurs promoting algorithms for monetary motives, individual computer scientists have the responsibility, as Pariser sees it, to design code keeping their users' best intentions in mind as well. If computer scientists believe that personalization will benefit the user, then they should also consider the potential consequences that follow personalization as well. Entrepreneurs focus on business, and programmers create code; both share equal responsibility while creating and manipulating the user's ever confining filter bubble.

Bursting the Bubble

In Pariser's interview with Peter Thiel, a Facebook board of directors member, Thiel says, "There are aspects of [technology] that are great and aspects that are terrible, and there are some real choices humans have to make about which technologies to foster and which ones [society] should be more careful about" (184). Pariser suggests that it is not too late to change the course of personalization and the restriction of the filter bubble. He recommends a variety of potential solutions. One, internet users should use different

websites. The more a person diversifies the types websites that they click on, the greater the assortment of relevant websites will be visible on their viewing screen (223). Two, users should delete their web cookies and web history often. Internet giants power and profit off of what users share about their past interactions. If the users don't give them that option as much as they'd like, the users can potentially be at the advantage (226). Three, Pariser advises the users to not fall for advertisement traps. Many people have the tendency to buy products from flashy advertisement schemes, and to avoid this, internet users should acknowledge the differences between what they need and what they want (40). Four, Pariser suggests that the creators of personalization should create and promote high quality products or provide services that work towards the absolute betterment of society, as opposed to making selfish decisions or earning more money. By simply changing a website's interface to acknowledge the use of personalization or by setting a website's default to basic service, letting personalization be the user's option, software entrepreneurs and computer scientists can stress their support towards moral decisions for their users (235). With of all these solutions in mind, the majority of society can avoid being stuck in their own personalized universe, thus expanding and maybe even one day bursting what Pariser calls the filter bubble.

Bibliography

Pariser, Eli. (2011). *The Filter Bubble: What the Internet is Hiding from You*. New York, NY:

Penguin Press.