THE DIGITAL AGE IS MAKING US WORSE HUMANS

How the technological revolution has negatively impacted our psyche.

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You've changed. Maybe you've noticed, maybe you haven't. I certainly have.

Your use of technology and social media has been changing your brain. Changing the way you feel, read, and understand information. Media multitasking has caused your attention span to dwindle and your reading comprehension to worsen. Switching between apps and content to find a boost of dopamine or serotonin has rewired your brain, affecting your emotions. The filter bubble you are placed in on social media and the internet creates a personalized and isolated online experience that only connects you with like-minded people and information, which doesn't allow for any bridging with different people or different views. You come across a variety of information every day through this new digital age that is presented in a fast-paced manner. Can you keep up with it? The answer is yes, but it will cost you.

Take a minute to think about it. When was the last time you actually read a book or article, without stopping to check your notifications or browse on your phone? Can you even sit still and read something of moderate length with one hundred percent focus? Or without skimming? The answer is likely no to at least one of those questions. Now, think about the content you see on social media, or the search results you get from a search engine. Is what you see unbiased, strictly objective facts? Do you see a balance of different views and opinions, or do you see content that further confirms your own beliefs? Again, the answer is likely no. Why do you think that is? It's because this technology is purposely created to be addicting. It is purposely programmed to think for us. Since we can't stop using it and it doesn't foster learning and development of the individual, technology is making us stupid. The technological revolution is upon us, and it is a threat to our humanity. The digital age, curated by the tech industry, is reshaping our brains, thus making us worse humans because of the creation of addicting technology and the programming of algorithms that think for us, which is making us stupid and psychologically stunted.

This should worry you. Afterall, you are at stake.

Algorithms Think for Us

The technology we use today, like search engines and social media, is operated by artificial intelligence (A.I.) and programmed algorithms. For my purposes in this paper, I will be using the terms A.I. and algorithms interchangeably. I will also use the term internet to refer to the idea of the world wide web, search engines, and even social media in some cases. It will be an umbrella term for all virtual content found on various devices. This may not be anything new to you, but are you aware of the extent that A.I. controls your information and content? There is no more one, objective search engine. The Google that you use and know is very different from the Google your friend or parents use and know. Eli Pariser, technology activist and author who coined the term "filter bubble" in his book *The Filter Bubble: How the New Personalized Web is Changing What We Read and How We Think*, gives a good example of this phenomena. Pariser explains that he asked two friends – both educated white women from the Northeast – to Google the term "BP" in wake of the Deepwater Horizon oil spill. One friend got results for investment information, while the other got results about news for the oil spill. (Pariser 2) The content you see on any given social media platform is very different than the content your peers see. Even if you follow the same accounts, the algorithm may show you specific posts at a specific time that differ from anyone else.

There are many issues and concerns with this. For one, this has made truth subjective. Facts are no longer objectively true for everyone. What is true for you is not true for everyone else. Algorithms and A.I. have forced every single internet user into their own filter bubbles and echo chambers. This has been all been made possible because of personalization.

Personalization is the concept of algorithms and A.I. collecting and using your personal data to curate content and search results that are specific and relevant to each individual users' interests. Today, there is a plethora of information on the internet, and that's an understatement. "…If you

recorded all human communication from the dawn of time to 2003, it'd take up about 5 billion gigabytes of storage space. Now we're creating that much data every two days." (Pariser 11) And this was just in 2011. It's safe to assume now that number is far greater.

The amount of information you could access on the internet is overwhelming to say the least. This is where personalization comes into play. The idea, in theory, seems very appealing. Narrow down the content a user sees to include only what interests them. This is achieved by gathering personal data on every individual user. From location, emails, and contacts to content you've recently viewed or clicked or searched, A.I. can generate a good understanding of who you are and what you want. Former Google CEO Eric Schmidt has stated that his goal was to build a Google code "that will guess what I'm trying to type," and that he believes customers want Google "to tell them what they should be doing next" (Pariser 8). This kind of complex and intelligent algorithm allows for accurate personalization of content.

Now, let's get into why this is so dangerous.

As previously stated, there is an appealing aspect to personalization. It's convenient for users. It's also convenient for advertisers. They can target their ads to a specific audience. Your device will know if you were at the mall, at a shoe store, texting your best friend about a pair of shoes you want, and looking up prices for the shoe. Next thing you know, BOOM!: an advertisement for a sale coming up for the specific pair of shoes you were looking for! You may be thinking, "Hey, that's not so bad, why wouldn't I want to know about a sale for something I want?" Well, personalization isn't necessarily bad when it comes to advertising. However, personalization does not stop at advertising. It dictates what information we see, what news we get, who we interact with, etc. It forces us into our own personal filter bubbles.

The filter bubble is a term coined by Eli Pariser, as previously stated, in his book that discusses the dangers of personalization both to individuals and democracy as a whole. Pariser

defines it as "a unique universe of information for each of us which fundamentally alters the way we encounter ideas and information." (Pariser 9) There are specific aspects of our filter bubbles that Pariser further discusses. We are alone in our bubbles, the bubbles are invisible, and we do not choose to enter the bubbles. Each filter bubble is specific to each person and their unique personal data that is used to ultimately create the bubble in the first place. The internet no longer caters to a group of a people or audience. In contrast with something like cable television, where you are amongst many others viewing the same content with similar interests, you are alone in your filter bubble and on the internet. You may not even realize you are alone in your filter bubble because you don't even know that you're in a bubble to begin with. Your filter bubble is not tangible. The only way you can see it is by educating yourself and understanding the clues that can reveal it, which I will explain later in my paper when I discuss how you can combat the negative effects of the digital age. Finally, while you technically play some part in the decision making of the content you view (by clicking on certain sites or content), you do not have control over the filters that the algorithm implicates. The sites or content you have clicked on were presented to you by the algorithm. You don't have a choice but to interact with what you see, and everything you see has been accurately calculated by A.I. to be something of interest to you or further confirm your own beliefs, which in turn creates a small, isolated world where users are unable to interact with anything that may differ from their likes or opinions. These digital isolated worlds bring me to another point Pariser brings up: bonding versus bridging.

Bonding and bridging are terms created by Robert Putnam in his book *Bowling Alone*. He defined these concepts in terms of social capital. "There's the in-group-oriented 'bonding' capital created when you attend a meeting of your college alumni, and then there's 'bridging' capital, which is achieved at an event like a town meeting when people from lots of different backgrounds come together to meet each other." (Pariser 16-17) Bridging allows for a wider, more diverse network of

people to connect with. It is what creates our sense of public and community. Online, thanks to personalization and out filter bubbles, we are really only getting bonding. We are exposed to people with similar backgrounds and interests. Bonding has created safe spaces for people to connect. This is not necessarily a bad thing, if we were also getting an equal amount of bridging. We do not get the opportunity to expand our social and professional circles. It is difficult for a society to function, never mind flourish, when there is little to no bridging amongst communities and citizens. A lack of online bridging affects our ability to bridge in the real world, too.

When you are constantly exposed to content that directly agrees with your views and constantly being shielded from anything you dislike or disagree with, you begin to lose the ability to compromise and accept others that are different than you. Personalization fosters narrowmindedness. Think about the political polarization in the United States, for example. The internet and personalization have contributed to the major political discourse in the country. It's so easy for users to follow others in the same political party. They only view content that confirms their own beliefs, content that is more often than not false. Content that is almost always presented in the form of news. Social media has warped the reality of truth and news with personalization and an increased spread in fake news and disinformation. This is especially dangerous to our democracy as one-in-five adults claim they get their news on social media, according to a 2018 Pew Research Study. (Geiger)

Even if you were to make the effort to follow people with different views, the algorithm wouldn't allow you to see it. It knows you don't agree or don't like that information, so it pushes the content to the bottom of your feed. You'll never reach it even if you wanted to. Personalized algorithms just echo back what each individual user indicates they like by collecting data on what posts you interact with and what you search. Personalization makes it nearly impossible to become a well-informed, well-rounded member of our democratic society.

Learning Has Changed

As previously stated, the technology of today is reshaping our brains and how we think. It makes sense that, because of this, the way we learn has been affected. The addicting aspects of technology and media multitasking have negatively impacted our attention spans and reading comprehension. With shorter attention spans and poor reading comprehension, there is great concern for the future of learning, and overall, the intellectual abilities we have as humans, such as reading, writing, and speaking.

Nicholas Carr, in his *Atlantic Magazine* piece "Is Google Making Us Stupid? What the Internet is Doing to Our Brains," described how he noticed a significant change in his abilities to read and focus. Carr explains, "And what the Net seems to be doing is chipping away my capacity for concentration and contemplation. My mind now expects to take in information the way the Net distributes it: in a swiftly moving stream of particles." The presentation of content and information on the internet is rewiring the way we process and understand information. The concise, fast paced manner in which we view content has conditioned us to comprehend all information in this way. The issue here is that this is not the standard of learning and understanding information. Another issue is the possibility of this actually becoming the standard as technology comes to the forefront of everyone's lives. The state of our minds and intelligence is now at stake.

Susan Greenfield, neuroscientist and writer, discusses the impact of social media and the internet on our brains in her book *Mind Change: How Digital Technologies Are Leaving Their Mark on Our Brains*. In her seventeenth chapter, she presents numerous different studies (mostly with students) on the matter, particularly on reading and comprehension. These studies will be a crucial focal point in my argument that the digital age is making us worse humans.

A key point in Greenfield's argument centers on media multitasking, which can be defined by "all too familiar and highly irritating scenarios such as switching from checking emails to having an instant messaging conversation with someone, text messaging while watching television, or jumping from one website to another" (Greenfield 74). There is no doubt that all of us are guilty of this digital multitasking. Even if we were to stay on a single site or app, there is so much content that quickly changes on our screens that we are constantly stimulated by it. You could switch back and forth from checking your DMs (direct messages), to checking your following feeds, to checking the content on your explore page, all on Instagram. You can scroll through hundreds of posts in minutes, spending seconds on each one. We are to believe we are in control of our scrolling, if we want to see something we can spend an extra few seconds looking at it or we can swipe immediately if we don't like it, but the reality is that we are not in control. We've been conditioned by the technology to do this. We do not have control in our media environments, and the effects of this are starting to cost us our cognition and comprehension abilities.

Greenfield cites multiple studies surrounding media multitasking and students. The amount of time spent media multitasking between more than one medium in 1999 was 16 percent, amongst two thousand children between the ages of eight and eighteen. Ten years later, the percentage nearly doubled to 29 percent. A 2011 survey of U.S. college students revealed that 38 percent said they could not go more than ten minutes while studying without checking one of their devices. (Greenfield 74) Given the extent of technology usage amongst college students today (and the shortened attention spans), one could assume that ten minutes may be a generous amount of time to expect a college student to go without checking their notifications.

Another study cited in 2013 by Greenfield observed middle school, high school, and college students working on school assignments in their homes for fifteen minutes. The results revealed that students worked on a given task for an average of six minutes before switching to something else.

This was caused by technological distractions and "a self-reported preference for task-switching." (Greenfield 75)

Media multitasking is one of the reasons for longer reading times, especially with e-books. It also increases mistakes in processing information. Another study cited by Greenfield revealed that individuals who media multitask are not able to filter information, and therefore are slowed down by the processing of irrelevant information. (Greenfield 74-75) The digital environment we live in, itself, is another major reason for our increase in poor comprehension and decrease in attention spans. We are being conditioned to be bad readers, to be less self-sufficient, and to be unable to regulate or control ourselves. On the internet, we are used to seeing short, shallow messages, and a lot of them at a rapid rate. This aspect of the digital age is diminishing our cognitive functions.

Despite the many negative impacts technology has on reading and learning, there are some positive aspects. These positive aspects are limited, though, as they pertain to children with special learning needs, autism, and intellectual disabilities. Greenfield explains that for those children "nonjudgmental interactive software, with its fast-paced and colorful displays, is easily more motivational than a simple printed book" (Greenfield 82). While this technology is helpful for children with special learning needs as it provides an experience that printed books cannot offer, the same technology can be harmful for most other students.

There have also been positive results in studies about using technology for mathematics. An analysis of forty-six different studies consisting of a total of 36,793 students revealed positive impacts of mathematics achievements. In a similar case, in about 80+ studies with more than sixty thousand students in total were analyzed regarding reading programs. They showed a positive, yet small, effect on reading. However, when integrated with teacher support, the results were significantly more positive. (Greenfield 82-83) The human interaction and support of the teachers being present during these digital programs made quite the difference. Greenfield discusses this as

well, stating, "the greatest promise of the digital devices lies not so much in the software and screen delivery themselves, but in their use in close connection with teacher' efforts" (Greenfield 83). Her point is that technology alone will not benefit students. The only way for technology in the classroom to be effective is with the addition of human interaction and guidance, a notion that must be accepted by all school systems to prevent the psychological dependency on technology in children that will be difficult to reverse in the future.

While there have been some positive results surrounding technology and learning, the most important aspect that I will reiterate is the presence of human connection amongst the technology. At the end of the day, it seems that no form of technology can be as successful and beneficial in learning than face-to-face connection with peers and teachers. Greenfield adds, "It seems that the benefits of dialogue, face-to-face discussions of issues, and problem solving with another person still exceed the benefits of virtual communication." (83)

This isn't to say that technology should never enter a classroom, that is inevitable. Technology should be integrated in a way that does not cause harm to the students' learning, comprehension, and attention spans. Although, Greenfield brings another compelling point in favor of limiting technology use across the board: the tech giants responsible for creating this technology are wary to immerse their own children, so why should we be so eager to do it? (Greenfield 87)

The Big Tech Model is Dooming Us

It should not be surprising that the companies in the tech industry (and, in actuality, any industry) are concerned with one thing: profit. In order to line their own pockets, these companies exploit their customers. Tech companies make money when you simply use their platforms: scrolling, viewing, and interacting with content. The more you use the technology, the more money they make. This idea has led to the development of more addicting technology. The business model

does not serve the public. Its only interest is making a profit for themselves, even if it means using unethical practices.

The investigative documentary and narrative drama, *The Social Dilemma*, combines interviews from tech experts and dramatic recreations of everyday life with actors to address the issues, specifically ethical concerns, of the tech industry today. A call for change and awareness in the industry is argued through compelling interviews with credible people directly involved in the industry. Mentioned in the documentary is a quote from Edward Tufte, a computer scientist and professor at Yale University, who has made an incredibly powerful statement that criticizes the tech industry, saying "There are only two industries that call their customers 'users': illegal drugs and software." (*The Social Dilemma*, 31:03)

Most platforms and sites today are free to use or create an account. This guise makes them even more appealing and accessible. The only problem with this is that, since the service is free, we become the product. (*The Social Dilemma*, 13:24) Tech companies are not making any money from selling you a product or service. They make money from collecting our data, and selling it to marketing and advertising companies, or even private parties. Marc Goodman, author of *Future Crimes: Everything is Connected, Everyone is Vulnerable, and What We Can Do About It*, speaks of the surveillance economy in his bestselling book. In discussing the revenue created by the data broker industry in his fifth chapter, he states, "It's important to note that the $156 billion in annual revenue earned by the data broker industry is twice the size of the U.S. government's intelligence budget. The infrastructure, tools, and techniques employed by these firms rest almost entirely in the private sector" (Goodman). It would take an entire other paper to delve into data surveillance, but it's necessary to note here the role it plays in the tech industry's business model. Without our online data, social media platforms and search engines would not be profitable, or they would not be free to use.

These companies gather every single bit of data. They practically have access to every detail on our phones. They know when we're on our phones and what we're doing. They know every click and how long we spend looking at each piece content on the internet. *The Social Dilemma* depicts what happens behind our screens in a dramatized way that seeks to accurately explain to viewers how algorithms work to keep them glued to their devices and platforms. During the narrative drama scenes, three clones can be seen at a motherboard making decisions about content, ads, and notifications to keep their user engaged on their platform. When they notice the device has not been active, they make carefully calculated decisions about notifications to send that will likely catch the user's attention to drag them back into the addicting cycle of the technology that produces profit. While the documentary gives a dramatized depiction of this process, it is accurate to how the algorithms really conduct their work. All platforms' A.I.'s work to keep you engaged in the app and its content. The more time you spend away from your phone, the more money they lose. Therefore, the tech industry's strategy is to keep you addicted.

Combatting the Negative Effects of the Digital Age

While the evolution of technology has had negative impacts on its users and society, there are steps each person, the industry itself, and the government can take in order to combat these negative effects. While individual changes will be beneficial on a small scale, true change cannot happen without the support from the companies responsible for the technology and without support from the government, who has allowed the tech industry to go unregulated for far too long.

One of the easiest ways to protect yourself from your filter bubble and misinformation on the internet is to become familiar with media literacy. Media literacy can be achieved through educating yourself about the ways in which social media and search engines function. Being aware that the information you come across may be biased and not truthful, and that it is specifically

chosen for you by algorithms, is a good first step in not falling too deep into your filter bubble. In understanding how the algorithms function, you can avoid playing into the patterns its created for you. Don't click on recommended content offered on platforms like YouTube. Always make a choice, and specifically look up what you're looking for. This is just another way to take control. (*The Social Dilemma*, 1:31:01)

Part of media literacy is also making the conscious effort to follow different people and click on different content you may normally not be interested in. Even if you are not particularly interested in or agree with these other people or the new content, it's a good way to expand your bubble and add diversity to your own beliefs.

There is a need for more ethical technology and technological practices. These important aspects cannot be thrown out the window in the name of profit. Advancing technology must be operated through morally sound means. One of the interviewees of *The Social Dilemma*, Tristan Harris, is currently fighting to make humane technology. Harris is the co-founder of The Center for Humane Technology and former Google employee. According to the Center's website, their "mission is to shift technology towards a more humane future that supports our well-being, democratic functioning, and shared information environment." Organizations like this are a key part of bringing change to the industry. They provide tools for individuals and can advocate change on a larger scale (to the government and tech companies). Their website includes many useful tips for a variety of people with different spheres of influence. They also highlight a framework for reform that increases impact with each step, beginning with social media platforms changes and gradually working up towards business models and culture. This is an organization committed to combatting the negative impacts and unethical practices of the tech business model. If you're committed too, they are a great resource.

Another way you can personally combat the negative effects yourself is to limit your screen time and turn off notifications. This step is not necessarily as easy as it sounds. As you know, you are addicted to your phone and using the internet. It will take a conscious effort and self-control to effectively complete this step, but just know it will be worth it and your brain will thank you. By turning off your notifications, you will be less inclined to constantly check your phone and click on apps that fight for your attention. You will be able to take that power away from the tech industry, and retake control over your life and focus.

In retaking this control, it would also be beneficial to increase the amount of print reading you do. Pick up a book more often and try to read for longer periods of time. You'll become accustomed to the reading skills and comprehension you used to have, or should have had, before the use of this technology.

To take this a step further, you could even delete your social media accounts all together. Jaron Lanier, a computer scientist and author who focuses on technology and humanism, wrote a book offering arguments for deleting your social media accounts. *Ten Arguments For Deleting Your Social Media Accounts Right Now* gives compelling reasons to finally take the step in deleting your accounts. To highlight a few: social media is taking away your free will (you don't make decisions in your filter bubbles), social media is undermining truth and making politics impossible (the spread of misinformation is vast and easy to accomplish), and social media is making us unhappy and unable to be empathetic (desensitizes us, makes it hard for us to understand to different people) (Lanier). As discussed throughout this paper and emphasized in Lanier's work, social media and the internet have negative, lasting effects on human psychology. The best way to combat this would be to eliminate that cause. This would also minimize your digital footprint and the amount of your personal data that companies collect and sell, which is obviously a major plus in our digital age.

Data surveillance is another aspect of the digital age that needs to be fought. This can only happen through government regulation. The technology and data industries are severely underregulated, especially for how prevalent technology and data are in the everyday lives of, well, pretty much everyone. New technological advancements, like A.I., are severely misunderstood or not understood enough amongst government officials. There is little to no control over this industry in particular, which gives them free reign over their services and their users which can be dangerous. Laws should be put in place that prevent monopolies in this industry and hold tech companies accountable for their services and products and their effect on users.

As far as regulating the data industry, that may be more unrealistic to achieve as the U.S. government utilizes data surveillance and allocates a large sum of money to its budget. However, exceptions should be made for companies in the tech industry. Joe Toscano, former Google Experience Design Consultant and author of *Automating Humanity*, proposed the idea of implementing a tax on the personal data obtained and shared by various tech companies in *The Social Dilemma*. This would be incentive for them to not track every single little bit of data on every single user, and instead narrow and limit the information they collect.

In Conclusion…

while our digital age has made us worse humans, there are still steps and hope in making the necessary changes to save ourselves. Algorithms and A.I. embedded into the technology we use today think for us and seclude users into their own personal bubbles. This has negatively affected the way we read, learn, and communicate. It's ultimately up to you to think for yourself and escape your filter bubble. There are steps outlined in this essay to guide you in the right direction to regain control over your life and mind in the midst of this technological revolution that is hungry for profit and disregards the impacts on users. But the action does not solely rest on each individual.

We, as a society, must be truly committed to these changes, and fight to hold the tech industry accountable. Individual efforts will not be enough without changes to the industry and business model. Humans created this technology, and humans will have to be the ones to fix it.

Are you ready to change?

Works Cited

Carr, Nicholas. "The Atlantic." *The Atlantic*, theatlantic, July 2008,

www.theatlantic.com/magazine/archive/2008/07/is-google-making-us-stupid/306868/.

"Center for Humane Technology." *Humanetech.com*, 2022, www.humanetech.com/.

Geiger, A. W. "Key Findings about the Online News Landscape in America." Pew Research Center,

Pew Research Center, 11 Sept. 2019, www.pewresearch.org/fact-tank/2019/09/11/key-findings-

about-the-online-news-landscape-in-america/.

Goodman, Marc. "Chapter 5: The Surveillance Economy." *Future Crimes: Everything Is Connected,*

Everyone Is Vulnerable and What We Can Do about It, Corgi Books, London, 2016.

Greenfield, Susan. "Chapter 17: The Screen Is the Message." *Mind Change: How Digital Technologies*

Are Leaving Their Mark on Our Brains, Random House, New York, 2015, pp. 72–88.

Pariser, Eli. *The Filter Bubble : How the New Personalized Web Is Changing What We Read and How We*

Think. Penguin Books, 2012.

The Social Dilemma, Directed by Jeff Orlowski, Exposure Labs, 2020. *Netflix*