Democracy Under Siege: Social Media, Biotechnology, and Artificial Intelligence

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Democracy survived the rise of fascism and the ensuing World War II. It then survived communism and the Cold War. Now democracy faces arguably its biggest threat in the form of new advanced technologies. These technologies will threaten the bedrock of democracy. Many different technologies will threaten democracy, but this paper will focus on three: social media, biotechnology, and artificial intelligence. Social media is profoundly affecting democracy already and will continue to into the future. Biotechnology does not pose immediate problems but threatens to alter the bedrock of democracy and its underpinnings. Artificial intelligence (AI) poses risks to democracy as well and even led Stephen Hawking to posit that AI may cause the end of the human race (Holley, 2014). As Diamond (2015) has shown, democracy is already faltering, there has been no net increase in democracies since 2006. The future for democracy looks grim, between the current woes and those posed by various technologies, it may seem if the age of democracy is coming to an end. But democracy can survive. It can even prevent such a future and prosper if action is taken today by democracies around the world, especially the United States. The leaders of democracies today will decide if there are leaders of democracies tomorrow. For democracy to survive, they will need to put into place regulations both internationally and domestically to ensure this system survives.

Democracy

Before proceeding, a working definition of democracy is needed. *The Encyclopedia of Political Science* defines democracy as "a political regime form based on the rule of the many, in contrast to the rule of the few" (Kurian, Alt, Chambers, Garrett, Levi, & McClain, 2011). This definition is a good basic starting point but needs to be expanded with several other components.

In addition to this definition will be Fukuyama's (2015), who defines the modern liberal democracy as a combination of "the state, the rule of law, and democratic accountability." The first component of democracy is the state, which is defined by a governing body that has a monopoly on the use of violence and can provide basic services. Or in simpler terms, the government has the power necessary to enforce laws, protect its populace, and provide basic services, such as roads. Fukuyama (2015) defines the rule of law, the second component, as a legal system that applies to the general population as well as to the elites of the society. The third component of democracy is free elections and suffrage. Multiple political parties must be allowed to exist, there should be suffrage for at least fifty percent of the population, and citizens must have political and civil rights. But at what point does a country no longer qualify as a democracy? For the purpose of this paper, a democracy must have all of the aforementioned components to be considered a democracy.

Social Media

Social media threatens the concept of a well-informed electorate and therefore threatens democracy. Jefferson (1789), one of the founding fathers, wrote that "wherever the people are well-informed they can be trusted with their own government." Social media disrupts the news cycle that is vital to a well-informed electorate. The political echo chambers created by social media do not create a well-informed individual, they create polarized individuals. And Americans increasingly rely on social media as their source for news. 67% of Americans now receive at least some of their news from social media, an all-time high (Gottfried and Shearer, 2017). Social media continues to supplement and even supplant traditional modes of news and this creates two problems. Social media is creating misinformed voters who cannot be trusted to vote and is altering elections.

Social media is oft-mentioned as the cause of divisions within the United States and while it does not cause the divisions, it does worsen them. Social media creates echo chambers for those of various political beliefs that reinforce one's own political beliefs. Radio and television also do this, but they are known entities at this point and are regulated in the United States (*The Economist*, 2017). The biases of television and radio are known, such as *Fox News* and *MSNBC*, whereas Facebook is viewed as a neutral platform. On Facebook, there now exists what *The Economist* (2017) terms "right-wing media ecosystems" and "left-wing media ecosystems." These are composed of various news organizations and fringe political websites of each side's political belief. The algorithms of Facebook further these ecosystems recommending content based on what the user has liked, leading to a form of groupthink (*The Economist*, 2017). What this means is that political discourse between people of different political beliefs has dramatically decreased. Additionally, Facebook's algorithms have contributed to the rise of hyper-partisan media, such as the infamous *Breitbart* (Madrigal, 2017) The result is that social media exacerbates the already existing problem of political polarization.

Social media has also become a breeding ground for misinformation or as it is commonly called: fake news. Fake news is nothing new, propaganda and misinformation have been present throughout human history (Niklewicz, 2017). Yet, social media provides an unprecedented platform for fake news and has allowed it to thrive. The problem is that social media algorithms, like Facebook's, are optimized in such a way that fake news can easily rise to the top (Carey, 2017). Carey (2017) argues that part of the problem is that fact checkers are not able to keep up with the rapid pace that fake news can spread on social media, whereas traditional journalism does require fact-checking. Thus, social media spreads fake news that alters election and chips away at the well-informed electorate with each individual it reaches.

Social media, specifically Facebook, can directly influence elections and while this was seen in the 2016 presidential election, it has not fully manifested itself. Everything that has occurred up to this point has happened because outside forces using the system of social media. Russia used organic methods to sow discontent in their political misinformation campaign by creating Facebook pages and paying for advertisements to promote these pages (Parlapiano, 2018). Not even the engineers who wrote the algorithms believed they could have such profound effects on voting (Madrigal, 2017). Nor did Facebook's executives, who have now admitted that social media can alter elections (Kennedy, 2018). What if Facebook decided they wanted to influence an election? They could influence elections in ways that would make Russia's meddling look inconsequential. It could filter the information of its users in such a way that directly affect elections. It could promote and filter content so that the candidates Facebook wants to win receive more coverage and the candidates they want to lose receive less. And they could do it conspicuously, in such a way that no one is the wiser that it is happening (Frey, Gigerenzer, Hafen, Hagner, Helbing, Hofstetter, van der Hoven, Zicari, & Zwitter, 2017) Facebook could subvert the electorate and nullify the purpose of suffrage. Unless action is taken, social media may someday control democracy.

The effects of social media have not been all negative, it, in fact, has provided some benefits to democracy. The Arab Spring, a series of uprisings throughout the Middle East to bring about democracy, owed its success in part to social media (Brown, Guskin, and Mitchell, 2012). Social media allowed protesters to communicate and organize their protests. It also allowed the protesters to broadcast their story to a global audience. Social media also allows for greater and easier engagement with elected officials. Many elected officials in the United States have Facebook pages that allow their constituents to contact them and hear their concerns. In

some cases, social media has even increased voter turnout among young voters, as Facebook has done (Madrigal, 2017). Unfortunately, these benefits also come with the costs of social media.

Public Policy Proposal

One potential solution is to allow social media platforms like Facebook to regulate themselves. Facebook is currently implementing what it terms "industry-leading transparency" which consists of showing who is running political ads, how much they spent, and the types of people who viewed it (Inskeep, 2018). Social media corporations, such as Facebook, cannot be trusted to regulate themselves. As mentioned earlier, Facebook could decide to alter elections if they decided. Facebook also has complied with authoritarian states like Turkey over Internet regulation laws so that its platform can still shows ads and make money in the country (Jankowicz, 2018). Similarly, in Russia, Facebook agreed to censor and remove "content related to opposition activist Alexei Navalny's anti-corruption investigation" (Jankowicz, 2018). A corporation that complies with authoritarian laws should not be allowed to regulate itself to prevent interference in democratic elections. Another type of self-regulation is mandated self-regulation, where the government levies punishments on corporations if they fail to regulate themselves. Germany is currently using this for hate speech, where social media companies, such as Facebook, are fined if they do not take hate speech down on their platforms. This may work for hate speech, but it does nothing to combat skewing the information of voters. Self-regulation does not do enough to fix the problem.

The best way to limit social media's adverse effects on democracy is through government regulation. One proposed way to do this is rebrand social media as a utility, like electricity (*The Economist*, 2017). However, social media is not a utility in the same way water or electricity are. Social media is not necessary to everyday life the same way water or electricity are needed.

Additionally, television and radio were just as popular back in their primes, yet they were never regulated as utilities (*The Economist*, 2017). While regulating social media like a utility may fix the problem, better solutions exist as this is not the proper category for social media.

Social media should be regulated in the same way that radio and television are currently regulated. This would require social media platforms to disclose who is paying for political ads, as is required for television advertisements. Therefore, it would be harder for countries like Russia to affect elections. The transparency would make it so that no outside user can influence elections through paid ads. The issue with government regulation is that many Congressman appear not to understand how social media works. Hatch, the senior Senator from Utah, asked Zuckerberg "How do you sustain a business model in which users don't pay for your service?" (Stewart, 2018). Some Senators do not understand how Facebook operates, which makes effective regulation hard to implement. However, the Senators clearly made it known that they did want to fix the problems of Facebook and more broadly, social media. Other Senators, more familiar with the platform, proposed specific legislation, such as Senator Klobuchar who suggested that the government should regulate political ads on the Internet (Stewart, 2018). These measures would provide a baseline for regulation and allow for further regulation to prevent social media from going rogue in the future.

In addition to the aforementioned regulation, the government needs to further research and investigate the effects of social media to see if further regulation is needed and what it should be. There is not much known about social media and its effects and government-funded research could lead to better regulation, as it is hard to regulate what one does not know (*The Economist*, 2017). Regulating social media like television and radio is the best way to regulate it based off the information known now. But, it does not deal with social media platforms

influencing elections themselves or the spread of misinformation. The research should include

seeing what can be done to limit misinformation while respecting freedom of speech. It should

also address how to properly regulate social media and make it more transparent so that social

media platforms themselves cannot influence elections. Regulation is ineffective if there is not

the proper information needed for regulation. Thus, research must be done before further

regulation is to take place to deal with this issue.

Biotechnology

On the other end of the technological spectrum is biotechnology, which has not been

realized yet, but is just as much of a threat to democracy. Biotechnology is unique to any other

threat democracy has faced in that it has the ability to alter the human nature that democracies

like the United States are based on. Hall (2009) argues the three biggest threats of biotechnology

to human nature are genetic engineering, cyborgs, and human chimeras. This paper will focus on

genetic engineering, but the other areas of biotechnology also threaten human nature and

therefore human nature. Humans created by genetic engineering will be different than any other

humans in the species' history. The type of genetic engineering done to a human can vary

greatly, from curing disease to enhancing humans, will this alter how human they are? What if

humans are genetically engineered to not feel certain emotions, such as fear or anger? Are they

still human? Do they have the same rights as non-genetic engineered humans? Or none at all?

These are all questions that states whose underpinnings are based on natural rights and human

nature will have to answer. The United States' founding document, *The Declaration of

Independence*, was the first legal document to enumerate that human rights are inherent for

everyone. Additionally, the *Constitution*, the most important legal document in the United States,

includes human rights in its *Bill of Rights*. If genetic engineering is to take place, countries such

as the United States will have to decide if these new humans have human rights or their underpinnings may need to be radically altered.

Biotechnology and its implications instantly bring to mind for many Huxley's (1932) dystopia *Brave New World*. In this timeless novel, the class system is based on genetic engineering, where there are different classes defined by their genetics and each class has their own unique genetic variances. The elite class, the Alphas, are genetically superior and thus hold the best jobs and the most wealth and each class progressively gets genetically inferior, with the lowest class, the Gammas, being practically slaves. The class system in the United States and the reduction of socioeconomic mobility in recent years has already caused some to wonder if the fabled American Dream is dead. Genetic engineering like in Huxley's (1932) novel could end any and all socioeconomic mobility as one's fate would be determined at birth. No longer would democracy be rule of the many but instead a rule by the elites who are genetically engineered to be superior to the rest of those around him. It is, in essence, a slave society that is based on genetics instead of race. Another possibility is that only the wealthy could afford genetic engineering in a society, furthering the socioeconomic divide. Either way, increasing class divides are not good for a society regardless of its form of government and would be unhealthy for a democracy. Predetermined genetic classes, like those in Huxley's (1932) novel, would render rule of the many obsolete.

Even if genetic engineering does not create new class systems, it could increase the divide between the global north and global south. Genetic engineering is likely to be developed by the most technologically advanced countries, such as the United States and China (Kuo, 2017). It could be the case that these countries decided to genetically engineer their citizens but other countries around the world, such as countries in the poor global south cannot afford it. It

would create a further divide between the global north and south. One potential result from this would be a new form of colonialism where countries offer their services of genetic engineering in exchange for goods or services. Or it could further economic inequality by making these poor countries genetically inferior and thus less likely to be able to compete in the global economy. Biotechnology could increase the divides between the poor and rich countries and it could lead to a new form of colonialism.

Biotechnology will be hard to regulate if states pose it as an issue of national security to genetic engineer their populations. What if a country like China or Russia were to genetically engineer a class of soldiers that would "need only an hour of sleep a night, have the eyesight of the best sharpshooter, or possess the endurance of Lance Armstrong" (Metzl, 2008)? If this were to happen, could the United States afford to wait before undertaking their own program? The repercussions for creating such a program besides the arguably national security benefit would be adverse to democracy. Would these people be forced to serve in the military? If they were, their fates would be predestined and in essence be slaves engineered for the government. It could also lead to the start of Huxley's (1932) class system, where a government is creating an elite class of people. Would this elite class also become the ruling class, given they are genetically superior to the rest of the population? This again contradicts the "rule of the many" and would once again be rule by the elite.

Biotechnology also poses a unique problem for democracies attempting to regulate it because the full effects will not be known for an entire generation. If a country decides to undertake genetic engineering, the results will not be apparent until these test subjects reach adulthood. As Hall (2009) points out, democracies are not good at the long-term planning necessary for regulating biotechnology. There are a variety of reasons for this. One is that

politicians need to be re-elected and enacting legislation that will not provide benefits for twenty years is not as enticing to voters as short-term legislation where the benefits are obvious immediately. These are unfortunate pitfalls of a representative democracy like the United States and is what makes biotechnology such a threat to democracy. Another problem with the long-term effects of biotechnology is that information will not be available for an entire generation and it is hard to regulate what one does not know. The long-term effects of biotechnology make it especially difficult for democracies to deal with, but not impossible.

As with social media, not all the effects of biotechnology are adverse, genetic engineering specifically can also provide immense benefits to humanity. Through genetic engineering, humans could effectively cure all diseases and eliminate aging. Genes could be altered to make people immune to major diseases and to prevent other ones, such as cancer. Additionally, scientists could make it that no one ages anymore and prevent the terrible suffering that people undergo in old age. It could also make everyone smarter and faster. These could all provide benefits to society, but each also has its own drawback as well. The biggest question concerning biotechnology is should a line be drawn to what is acceptable and if so, where should the line be drawn?

Public Policy Proposal

There are many ways to potentially deal with biotechnology regulation, each with their own positives and negatives. Several of these methods involve no regulation at all. Hall (2009) discusses two of these, one is to "let the chips fall where they may" and not doing anything. A lack of regulation will not work however because the stakes are so high, democracy itself could fail if no regulation is undertaken. Another option Hall (2009) proposes is to rework democracy in a way that it is not based on human rights like the *Bill of Rights* is. However, this does not

solve every problem, as a genetic class system could still result in this overhaul of Western democracies. There needs to be a two-step solution to genetic engineering, the first step is an international organization or treaty to enforce it and the second step is domestic enforcement.

There are several past treaties and international institutions that can be used as past precedent to regulate genetic engineering on a global scale. One method is that of the Paris Climate Agreement where every nation is allowed to set its own goals and there is little to no enforcement. This will not work with genetic engineering, as enforcement will be necessary to ensure no nation begins to genetically engineer their population. Furthermore, allowing each nation to make their own goals is ineffective, as genetic engineering is not being reduced like pollution. Instead, regulators need to draw a line. Another proposal for international regulation is Metzl's (2008), which is to follow similar guidelines of the Nuclear Non-Proliferation Treaty. Metzl (2008) describes a treaty where countries would share information and technology concerning biotechnology with one another "in exchange for all members agreeing to common protocols and appropriate regulations." If the international treaty were to be broken, the offender would be punished by the other states using sanctions or, if necessary, military force. It would be an effective safeguard against a biotechnology arms race. Of course, where would the line be drawn in this treaty? The treaty could ban all forms of genetic engineering, but what if states wanted to use genetic engineering for good? If someone wants to cure cancer, should they not be allowed to? The line should be drawn at therapy and enhancement should be prevented to assure an elite population does not arise (Fukuyama, 2002). Therapy, such as curing cancer would be acceptable, but enhancement, such as increasing IQ scores, would not be acceptable. The reason for this is that although these benefits could be beneficial, the potential pitfalls are too great. As Fukuyama (2002) points out, where to draw the line here is tricky, it would be up to the states in

the treaty to decide exactly what criteria is needed for enhancement versus therapy. This international agreement would then need to be coupled with new regulation bureaucracies domestically.

There are no existing organizations to deal with the problems of genetic engineering, at least in the United States. The FDA is the closest existing organization in the United States, but Fukuyama (2002) shows that the organization's charter does not allow it to properly regulate biotechnology and changing an organization's charter typically has mixed results. Thus, the easiest way would be for the states who sign off on the treaty to create a new regulatory bureaucracy with its sole function to regulate biotechnology. This new agency would need broader regulatory powers than the FDA so that biotechnology does not outpace its regulation. If each country were to create its own regulatory agency that followed the rules of the international treaty, it would allow them some autonomy while still preventing the negative aspects of biotechnology. Adding to the bureaucracy is often not popular in politics and is hard to sell to constituents but in this case is necessary to ensure democracy survives.

Artificial Intelligence & Automation

Artificial intelligence can refer to a variety of technologies, ranging from a smart lamp to sentient machines, so it must first be defined. For this purpose of this essay, there will be two different types of artificial intelligence. The first will be sentient artificial intelligence, a machine that is conscious and self-aware. This group consists of those that go beyond just recalling memories and simulation, the AI would have its own consciousness (Christian, 2011). The second group will be all other artificial intelligence, including personal assistants and those that can imitate human behavior, which would include a simulation that could pass the Turing Test (Turing, 1950). These will be termed limited artificial intelligence. Many worry about sentient

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artificial intelligence and they have been the subject of many science fiction novels, such as Wilson's (2012) *Robopocalypse*, but the second group is more realistic and poses more immediate concerns. Limited artificial intelligence is already in widespread use and is predicted to supersede humans in almost every field in the next twenty to sixty years (Frey et al., 2017). Each of these provide unique challenges to democracy that must be handled separately from the other.

Limited Artificial Intelligence

Jobs, a prerequisite for Western democracies, are at stake with the implementation of limited artificial intelligence. In the next two decades, roughly half of the current jobs could be replaced by artificial intelligence (Frey et al., 2017) Some compare this to the computer revolution of the Industrial Revolution, where jobs were destroyed but, in the process, other jobs were created. Yet, there is a stark difference between the possible artificial intelligence revolution and these past revolutions: they affect different types of jobs. As Vardi (2012) points out, these past revolutions replaced mostly jobs of manual labor whereas the artificial intelligence revolution would replace mostly skilled labor, such as a paralegal or accountant. New jobs will be created by artificial intelligence, but will enough be created? No. Jobs are already being destroyed faster than they are being created and Carr (2015) believes the gap will continue to grow as limited artificial intelligence takes on a greater role. If nothing is done, hundreds of millions of people could end up unemployed. A society without jobs sounds enjoyable and though this may be the case, democracies are not currently setup to operate this way. High unemployment rates historically lead to instability, such as the decade of the 1930s, which saw the rise of fascism throughout the Western world. Modern democracies are currently incompatible with the coming AI revolution.

Despite the potential drawbacks, artificial intelligence could be a major boon to society. By reducing and eliminating labor from certain fields, it can reduce the prices of goods for consumers. The rise of autonomous vehicles will drastically reduce accidents on the roads and has the potential to save thousands of lives, as over thirty-three thousand people die per year in the US alone to car accidents (Healey, 2016). It could have similar effects to the Computer Revolution and Industrial Revolution in terms of lives affected and possible improvements in quality of life. These would all be welcome benefits to society if it can handle a jobless or reduced work society.

Sentient Artificial Intelligence

Sentient artificial intelligence, though presumably far off, will pose a plethora of issues to democracy if it is ever developed. Science fiction is chock-full of scenarios of apocalyptic scenarios due to sentient artificial intelligence. One common scenario is that the current technology will become sentient and then begin an all-out war against humanity, such as in Wilson's (2012) *Robopocalypse*. Another potential scenario is Gibson's (1986) *Neuromancer*, where the AI embeds itself in the human world. These existential crises pose obvious threats to humanity, but there is a more pressing issue concerning democracy and sentient AI.

What if instead of AI being nefarious, humanity lives alongside artificial intelligence? A sentient AI poses many of the same questions that biotechnology does to the underpinnings of democracy. Would they be considered human? Or would they be hunted and enslaved like in Dick's (1968) *Do Androids Dream of Electric Sheep*? As with biotechnology, a non-human sentient being completely disrupts the underpinnings of Western democracies in much the same way. Two paths seem likely, either Western democracies would have to completely change the underpinnings of their government the AI could be considered subhuman and thus enslaved and

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eradicated. While the former may be more ethical, the latter is the more likely option given human history. Humans have enslaved their own species for thousands of years and forty million people are still enslaved today (Tutton, 2017). Why would a species that has regularly enslaved one another have moral or ethical qualms about enslaving other sentient beings? Especially if these beings are only perceived as robots and not to be living.

Public Policy Solution

There have been many solutions thought up on how to limit the negative impact of limited, but many do more harm than good. One that has been receiving some attention is to just outlaw artificial intelligence. This does solve the problem, but also cancels out all of the benefits of limited artificial intelligence which have the potential to help millions of people. It would also stifle economic competition and prevent consumer benefits in the name of the consumer, in much the same way protectionist policies advocate. These policies, though they sound fine at first glance, are not the best solution. Lee (2017) advocates an alternative solution where the government provides a universal income to replace the lost jobs. This solution may fix the problem as well, but there is a better solution that involves less government intervention and less spending. This should be the last resort after other means have been attempted first and found to fail. Additionally, this will be hard to advance politically, as a universal basic income is already nearly impossible to pass in countries like the United States. While this solution may work, there is an alternative that is less disruptive and with less drawbacks.

Instead of less people working, people could work less hours per week instead. Just as the Industrial Revolution and computer revolution reduced how many hours the many people worked, so too could the AI Revolution. Workers in the United States already work substantially more hours than their European counterparts (Addady, 2016). By reducing the hours worked, a

similar amount of people can remain employed and people will have more leisure time. This would also minimize the disruption to society If pay does not end up being sufficient with this solution, a basic universal income could be considered, but this should be carefully researched before being implemented. A trial run, such as a state implementing such a program before it is introduced federally, could help iron out these issues. This solution will inevitably require the retraining of some workers, but that is a consequence of any new technology. This solution would be more likely to gain traction politically and if it fails, a full universal income can always be implemented.

Sentient artificial intelligence cannot be regulated like other aspect of technology nor does it need to be. An international treaty to ban the development of artificial intelligence may work to prevent apocalyptic scenarios, but this would be ineffective. A ban could easily be avoided, a rogue individual could easily circumvent such a treaty and develop sentient AI without anyone being the wiser. A feasible treaty would be to incentivize nations and individuals from developing sentient AI on their own by creating a shared resource pool of information if they agree to share what research they do and have their research be monitored. The treaty could additionally require an "impregnable 'off switch'" in case the AI does decide to eradicate humanity (Etzioni, 2017). The treaty should, in addition to this, create a panel or rubric to decide whether or not the AI developed are considered alive and conscious or just another limited AI. AI regulation should focus on limited AI which will pose more pressing problems to society and sentient AI is still far off, if it ever is developed. Sentient AI is in many ways too far down the road for democracies to properly regulate. This treaty, though limited, could help prevent the development of rogue and nefarious sentient AI.

Conclusion

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Democracy has weathered many storms in the past and it can weather the storms of these technologies as well. Social media, biotechnology, and artificial intelligence will pose significant problems to democracy, but they are not insurmountable. Proper regulation will prevent them from undermining and destroying democracy. The solutions proposed in this paper are of course not the only solutions, but one way to prevent the end of democracy. If regulations are put in place, the leaders of today will guarantee that these technologies will be another page in the history books like fascism was. If regulations are not in place, there may be no history books to write.

References

Addady, M. (2016, October 18). U.S. Workers Put in Staggeringly More Hours Than Europeans

Do. *Fortune*.

Brown, H., Guskin, E., & Mitchell, A. (2012, November 28). The Role of Social Media in the

Arab Uprisings.

Carey, B. (2017, October 20). How Fiction Becomes Fact on Social Media. *The New York Times*.

Carr, N. (2015). *The Glass Cage: How Our Computers Are Changing Us* (1 edition). New York:

W. W. Norton & Company.

Christian, B. (2012). *The Most Human Human*. New York: Random House.

Diamond, L. (2015). Facing up to the democratic recession. *Journal of Democracy*, *26*(1),

141–155.

Dick, P. K. (1968). *Do Androids Dream of Electric Sheep?* New York: Random House.

Do social media threaten democracy? (2017, November 4). *The Economist*.

Etzioni, O. (2017, September 1). How to Regulate Artificial Intelligence. *The New York Times*.

Firmage, E. (1969). The Treaty on the Non-Proliferation of Nuclear Weapons. *American Journal*

of International Law, 63(4), 711-746. doi:10.2307/2199482

Frey, B., Gigerenzer, G., Hafen, E., Hagner, M., Helbing, D., Hofstetter, Y., van der Hoven, J.,

Zicari, Y., Zwitter, A. (2017, February 25). Will Democracy Survive Big Data and

Artificial Intelligence? *The Scientific American*, 25.

Fukuyama, F. (2003). *Our Posthuman Future: Consequences of the Biotechnology Revolution*.

Farrar, Straus and Giroux.

Fukuyama, F. (2015). Why is democracy performing so poorly? *Journal of Democracy*, *26*(1),

11–20.

Gottfried, J. Shearer, E. (2017, September 7). News Use Across Social Media Platforms 2017.

Gibson, W. (1984). *Neuromancer*. New York: Ace.

Hall, L. K. (2009). Biotechnology and the Problem of Liberal Democratic Governance.

    Perspectives on Political Science, *38*(3), 167–172.

Holley, P. (2014, December 2). Stephen Hawking just got an artificial intelligence upgrade, but

    still thinks AI could bring an end to mankind. *Washington Post*.

Huxley, A. (1932). *Brave New World*. New York: Harper Collins Publishers.

Inskeep, S. (2018, April 5). Full Transcript: Facebook COO Sheryl Sandberg On Protecting User

    Data. *NPR*.

Jankowicz, N. (2018, April 13). Opinion | Why dictators love Facebook. *Washington Post*.

Jefferson, T. (1789, January 8). Thomas Jefferson to Richard Price.

Kennedy, M. (2018, January 22). Facebook Says Social Media Can Be Negative For Democracy.

    NPR.

Kuo, M. (2017, August 23). The Great US-China Biotechnology and Artificial Intelligence Race.

    The Diplomat.

Kurian, G. T., Alt, J. E., Chambers, S., Garrett, G., Levi, M., & McClain, P. D. (Eds.). (2010).

    The Encyclopedia of Political Science Set (1st edition). Washington, D.C: CQ Press.

Lee, K.-F. (2017, June 24). The Real Threat of Artificial Intelligence. *The New York Times*.

Madrigal, A. C. (2017, October 12). What Facebook Did to American Democracy. *The Atlantic*.

Meacham, J. (2012). *Thomas Jefferson: The Art of Power*. New York: Random House.

Metzl, J. (2008). Brave New World War. *Democracy: A Journal of Ideas*, (8), 50–58.

Niklewicz, K. (2017). Weeding out fake news: an approach to social media regulation. *European*

    View, *16*(2), 335–335. https://doi.org/10.1007/s12290-017-0468-0

Non-tech businesses are beginning to use artificial intelligence at scale. (2018, March 31). *The Economist*.

Once considered a boon to democracy, social media have started to look like its nemesis. (2017, November 4). *The Economist*.

Parlapiano, A. (2018, February 16). The Propaganda Tools Used by Russians to Influence the 2016 Election. *The New York Times*.

Stewart, E. (2018, April 10). Lawmakers seem confused about what Facebook does — and how to fix it. *Vox*.

Vardi, M. Y. (2012, October 25). The Consequences of Machine Intelligence. *The Atlantic*.

Wilson, D. (2012). *Robopocalypse: A Novel*. New York: Vintage.