

**Understanding the Politics Behind Increased Anti-vaccine Sentiment in Response to
COVID-19**

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Introduction

The progression of the novel coronavirus, COVID-19, continues to hinder global socioeconomic systems and claim more lives as the year 2020 comes to a close. The effects of this pandemic are felt by those who have lost their jobs, lost loved ones, or been infected themselves and may continue to struggle with health and financial consequences. Due to the relatively high number of asymptomatic COVID-19 cases in conjunction with the wide range of potential symptoms, it has been difficult to prevent the transmission of this disease. Consequently, the creation and distribution of a safe and effective vaccine against SARS-CoV-2, the virus that causes COVID-19, is of the utmost importance. In order to end the pandemic, herd immunity must be achieved which requires around 70% of the population to be protected from SARS-CoV-2 through either previous infection or immunization (Bhagat, 2020). Therefore, the immunization of as many healthy individuals as possible once a COVID-19 vaccine is approved is necessary to terminate the spread of this disease.

A major impediment to attaining herd immunity is the proportion of Americans who are averse to being vaccinated for COVID-19 due to a resurgence in anti-vaccine sentiment. Since the creation of the smallpox vaccine in the late eighteenth century, anti-vaccine groups have protested the safety and ethics of vaccination (Wolfe, 2002). Particularly within the past decade, this perspective has resurfaced and been propagated through the emergence of social media and online interest groups. In fact, around 31 million people have been found to interact with anti-vaccine groups on Facebook which demonstrates the breadth of the audience that anti-vaccine activists are able to influence (Burki, 2020). This increase in anti-vaccine sentiment only

continues to grow during the COVID-19 pandemic as many fear that the accelerated schedule of vaccine development will produce an unsafe vaccine with potentially harmful side effects. As of September 2020, a survey revealed that only 51% of respondents would definitely or probably get vaccinated when a COVID-19 vaccine becomes available (NW, 2020). This statistic is concerning as a significantly larger proportion of the American population must be immunized in order to reach herd immunity for this disease. An analysis of historic trends in anti-vaccine sentiment as well as how this viewpoint affects COVID-19 vaccine perception forms a better understanding of how to address the public's concerns surrounding vaccination. To best understand the complexities of this issue, the theory of political technologies is applied in order to discern the dynamics between vaccination and the current political climate in the United States. This investigation shines a light on the progression of anti-vaccine sentiment and its potential effects on public health by addressing the underlying factors that propagated this once niche viewpoint. In this paper, I argue that the political nature of vaccine technology combined with the rise in social media is primarily responsible for increased anti-vaccine sentiment amongst the American population, specifically in regard to a COVID-19 vaccine.

Problem Definition

In order to understand how anti-vaccine sentiment originated, the development and public reception of vaccine technology throughout history must be analyzed. Vaccines were first available to the public upon the creation of the smallpox vaccine by British scientist Edward Jenner in the late eighteenth century (History, 2020). This vaccine was then widely distributed in Britain through the Vaccination Act of 1853 which mandated vaccination for children younger than three months old and was later expanded to include mandatory vaccination for children under 14 years old. While these laws were implemented in the interest of public health to eradicate smallpox, they were met with immediate backlash from the British public who argued that they required control of their bodies without interference from the government (History, 2020). As a result, the British government had to debate the vaccine mandates over a period of seven years due to the severity of public objection. In 1896, the government finally decided that while vaccines are effective at preventing infection, failure to comply with the vaccine mandates would no longer result in penalization and a “conscientious objector” clause was instituted that allowed those who morally opposed vaccination to be exempt (Wolfe, 2002).

The smallpox vaccine faced similar concerns when it made its way to the United States in the nineteenth century. At first, vaccination was so widespread that smallpox outbreaks had been almost eradicated; however, towards the end of the century, anti-vaccine sentiment increased causing vaccination rates to decrease to the point that a severe smallpox epidemic developed (Wolfe, 2002). The US government attempted to control the transmission of this disease by enforcing mandatory smallpox vaccination but was met with strong opposition from anti-vaccine

supporters. Multiple organizations formed to protest this new vaccine mandate employing pamphlets and legal proceedings to successfully repeal this ordinance in several states and, in some cases, resorted to violent riots to achieve their goal (Wolfe, 2002). Despite the public backlash towards compulsory vaccination, a smallpox outbreak in the early twentieth century in Cambridge, Massachusetts caused local health officials to enact a mandatory vaccination policy for the entire city. When one citizen refused to be vaccinated based on his desire to remain autonomous, criminal charges were raised against him by the local government. The case made its way to the Supreme Court who ruled in favor of the city of Cambridge thereby establishing a precedence of allowing governments to enact compulsory laws to protect public health in the event of a severe communicable disease (History, 2020). The verdict of this case remains significant as it was the first legal debate on the amount of power that the government should have regarding the personal health of its citizens.

The conflict surrounding the smallpox vaccine was only the first instance of anti-vaccination sentiment in a movement which has only grown in popularity over the past century and a half. In the 1970s, the release of the diphtheria, tetanus, and pertussis (DTP) vaccine raised international concerns over its safety due to claims that children suffered neurological damage due to vaccination from a study published in Britain (History, 2020). Soon after, a British anti-vaccine physician published a study to support the claims surrounding the dangers of vaccination, despite his obvious bias. The public outcry that resulted from this series of events quickly spread to the United States due to extensive media coverage. In response, action groups formed to protest the implementation of this new vaccine, similarly to when the smallpox vaccine was rolled out almost a century before. Despite strong opposition that included media

coverage and lawsuits, the strength of the response from federal medical departments, like the Centers for Disease Control and Prevention (CDC), was enough to dispense vaccine fears without a significant decrease in vaccination rates against DTP (History, 2020).

More recently, there was a paper released in 1998 by a former British doctor named Andrew Wakefield who indicated a connection between the measles, mumps, and rubella (MMR) vaccine and the development of autism in children (History, 2020). This claim was met with significant backlash from anti-vaccination groups, but specifically, from parents who were concerned for the safety of their children and suddenly became involved in anti-vaccine discussions. However, it was later revealed that Wakefield published his work with significant bias due to a conflict of interest from his investors as well as faulty methodology in his research that rendered the findings inaccurate. Despite his claims being publicly refuted, anti-vaccination groups continue to cite his research when defending their position (Benecke, 2019). This commitment to propagating inaccurate findings that support one's beliefs shows how truly powerful misinformation can be when addressing a complicated issue such as the technology behind vaccines.

While anti-vaccine sentiment may have existed since the inception of vaccination and even increased due to the release of Wakefield's research, it is now much more common for this viewpoint to spread online. The rise of social media undoubtedly changed the way that individuals interact and share ideas, but this change extends even further to the way that political views are shared. There are online interest groups that exist for almost every viewpoint, especially on platforms such as Facebook and Reddit. This new level of interconnectedness is

most commonly regarded as a societal good as new connections can be made that might otherwise be impossible due to geographic location. However, the ability to share opinions and ideas, particularly fringe political views, with no restrictions can be a cause for concern when considering the ideas that have developed within these online communities before. For example, the far-right QAnon conspiracy group was started online in 2017 on a similar message board to the ones mentioned above. The momentum that this group gained solely from online interactions over the past four years was eventually enough to fuel the Capitol riots in early 2021. As difficult to believe as this series of events may seem, it is more common than one may think that this level of misinformation can pervade an online community.

The influence that these online groups have on those individuals who are uncertain about their views on vaccination contributes to the recent spread of anti-vaccine sentiment. While novel vaccine technology might be thought to exist mainly in the realm of science, medicine, and academia, new vaccines tend to have a distinctly political component, especially amongst anti-vaccine groups. While the political nature of vaccine technology will be explored further throughout this report, it is important to note that online anti-vaccine communities tend to incorporate political components into their arguments and could even be considered as political groups due to their motivations and means of communication.

Regardless of the level of pre-existing anti-vaccine sentiment online, its rapid increase in recent years is a potential cause for concern as more and more undecided individuals are being reached by this content. For example, since 2019, anti-vaccination accounts on social media have increased their following by 7 to 8 million people. Additionally, there are almost “31 million people [that] follow anti- vaccine groups on Facebook, with 17 million people subscribing to

similar accounts on YouTube,” which shows the breadth of the audience that anti-vaccine groups can access (Burki, 2020). This rise is particularly concerning because the majority of individuals that this content is reaching are those who are undecided in their opinions on vaccination and are likely to be swayed by interesting or convincing content. In fact, anti-vaccine groups are able to attract a larger following than other accounts as their content on YouTube reported both increased viewership and higher ratings than that of pro-vaccine groups (Benecke, 2019).

After considering the sizable impact that these online groups have on undecided individuals, it is important to next consider what other content can be shared among these communities. For the most part, this content ranges from conspiracy theories, non-traditional medicinal practices, and, more recently, information about COVID-19 (Johnson, 2020). The inclusion of COVID-19 information in anti-vaccine discussions is particularly worrisome as the race to vaccinate a majority of Americans to reach herd immunity is still underway. The spread of misinformation can strongly impact the opinions of those who encounter it without any prior fact-checking, as illustrated in the example of the Capitol riots. As a result, one must consider how the politicization of vaccine technology and COVID-19 could contribute to forming skewed perceptions of these subjects. Once again, the discussion around anti-vaccine sentiment becomes inherently political, beyond simply the science behind vaccine technology.

Methods

When discussing the recent increase in anti-vaccine sentiment as well as its more general progression throughout history, it is necessary to consider the political components of vaccine

technology. Political components can include any factor of this technology that provokes politically divisive discourse or resonates with individuals moral alignment and subsequently their political opinions. The best lens through which to examine this problem is the theory of technological politics, commonly known as “political technologies,” which was formally developed by Langdon Winner in his essay titled *Do Artifacts Have Politics?*. This essay builds on the claims of previous work from other socio-technical scholars who developed prominent STS frameworks including technical determinism and social determination of technology, the latter being commonly referred to as “technological momentum.” It is first important to understand these two frameworks before the reader can fully grasp the significance of Winner’s novel political technologies framework.

The first framework that must be explored to understand the theory of technological politics is technological determinism. This framework was best defined and summarized by Merritt Roe Smith in his essay titled *Technological Determinism in American Culture*. In this piece, Smith describes the basis for the theory of technological determinism which can be succinctly summarized as the “belief in technology as the driving force in society” (Smith, 1992). To reiterate, this theory states that technology is the principal force that molds society and that as new technologies are developed, society adapts to accommodate them accordingly. This rigid view of societal progress was formed in the Enlightenment Era when industrial capitalism began to dominate the political scene. Consequently, technology was then a very powerful force when one considers how much society adapted to the introduction of steam power and factory systems. However, despite the strong, visible effects of new technologies during this era, the theory of technological determinism completely ignores factors such as “international conflict,

national politics, maldistribution of wealth, and differences of class and gender” as affecting widespread societal change (Smith, 1992). Although this paper will not explore the specifics of how social change is initiated, it is widely accepted that change does not occur solely due to the invention of new technologies which is the main deficiency in this framework. On the other hand, another theory exists that posits that social and technological progress is driven exclusively by social factors and that new technology is developed in response to social changes. This theory is almost the exact opposite of technological determinism and is aptly referred to as social constructivism. While both of these theories share the same downfall due to the rigidity in their views of how societal progress occurs, there is another theory that more accurately combines these perspectives.

Between the extremes of social constructivism and technological determinism, another theory known as technological momentum was developed that combines these frameworks to form a more moderate perspective. The general principle behind technological momentum is that “social development shapes and is shaped by technology” rather than solely technical forces determining social changes or vice versa (Hughes, 1969). This theory is elaborated upon in the rest of Hughes’ essay titled “Technological Momentum” in which he clearly differentiates his theory from technological determinism. The most important distinction to take away from this argument is that Hughes proposes the idea that technology includes social aspects and forms a technological system rather than existing as a distinct technology (Hughes, 1969). In other words, “social, or interest groups define and give meaning to artifacts [and] in defining them, the social groups determine the designs of artifacts” (Hughes, 1969). This theory is pivotal in the progression of socio-technical theories, leading up to the theory of technological politics, due to

the association of the reciprocal effects between technology and social forces. This theory is more complex, adaptable, and convincing than either theory of social constructivism or technological determinism; however, it still does not explain the depth of interaction between society and technology, especially in relation to anti-vaccine sentiment and vaccine technology.

Winner opens his argument on the theory of political technology with the claim that “there is no idea more provocative than the notion that technical things have political qualities” (Winner, 2020). This statement summarizes the first part of understanding this argument very succinctly. It could be commonly accepted that technological systems interact with political systems to affect social change on a deep and complex level, but it is more challenging to explain the ways in which certain technologies have inherently political components despite being developed within a seemingly unrelated field. The theory of technological momentum and the theory of technological politics are still fairly similar at this point in one’s understanding as they agree that the interplay of technological and social forces can drive socio-technical progress. However, the theory of technological politics differs as it “takes technical artifacts seriously [and] suggests that we pay attention to the characteristics of technical objects and the meaning of those characteristics” (Winner, 2020). By unpacking this idea, it becomes apparent that it is important to distinguish how some technologies can have inherently political qualities while other technologies can have political effects when combined with certain social forces. This is an important distinction to note as it constitutes the primary difference between the frameworks of political technologies and technological momentum, respectively.

Once it is understood that the theory of political technologies recognizes the inherent, political characteristics of certain technologies, without the context of further social interactions, it is important to explore what constitutes a political technology. An inherently political technology is one that is constructed, either intentionally or unintentionally, to “require, or to be strongly compatible with, certain kinds of political relationships” (Winner, 2020). It is important to note that political technologies can be developed unintentionally. This could occur if a technology is developed but then can only be successfully implemented in a certain political environment. A political environment, in this context, can refer to “arrangements of power and authority in human associations” rather than a dominant political party being in power necessarily (Winner, 2020). To reiterate, political technologies require certain political systems or specific organizations of power between individuals to function properly. A perfect example of this kind of inherently political technology is vaccine technology and the power dynamics that it necessitates in order to function exactly as intended. This political aspect of vaccines facilitates its spread through online forums as it promotes political discourse. This proposition will be explored further using the theory of political technologies as a framework to understand the relationship between vaccine technology and political systems as well as how their interactions elicit downstream social change.

Results

Once the complexity of Winner's theory of technological politics is understood, the next step in this investigation is to consider a COVID-19 vaccine candidate to be a political technology. This is an acceptable assumption as many arguments against vaccination venture beyond perceived health risks to include concerns about infringement upon individual rights. In other words, some anti-vaccination supporters tend to offer "distinctly political reasons" against vaccination so this subject must be considered a political issue (Winner, 2020). To reiterate Winner's framework, all technologies have a political component. The political nature of a technology can be explicit and intended as part of its design or can be inherent and arise from the system of beliefs that said technology reinforces. In the case of vaccines, it is an inherently political technology based on its ability to provoke the political, religious, and moral beliefs of those who face the choice of whether or not to be vaccinated.

In order to fully understand the complex relationship between vaccine technology and politics, one must investigate the importance of governmental structures in relation to vaccine effectiveness. Without delving into the minutiae of vaccine technology, vaccines require large-scale immunization to be as effective as possible and eliminate the transmission of the target disease. This phenomenon was seen with the smallpox epidemics in the late nineteenth century in which widespread, mandatory vaccination was able to eliminate the disease to the point where there is no longer a single case of smallpox worldwide. However, it is important to note that vaccinations were often distributed under mandates with threat of punishment for failure to comply. This system of distribution may have been acceptable two centuries ago, but laws

protecting individual rights and autonomy related to personal health would prevent this sort of forced vaccination. For most diseases, vaccinating a sufficient proportion of a population to protect against a disease is a fairly easy undertaking that occurs regularly with the Diphtheria, Measles, Mumps, etc.. However, anti-vaccine sentiment has increased so significantly in recent years and in response to the COVID-19 pandemic that public health experts anticipate that this resistance to vaccination will inhibit the attainment of herd immunity against the virus SARS-CoV-2.

While concerns about COVID-19 vaccination due to a fear of vaccines or a lack of understanding of their technology can fuel anti-vaccine sentiment, this investigation aims to examine how political factors have caused this perspective to spread. To reiterate an earlier point, vaccines constitute an inherently political technology as they require mass cooperation from a population that can only be achieved through a very centralized government or collectivist society. The United States lacks both of these features which contributes to why anti-vaccine sentiment might threaten herd immunity for COVID-19. While there is obviously a centralized government, the freedom of political and personal rights prevents the government from mandating vaccination for all citizens. Similarly, there is a very strong sense of individualism in the U.S. which leads many people to prioritize their own health and well-being over that of the general population, which is the opposite in a primarily collectivist society that prioritizes the whole community. Without attempting to debate which societal organization is better, it is important to note that truly individualistic people value their autonomy and right to make their own decisions above almost all else. As a result, the possibility of mandatory vaccination can drive individuals away from vaccination as this presentation makes it a political issue. Rather

than being a discussion of how safe and effective vaccine technology is, the conversation has shifted to become a dialogue on how much power the government has over what individuals put in their bodies. The argument now is whether widespread, mandated vaccination is an infringement on person rights. Much like the mask mandate and strict social distancing restrictions implemented by the CDC, COVID-19 vaccination has become a highly politicized issue rather than a public health issue.

The political nature of a COVID-19 vaccine is what allows anti-vaccine sentiment to have spread so rapidly across online forums and on social media. Most of these online sites are concerned with highly divisive political issues as that sort of sensationalism makes for attracting and entertaining content. Now that COVID-19 vaccination has become one of these issues, it is spread online in the same way that other controversial political issues have been, especially because online interest groups are particularly successful at spreading fringe political views. For example, the QAnon conspiracy started as a small group of political extremists and spread so far as to conceive the Capitol riot. In this same way, anti-vaccine sentiment, which once used to be associated with concerned mothers and leftist celebrities, has now spread to enough people to concern public health officials about their ability to vaccinate enough of the population to protect against COVID-19. When vaccines are understood to be a political technology, supporters of anti-vaccine sentiment are no longer considered to be an assortment of fringe political activists hiding behind their computer screens, but a collection of individuals who believe in their duty to protect their individual rights. The most critical mistake being made when deciding how to address anti-vaccine sentiment is the failure to consider this perspective to be a political movement.

Conclusion

The investigation into the inception and progression of anti-vaccine sentiment, particularly regarding a COVID-19 vaccine candidate, aims to better understand and address this perspective. The classification of vaccine technology as a political technology helps simplify the pursuit of how anti-vaccine sentiment managed to become so widespread in recent years. As soon as this perspective is considered to be a political movement, it is easier to understand how a once fringe political idea has become mainstream through social media and online forums. Vaccines are often considered to be a technology belonging within the scientific and medical communities. This belief frames anti-vaccine supporters as individuals who lack understanding of the fundamental science behind vaccines or those who oppose modern medicine. However, when examining vaccine technology through the lens of its political nature and downstream political repercussions, one can better comprehend how opponents of vaccination may base their argument on a political perspective. By developing a deeper understanding of the political motivations that drive anti-vaccination sentiment, public health officials will be better able to address those concerns in order to vaccinate a sufficient proportion of the American population to reach herd immunity for COVID-19.

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