

6-16-2021

Connecting the Fossil Fuel and Tobacco Industries Through Dependency and Denialism

Alyssa M. Shea
Portland State University

Follow this and additional works at: <https://pdxscholar.library.pdx.edu/honorsthesis>



Part of the [Political Science Commons](#)

Let us know how access to this document benefits you.

Recommended Citation

Shea, Alyssa M., "Connecting the Fossil Fuel and Tobacco Industries Through Dependency and Denialism" (2021). *University Honors Theses*. Paper 1031.
<https://doi.org/10.15760/honors.1057>

This Thesis is brought to you for free and open access. It has been accepted for inclusion in University Honors Theses by an authorized administrator of PDXScholar. Please contact us if we can make this document more accessible: pdxscholar@pdx.edu.

For many years' science denialism has been used to support capital gain. This was first seen on a large scale within the Tobacco industry when evidence came out confirming the effects of secondhand smoke as well as evidence detailing how smoking causes cancer. Over recent years, science denialism has extended into a new branch, climate denialism, and it is being used by the fossil fuel industry in order to deny the scientific evidence which shows the use of fossil fuels are the main contributors to climate change. What has not been talked about much is the connection between these two industries, the tobacco and fossil fuel industry, and how they are using the same tactics to coerce dependency on their products in order to maintain significant capital gain. These two industries have many similarities, not just in their use of science denialism to negate the negative effects of their products, but also in the ways they have created dependency on their products. Current research looks at this phenomenon of dependency on a much broader scale, it does not tie these two industries together based on their coercion tactics, but through the use of the same science denialism tactics. This research will create a deeper understanding of how these industries mimic each other in coercing dependency, thus demonstrating how dependency and denialism are inherently related. The goal of this analysis is to look more closely at how these industries' playbooks regarding denialism create dependency.

To understand this relationship of dependency this paper will use the Jevon's Paradox to explain how these industries' quest for efficiency have led society into a path dependent reality. Thus, demonstrating how these industries have propelled society down a particular path based on their choices to only focus technological improvements on efficiency. Both industries have created what William Stanley Jevons identified as a "paradox", by employing technology that increases the efficiency of how their products are consumed. This study will also go one step further and consider how ending the dependency of these products can be done in similar ways. No current research looks at how the cessation methods for the tobacco industry can be replicated onto the products of the fossil fuel industry. This is a valid point for further exploration that this study addresses because these industries products are both highly addictive thus making the user more dependent on the product. So, this study looks at successful methods of cessation from tobacco products and analyzes if they can apply to fossil fuel products and what that would look like. The Jevon's Paradox also makes a re-appearance here, due to the inability to completely separate an individual from the use of fossil fuel products. Although this study does find a way that tobacco cessation methods can be applied to fossil fuel products, it also identifies ways in which fossil fuels products are embedded within western society. Using the Jevon's Paradox as a resource for the explanation on why an individual cannot fully be responsible for stopping their use of fossil fuel products, it is shown that the western capitalist society would have to be restructured in order to separate from fossil fuel dependency. Thus, meaning under the current capitalist system it is impossible to fully break the ties of dependence on fossil fuels. The questions this study will address are as follows: Does fossil fuel dependency promote climate denialism? How has the fossil fuel and tobacco industries used science denialism to promote their products, thus causing their products to create the same dependency?

If so, can users withdraw from these products in the same way? By addressing all these questions, this study plans to create a clear picture of how the tobacco and fossil fuel industries are connected through coerced dependency and denialism. The overall purpose of answering these questions is to bridge the gap between the fossil fuel industry and the tobacco industry, thus opening this area for further exploration in a time where science denialism is wreaking havoc on the environment and further lifeforms.

Literature Review

Research on denialism is not new, nor does this study present any new information, however it fills in the gap that the current research is lacking. The information that is present in the current literature discusses denialism as a whole, the production of science denialism, how to combat climate denialism, the fossil fuel industry and its connection to climate change, and lastly the fossil fuel industry and its connection to the tobacco industry. What the current literature is missing is the connection between the fossil fuel industry and the tobacco industry through the dependency created by their products, and how this dependency leads to denialism. These gaps, in the current literature, is where this study will fill in. In order to understand this topic and the motivation to conduct this research, to fill this gap in the current literature, the current literature must be discussed and outlined.

I. Politics of Denialism

Denialism is a tactic that is used against a well-accepted piece of information, this is most often a scientific conclusion. This tactic is used to make the well accepted consensus not appear as a consensus at all, by highlighting individual voices that provide evidence that this consensus was improperly made (McKee 2009, Bardon 2020, Zerubavel 2006). Denialism is only able to work when both parties avoid the certain set

of information, meaning that both the producer of the denial and the targeted consumer avoid the information of the consensus after deciding to join in a conspiracy of silence. Denialism is a tactic that has to be accepted by the consumer in order for it to work, and it takes multiple parties. If the producer of denial does not create a large enough platform for the evidence against the consensus, denialism will fail as a tactic to combat well accepted information. This is because the consumer has to make a conscious effort to deny all other information that is not being produced by the denialist campaign (McKee 2009, Bardon 2020, Zerubavel 2006).

The next important grouping of current literature is about how science denialism is able to be constructed and who is more likely to partake in it, especially with climate denialism. The denial here is around climate change, especially anthropogenic climate change. The majority of the literature that falls into this category focuses on those who are more likely to follow denialism tactics. Research has shown that wealth, race and sex are important variables for determining who will follow the misinformation created by the denialism campaign (Norgaard 2012, McRight & DunLap 2011, Poortinga e.t al 2010). In the United States political parties play a significant role in determining the probability that one will deny climate change, especially anthropogenic climate change. Since the release of the scientific consensus around human caused climate change those that chose to associate themselves with the Republican party in the United States are likely to partake in denialist tactics (Mann & Toles 2016, Poortinga et al. 2010, McCright & Dunlap 2018). This is most likely due to the fact that the Republican party in the United States is predominantly non-Hispanic white, as well as being financially better off than those individuals who are part of Democratic or Independent party (Fay

2012). This information is important because research has found that conservative white males hold the highest percentage of those who deny climate change in the United States (McRight & Dunlap 2011). Research has also shown that financial standing plays a large role in the ability to deny climate change. One with more wealth, thus placing them in a position of privilege, tends to deny that climate change is important. The effects of climate change are mostly felt by women of color in the global south. Those with the wealth that live in the global north are able to deny the importance of addressing climate change because they are not the recipients of its effects (Norgaard 2012). In the global south the majority of women work within subsistence farming therefore, changes in climate creates great vulnerabilities to them. Long term flooding can lead to a lack of ability to feed their families as well as risk of drowning, many women are often denied the ability to learn how to swim (Norgaard 2012). Since the global north is not the recipient of many of the harmful effects of climate change there has been a normalization of climate change resulting in the recurring idea that everything is fine. This became a gateway to denialism tactics to be used on climate change (Norgaard 2012, Oreskes & Conway 2010).

II. Tobacco & Fossil Fuel Industry; Similarity and Differences

Due to the normalization of the effects of climate change the global north was encountering, it made it easier for those who wanted to skew the information about climate change. The first step was just to confuse the public about the science information that had been given. This works because if the public believes that the science behind something is debatable, they are significantly less likely to back any public policy that is based in said science. This is the tactic of doubt mongering, which is

not a new tactic, it has just been moved into the scientific arena (Oreskes & Conaway 2010). Once the public begins to question the science at hand, those behind the denialist campaign find scientists, as well as people with a credible background, to write papers, give speeches and publish claims debunking the scientific consensus in question. This then makes the consumer of the information have to choose what information they believe. The denialist campaign, within itself, has already become detrimental to the scientific consensus at this point because policy will not be put in place to deal with the repercussions outlined in the conscience because of the public uncertainty (Oreskes & Conaway 2010, Mann & Toles 2016). The tobacco industry was the first to use these denialist methods on a large scale. The tobacco industry had two large denialist campaigns: one against smoking causing cancer and the other about secondhand smoke. As early as the 1900's it was known that smoking tobacco had massive health effects, however not until the 1950's was this information made available to the public. Once the information was available the executives of the tobacco industry had a meeting in which they developed the playbook for science denialism that is known around the world today (Baxendale 2018). They used aggressive advertisements and were the first to use the term "junk science", in regard to the scientific evidence that proved smoking causes cancer.

The fossil fuel industry used the tobacco industry's tactics to create a denialist network around anthropogenic climate change. Therefore, the fossil fuel industry was not the first industry in United States history to be credited for creating a denialist campaign and using its ties to the government to conceal information. There has been a lot of research done on connecting the fossil fuel industry denialist tactics to that of the

tobacco industries that came before it. Research has been obtained outlining how companies like Exxon knew about climate change and the effects of their products in causing the climate to change many years before it came to the attention of the general public (Frazier 2016, Baxendale 2016). Exxon had employed its own internal scientist to study climate change from 1988 to 1992 in the arctic, their scientist reported back with information highlighting that climate change is happening and what some of the effects of climate change would be, such as higher sea levels. Once Exxon obtained this information not only did they conceal it from the public but they also actively became one of the largest players in the denialist campaign against the idea that the world was warming (Frazier 2016, Baxendale 2016, Oreskes & Conaway 2010). The fossil fuel industry was able to conceal this information because of its generational ties with the government in the United States. The United States government and the fossil fuel industry are so closely intertwined that a United States presidency is measured by the GDP and the narrow trade deficit which is greatly improved through the fossil fuel exports (Dickinson 2014).

The tobacco industry, much like the fossil fuel industry, has deep ties to the United States government. Just like when fossil fuel regulations increased in the United States, the United States government put pressure on the non-western world to allow for the fossil fuel industry to expand to their soil. ??This mimicked what the United States government did with tobacco products in Asia (Revkin 2014, Dickinson 2014). Like the tobacco industry the fossil fuel industry created a research institute and council that was made to look to the public like it was researching climate change, when it was actually producing misinformation about climate change and creating false science (Oreskes &

Conaway 2010, Baxendale 2018). The fossil fuel industry took the step-by-step playbook on how to create a successful denialism campaign directly from the tobacco industry. The research has shown that not only did the industries use the same playbook, but also the same scientist to write their fake science publications and cast doubt among the general public (Oreskes & Conaway 2010). The tobacco industry was eventually taken to court for its legal misinformation campaign under the Racketeer Influenced and Corrupt Organizations (RICO) Act yet they were only penalized because they lied under oath when asked if smoking caused cancer (Oreskes & Conaway 2010). Many have wanted the fossil fuel industry to be taken to court, like the tobacco industry, because of similar misinformation campaigns. There has been research done on the likeability that the fossil fuel industry would lose the case. The research currently shows that although the issues that the case would contain are complex the case itself is not, because the fossil fuel industry at the baseline marketed and sold its product with deception and a sole focus on financial success without any regard for humanity (Baxendale 2018). These industries are tied in so many ways from their denialist campaign to relationships with the United States government to their legal cases.

III. Combating Climate Change

Although these industries are tied together in so many ways there has been barely any, if at all, research done on how these industries' products of dependency can be stopped by using the same tactics. This paper will address not only how these industries used the same denialist tactics and how their products mimic one another, but also how the solution to addiction of both nicotine and fossil fuels can be addressed in a similar fashion. Due to the fact that these industries have not been connected this way, there is a

lot of significant research that has already been done about how to respond to climate change denialism. Research has shown that there is a significant lack of understanding about climate change through political lines, therefore creating climate change to be politicized therefore creating the polarization that is seen today when trying to address solutions to climate change (McCright & Dunlap 2018). Other research has shown that a powerful social movement is needed in order to combat climate change, right now the power to solve climate change has been given to the elites within a capitalist society where no progress will be made. In order to create a movement that could lead to the addressing of climate denialism and dealing with climate change there needs to be more research done into policies of ecological modernization that the elite community has been proposing (Bonds 2016). Understanding is needed in order to make sense of the way the climate denialism campaign took such a stronghold in the United States conservative movement. Research has shown that this is because addressing climate change means addressing the capitalist system which the conservative movement needs to protect (McCright & Dunlap 2010). This lack of understanding has created much divide in the issue of climate change, so much of the research on how to address it starts with creating a general platform of understanding (Bonds 2016, Hamilton 2009, Norgaard 2011). Overall, there has been no definitive solution to climate change or how to address climate denialism. This paper will look at the products of the industry that are at fault for both climate change and its denialist campaign in search for more descriptive possible answers.

Methodolgy Section

The method of analysis this study will be using, in order to answer the questions presented above, is a comparative historical analysis. This method has been around for a while and is commonly used throughout the social sciences when looking at historical conceptualized comparisons. A comparative historical analysis is a way of conducting research where the researcher uses a systematic comparison and analysis of a process that has happened through an extended period of time to explain large scale outcomes such as political regimes or welfare states (Mahoney 2004). Using the comparative historical methodology allows for the analysis of both necessary and sufficient causes of the phenomenon that is in observation. As this methodology places great importance on sequence arguments, the researcher focuses intensely on the early events that happen in the sequence. In order to form a sequence argument there must be evidence that earlier events shaped the trajectory of the following events (Mahoney 2004). Therefore, the comparative historical methodology is often used to answer hefty societal questions about large scale outcomes. Using this method, a researcher is able to ask large scale questions in order to assemble a puzzle about a specific set of cases, exhibiting multiple similarities, thus leading to the comparison of such cases.

For this particular study about the connection between dependency and denialism it is extremely beneficial to use this methodology. There are four steps in using a comparative historical analysis; The first being developing a hypothesis; The second choosing the specific cases one wants to examine; The third examining the similarities and the differences between the multiple cases; Lastly, based on the information gathered throughout the analysis, come to a causal conclusion about the particular phenomenon (Schutt). The overall hypothesis for this specific research is that there is a causal relationship between dependency and denialism, meaning that dependency on a product leads to the outright denial of the effect of that

product. For this case the focus is the products specifically from the tobacco and fossil fuel industry. As already presented, the specific cases this study will analyze is the fossil fuel industry and its construction of climate denialism, thus comparing it to the tobacco industry and its denial of the effects of secondhand smoking. The tobacco industry denial campaign is the event from the past that has shaped the fossil fuel industries trajectory for their denial campaign. This can be seen through the release of official documents and emails that formulate the tobacco industry's denialist campaign playbook and then comparing these strategic moves to the climate denialism movement of today. This method of analysis for these specific cases will form a causal conclusion to be made about how these industries have been able to use dependency on their products to create strong and effective denialist campaigns and through this conclusion open up a new space for discussion about cessation methods of fossil fuels.

To provide evidence for the effectiveness and the reliability of this method there are two previous studies that have used this methodology to create causal conclusions. One of the previous studies was done on nation-state membership in Western Europe. It used this method to compare 1880's France and the Wilhelmine era Germany (Brubaker 1990). The study looked at the distinctive differences and similarities between the two countries as well as the eras and how these impacted the immigration policy. In order to do this, an ideal model of a nation-state membership is created, then the study does a in depth analysis of a wide variety of European citizenship law and naturalization practices. European citizenship law and naturalization practices documentation are this studies primary sources, as these are original source information on the topic in question. Secondary sources for this study are writings about traditions of nationhood in each country. The study then combines the analysis of both the primary and secondary sources to come to conclusion about how the development of these particular

traditions of nationhood, in question, shaped the development of citizenship law and naturalization practice. By doing this it concluded that the politics of citizenship, in relation to immigrants, is highly dependent on national self-understanding (Brubaker 1990). The comparative historical analysis methodology was used here to compare two eras in two different countries to come to an overall conclusion of a phenomenon.

The second study that follows the same methodological trajectory of this current study, is a study by Barzelay and Gallego. Their research is done on public management policy cycles in Spain, Italy and France. Their study uses the comparative historical analysis method to find the main causal factor that explains how these specific European countries' policy reforms made progress, including their eventual passing (Barzelay & Gallego 2010). In order to do this their study looked at each specific country, thus conducting three different original case studies about these reform periods and then analyzed the specific causal events in each case. The data gathered for each case study was both primary and secondary. The primary data was archival interviews done with the actors of each reform era. This is a primary source because even though it is archival data it is a firsthand account. The secondary data that was used was documented information about conduct, activities and incidents that followed the specific episodes in question (Barzelay & Gallego 2010). By doing this they were able to create explanatory arguments about the causation of these events, then comparing the explanatory arguments from each of the countries. The benefit of using a comparative historical analysis for this study was that it showed the reason why researchers should hold reservations about making overarching generalizations about an inevitable progression toward the stability of a country that has a Napoleonic administrative tradition to become more understood (Barzelay & Gallego 2010). Barzelay and Gallego were able to make an overall conclusion about how contention

played a major role in the shaping of authoritative choices about public management and policy. Thus, again illustrating how the comparative historical method is used to compare different entities and times to come to an overall conclusion.

This study is addressing two different industries in two different decades that are being compared in order to come to a conclusion about the phenomenon of a relationship between dependency and denialism. Like the studies above, this study will use both primary and secondary sources in order to come to its overall conclusion. The two industries of focus for this study have essentially released what has come to be known as their playbooks, thus providing this study with some primary sources. This comparative historical analysis will use both primary and secondary sources. The primary source in this case are the files released from the tobacco industry that outline their playbook regarding the discrediting of scientific data, as well as the information that has been recovered from within the fossil fuel industry, such as firsthand accounts and released communications. The secondary sources are studies that have been done on these industries as well as the concepts of dependency and denialism. They will provide data on the particular phenomena that the analysis is planning on addressing. An important distinction to make between this study and the previous studies that have used this method, is that this study does follow a very similar path to its conclusion as the previous studies however it does not compare these industries in question in multiple countries. The focus of this study is on these industries as a whole, while many of the studies that this paper will include have been conducted in the United States, there are a few that have been from other areas of the world. This study is not interested, at the moment, in identifying the impact differences that these industries have throughout the world. Overall, the use of this method allows for the

creation of a causal argument about the macro-sociological phenomena of science denialism and its internal motivation of capital gain.

Theory Section

To understand the organization of this study it is essential to address that it will be attempting to bridge three different disciplines within the branch of social science in order to answer the questions about the relationship between the tobacco and fossil fuel industries. This paper will be written with intersectional disciplinary thinking that comes from psychology, sociology and political science. Using information and techniques from all these disciplines will create the opportunity for a more comprehensive understanding of the tactics the tobacco and fossil fuel industries are using, and their interrelationship with dependency. A previous investigation into these two industries has shown that there is a reliance on the same tactics such as science denialism (Kenner 2014). The extension this study plans to create is an understanding about how these tactics are based off of a dependency on these industries' products.

This study uses the theories of science denialism and Jevon's Paradox to explain how these two industries have been able to create dependency. Science denialism is the use of rhetorical arguments to manufacture what looks like a legitimate debate on scientific knowledge that has been well accepted within the scientific community (Sven 2017, Rosenau 2012, Diethelm & McKee 2009). The overall goal of denialism is to reject and create skepticism around a specific scientific consensus. Climate denialism, more specifically, is denial around the scientific consensus that the climate of the earth is changing, becoming warmer as an overall trend (Hamilton 2011). The interesting thing about climate denialism is that it is often further broken down into human caused climate denialism. This distinction of climate denialism houses

those who believe that the climate is changing but it is not caused by humans. The majority of the scientific community has concluded that climate change is human caused, especially by humans over the past few decades (Wouter et al. 2011). Understanding what science denialism is, as well as climate denialism is important to this study because these come up multiple times throughout the research and thus will be quite present through the remainder of this study. Knowing how these denialist campaigns work is also essential to understanding. This study addresses how dependency creates denialism; thus a concrete understanding of what denialism is as well how these campaigns function is needed in order to grasp the overall research and conclusion of this study. These denialist campaigns are able to manufacture doubt because they are able to mimic the scientific community so well. This occurs because science denial is able to share in the authority that is given to science, by proposing their data in the same way as scientifically tested data (Rosenua 2012). In some cases, science denialist data has been backed by a credible scientist and made it through a peer review process, however this is not as common as fabrication of peer reviewed data. Science denialism is also able to create its authority because an audience tends to determine the credibility of data based on how well data matches their own beliefs (Rosenua 2012). This trend created a scientific space for people who were skeptical about scientific conclusions, like climate change, to meet thus creating a social group. The ability to have a basic understanding of how science denialism functions is important to this study, because both the industries this paper is researching use the mechanism of science denial to create a following in their denial of science that jeopardizes their products.

The next theory that is important to have a basic understanding of is the Jevon's Paradox. This theory holds a main focus in this paper, and it can be seen at play within both of the industries in question. The Jevon's Paradox most simply put is that as efficiency increases

for how a resource is used, the resource use also increases, therefore the new technology does not mean that it is a more sustainable practice (Giampietro & Mayumi, 2018). A simple example of this paradox is with cars, as cars get more fuel efficient the amount that individuals drive increases therefore increasing emissions. The Jevon's Paradox is interlinked with this study because of its relation to dependency. The paradox identifies that systematic changes are needed not just technological ones, yet when looking at the most unsustainable systems today, the approach to make them more sustainable is done solely by the creation of new technology, especially in the specific areas of interest, for this study, the tobacco industry and the fossil fuel industry (Giampietro & Mayumi, 2018). Articles on the Jevon's Paradox pay great attention to the fossil fuel industry, because it seems that this industry specifically cannot beat the Jevon's Paradox. In an article by Giampietro and Mayumi there is a discussion on how efficiency does not have sustainability, so if the focus is only on creating more efficient products, then Jevon's Paradox will continue to be at large in the industry (2018). Piggybacking on the idea presented earlier, of fuel-efficient cars being part of the Jevons paradox, so are electric vehicles. Electric cars that are not powered by oil do not lead to them being more sustainable, they are only more efficient in the aspect of not using oil to power them. The concept of electric cars exists within the Jevon's Paradox because mass amounts of different fossil fuels are needed for the creation of the cars leading to exploitation of other resources. This then entraps the consumer into an endless cycle of dependency.

This cycle of dependency is often referred to as path dependency. Path dependency explained most simply is the idea that one's present decisions are constrained by the decision of their past (McGee & York, 2016). To provide an example of path dependency one can look again at the fossil fuel industry. Like many industries, the fossil fuel industry focuses on

efficiencies of their product and in the development of their product. In doing this they increase efficiency but they also increase the amount of resources used. This is because as something becomes more efficient it also becomes more cost effective, therefore more worthy of investing in it. Causing more people who were not using a specific product before beginning to use it because they believe it to be doing less damage. Again, one can look at today's electric cars to explain this phenomenon. The cars are seen as more efficient because they do not rely on oil, which is known to create environmental problems like climate change, so when an alternative came out that was not run on something that is seen as being destructive to the environment, people who were not driving before either bought an electric car or started driving their electric cars more. As stated above, today's electric cars still run-on fossil fuels therefore still cause considerable harm to the environment. The problem simply put is that a capitalist society functions on the notion that money is more important than conservation therefore everything in this society follows a certain developmental path that puts efficiency as the top priority for the creation of new technology. Therefore, this developmental path creates its own notion of dependency. In order to break away from this path a total reconstruction of the major structural aspects of the capitalist society is necessary (McGee & York, 2016). What path dependency means in the Jevon's Paradox is that the consumer has very little options in deciding what they want to see in new technologies of the future because they are dependent on the decisions of the past. This becomes an endless cycle that can be seen within many of today's industries.

A study was done on the Jevon's Paradox in the United Kingdom evolving carbon dioxide emission in relation to transportation. This study found that in order for the United Kingdom to reduce emissions more would need to be done than just increasing the fleet efficiency. It would also be necessary for the cost of travel to be more expensive as well as large

reduction in the amount an individual travels (Freeman, Yearworth & Priest 2015). The study shows that how to overcome the Jevon's Paradox is not just through increasing the efficiency of resource use but also making the resource more expensive therefore giving people the initiative to use it less. This is the opposite of what is happening now, when efficiency increases the price decreases therefore encouraging people to use the product more. Another study on how to overcome the Jevon's Paradox was done in Israel and it came to a very similar conclusion as the previous study. This study found that just focusing on technology with a focus on efficiency will not result in a reduction. There needs to be research done on demand management focusing on how to permanently change transportation patterns as well as why there is a growing dependency on automotive travel (Tal 2017). The study in Israel noted how there is an increasing reliance on automotive transportation, in specifically private automotive transportation, this then leads back to the idea of path dependency. Society has been structured in a way that travel has become a necessary commodity therefore entrapping society into an endless cycle of reliance. The Jevon's Paradox is used in this study to show the consequences of denialism that both the tobacco and fossil fuel industry have created through the dependency on their products.

Dependency & Denialism

I. Relationship Between Dependency and Denialism

Dependency and denialism's relationship is that of direct correlation. This can be seen not only through how fossil fuel dependency is related to climate skeptic beliefs, but also through physical addiction like to nicotine dependency and its relation to science denialism. This section of the paper will outline the relationship between dependency and denialism. The goal is to address how path dependency relates to the interlinking

between dependency and denialism within the tobacco and fossil fuel industries. Dependency and denialism have a direct correlation to one another because denial acts as an alternative explanation to one's dependency. When the consequences of one's dependency is not straightforward common knowledge, it becomes very easy to disengage from the new knowledge in circulation that explains these consequences and why they are happening (Pickard 2016). Denial becomes a scapegoat for dependency, it creates a path that requires little to no change at all in one's actions. Denial happens through two pathways; these are cognitive dissonance and addiction. Due to the fact that denial becomes the easy pathway for addressing dependency, it is not surprising that fossil fuel dependency is connected to climate denialist beliefs. This connection between fossil fuel products, like oil, and denying climate change is a relationship that has started to be addressed in the research of today. This research points to the conclusion that fossil fuel dependency not only has a relationship to climate denialism but is a cause of it. A study has been done on oil dependency and how it is connected to the teaching of climate change in regions in Norway that are directly related to the petroleum industry. The study shows that there was an undeniable positive correlation between the region's dependency on the petroleum industry and climate skeptic views. This study's conclusion expanded further by stating that the positive correlation was even more drastic when looking at anthropocentric climate change opposed to just an acknowledgement of climate change overall (Skarstein 2020). Norway's economy is highly oil dependent, in some regions of the country more than others. In the regions where one's livelihood or the livelihoods of family members is dependent on the petroleum industry there are more climate skeptics than in areas of the country that do not have such a direct relationship to the industry

(Skarstein, 2020). This again shows how denial is created from dependency, denial allows the individuals who rely on the fossil fuel industry for their well-being to continue to go about their lives in the same way with little to no change. Human beings do not like change therefore find many ways to resist it, denial has become one of the core ways to resist a major change that would be needed if one was to address the fact that the fossil fuel industry does cause climate change. Humans see change as something extremely threatening, therefore use the resistance to change as a vital survival mechanism (de Jager 2001). Change is seen as something unfamiliar, and when humans encounter something unfamiliar the best way to reject it is not to address the things that would require change. The fossil fuel industry and its products have been so ingrained in today's society that when it is addressed as a problem which requires intense restructuring, the people who find this industry deeply ingrained in their life reject the idea that it could be a problem. This is due to the resistance of change that exists within the human condition.

Another explanation for dependency leading to denial is the concept of cognitive dissonance. Cognitive dissonance, “the feeling of psychological discomfort produced by the combined presence of two thoughts that do not follow one another. Festinger proposed that the greater the discomfort, the greater the desire to reduce the dissonance of the two cognitive elements” (Harmon-Jones & Mills 1999). Dr. Leon Festinger first came up with this theory to explain situations in which a smoker will identify that smoking is unhealthy yet continue to smoke. Cognitive dissonance in terms of fossil fuels means holding the belief that conservation of the environment and its resources is important while consuming a high percentage of fossil fuels. A study done in Western Australia on the cognitive dissonance theory within electricity consumption, showed that

those who were addressed with their contradictory beliefs and actions changed their electricity consumption in the short run yet, but in the long run they did not continue with this trend. At the end of the study, the cognitive dissonance group only differed in electricity consumption from the control group, but not from the other groups. These other groups were a feedback/tip group and just a tip group, these groups were not addressed with their contradictory beliefs to their actions (Kantola et al. 1984). The conclusion in this study is explained by the cognitive dissonance theory which states that people are apathetic towards their contradictory beliefs, thus will readjust their beliefs and actions to be inline. This can be seen within the study when the dissonance group initially changes their action of consuming large percentages of electricity to focusing more on conservation which matches their beliefs. However, this change does not last long. This could have happened due to two reasons. The first being that the cognitive dissonance theory is invalid as the people in the dissonance group still hold the belief of conservation being necessary yet are okay with knowing that they consume a lot of electricity. The other reason is that they changed their belief regarding the necessity to conserve resources, therefore aligning their beliefs and actions. The study does not ask the participants of the dissonance group their attitudes towards conservation after the study was completed, which would have been vital to answering this question. However, from prior knowledge about how humans react to change, and that this theory has been proven through much research, the second option makes itself the most believable. Since humans are threatened by change, switching one's views to align with their actions is less frightening than switching their actions to align with their views. This provides the second pathway for dependency creating denial. People see fossil fuels as a necessary

part of everyday life such as electricity, therefore when addressed with the discrepancy between their beliefs in anthropocentric climate change and their own fossil fuel use, there is a push to rid oneself of the contradiction, which makes them uncomfortable, thus choosing to deny that anthropocentric climate change is happening. This allows them to continue to use the products that they have become dependent on.

I. Denial and Addiction

Dependency and denialism's relationship can come in many forms. Their relationship has been explained in the terms of the fossil fuel industry and climate skepticism. Now their relationship will be explained via the physical dependency as addiction and science denialism. This will relate this relationship of dependency and denialism to the tobacco industry. The relationship between denial and addiction is too commonly overlooked. Denial plays a central role in addiction. The question that many people are trying to answer about addiction is how one pursues the addiction no matter the negative consequences that come with the addiction. In the case with tobacco products, people continue to use tobacco products because they are addicted to the nicotine in them, yet there are significant consequences to using these products like lung cancer. The current research conclusion is that this happens because of compulsion, yet there is more research coming out that addiction is not different solely by compulsion, but that the individual has the ability of choice and sometimes even control over consumption in quite a few circumstances (Pickard, 2016). Due to this new research drawing these conclusions, there has been a lot of thought around this and its connection to denial. This is the denial of the consequences of one's addiction, thus meaning one denies the knowledge around the consensus that their addiction leads to specific health

concerns. Such that those who are addicted to smoking cigarettes deny the scientific evidence that it causes lung cancer or even that it has second-hand effects. This is because they are able to lean into the skepticism that the tobacco industry created around the scientific consensus making the knowledge not appear scientifically viable, thus allowing for easier denial and the addiction to continue. Motivated belief allows for this to happen, the belief formation process can be influenced by our desires and emotion thus meaning that one is motivated to believe what one wants. There is evidence that humans are likely to be more skeptical and question the validity of preference inconsistent knowledge than preference consistent knowledge (Pickard 2016). This then leads to disbelieving what one may fear, such as they believe they need a cigarette in order to function, therefore they can be motivated to not believe that smoking causes cancer. This then translates back to the idea of change, where if one was to identify with the idea that smoking causes cancer, they would have to face a lifestyle change, whether they decide to continue to smoke or stop.

II. Path Dependency

Dependency and denialism go hand in hand, especially when society has been structured in a way that makes sure one becomes dependent on a product. Product dependency is often not solely the fault of the individual but is often shaped by historical actors. Path dependency, as explained previously, is the idea that one's present decisions are constrained by the decisions of their past (York & McGee, 2016). This does not have to be looked at just the individual level, but it is also extremely important to look at this through the societal level, especially when addressing fossil fuel dependency. Many fossil fuel industries, such as petroleum and natural gas, put a lot of focus on the

efficiency of their product. This can lead to the development of new methods or product which even more resources are often used (York & McGee, 2016). This is the concept of the Jevon's Paradox, which path dependency is a concept of. Path dependency provides the explanation for how efficiency increases can coerce dependency. This coercion happens through setting society on a path of development in which efficiency increases takes priority because it has a monetary value. This then highlights the idea that a capitalist society functions due to the notion that money is more important than conservation, therefore creating everything in society to follow one certain developmental path that has put profit efficiency as the top priority in the creation of new technology. This developmental path then creates its own notion of dependency. The dependency is created through the idea that in order to break away from this created path a total reconstruction of major structural aspects of the capitalist society is not only needed but necessary. Thus, entrapping the consumer in an endless cycle because there are very limited decisions for them to make when it comes to the creation of new technologies. The creation of the new technologies is dependent on the decisions of the past (York & McGee, 2016). This concept of path dependency is highlighted in the fossil fuel industry. Society has been physically structured around its products, and its products are made with one main goal which is efficiency. Since society is physically structured to be dependent on this industry, it provides a motive to deny climate science because path dependency explains that addressing the problems within this industry would lead to having to address the structure of the capitalist society. The necessary restructuring of society terrifies people because humans are conditioned to be resistant to change. The change required to address the climate crisis is so large it becomes unimaginable for

people to address it and therefore turn to denial as a way to protect themselves from this necessary change.

Looking at the overall relationship between dependency and denialism provides evidence that fossil fuel dependency promotes climate denialism just as nicotine addiction promotes science denial. Both of these claims lead back to the idea of change, in order to address one's dependency on a product there would have to be significant change, therefore denial of effects of one's dependency becomes the easiest coping mechanism in dealing with the conceptual contradiction. Denial is made in these specific cases, because the fossil fuel and tobacco industry have created such a massive network of denialism, thus allowing for those looking to resist change a much easier pathway.

Science Denialism for Capitalist Gain

I. The Tobacco Industries Denial Campaigns

Out of the two industries that are addressed in this study, the tobacco industry's denial campaigns are the most well-known. This is because of two reasons, they were the first large scale industry to use these denial tactics and be caught, as well as the fact that they actually went to trial and lost, because their executives lied under oath. Even though the tobacco industries' denial campaigns did end with them losing in court, that does not mean they actually paid repercussions for the damage they caused to the scientific community. Even more interesting is that they still use these tactics today, in the rising industry of vaping. To understand how this industry used science denialism in order to accrue mass amounts of wealth is extremely important in understanding its connection to the fossil fuel industry.

It is necessary to provide an in-depth understanding about how the tobacco industry's denialist campaigns function. This study will use both leaked emails, from within the tobacco industry executives, as well as a study done by Drope and Chapman that analyzes why the tobacco industry's denial campaign was so successful. The tobacco industry had two successful denialist campaigns. The first being denying that smoking causes cancer, this is what they eventually ended up in court over. The second campaign involved the denial of the effects of secondhand smoke. Drope and Chapman's study looks at the science denialism campaign of secondhand smoke, however the same exact tactics were used for the cancer denial campaign as well as the same scientist (2001). In the early 1900's the tobacco industry was conducting its own research on how smoking impacts the likelihood of getting cancer, yet this information was held from the public until around 1950. This was the same tactic seen with the secondhand smoke campaign, they did research in 1975 on the effects of secondhand smoke, but it was held from the public until the late 1980s (Drope & Chapman, 2001). This provides evidence that the tobacco industry knew about the effects of their products and willfully withheld the information from the public while simultaneously creating a legitimate looking denialist campaign.

This campaign was able to appear legitimate because it used actual scientists and curated articles that appeared to be peer reviewed. The tobacco industry gathered scientists that were sympathetic to their cause, often being paid large amounts for their sympathy, and then gave the industry's lawyers full control over what "science" these individuals would be able to pursue. They then created an independent organization that appeared to be a separate entity from Big Tobacco. This independent organization

produced the same findings that the tobacco industry was creating therefore giving the fake science more credibility in the public. Lastly one of the most unique tactics they used was in creating articles that appeared to be peer reviewed. Peer reviewed articles carry an incredible amount of prestige in the academic and scientific community, so it was essential that these denialist writings appeared in this realm. In order to do this, they organized symposiums through independent organizations, of their creation, and thus used these symposiums to publish their work into the realm of peer reviewed articles (Drope & Chapman, 2001). By doing this the tobacco industry was able to turn fake science into a legitimate looking alternative, thus being able to turn out significant profits for longer then they would without running this campaign.

The tobacco industry is on record saying that they knew if the information around tobacco smoke or cancer would have come out it would have had a “devastating effect on sales” (Drope & Chapman, 2001). This quote in Drope and Chapman’s writing was pulled from the Project Down Under Conference in 1987, in which the conference notes were leaked; however today these documents are not available to the public. In an article published by the Washington Post in 2015, Sheldon Whitehouse creates a simple outline of the tobacco industry’s playbook: “(1) Pay scientist to produce studies defending your products; (2) develop an intricate web of PR experts and front groups to spread doubt about the real science; (3) relentlessly attack your opponents.” The article then reports on the court trial of the tobacco industry for violating the Racketeer Influenced and Corrupt Organizations Act. The court decided the science denialism campaign was a racketeering campaign made by the tobacco industry and proved that their denialist campaign was a coordinated action to maximize profits by preserving, as well as expanding, the market

for tobacco products through actively deceiving the public (Whitehouse, 2015). From a leaked memo between Brown and Williamson, owners of a tobacco company, this statement was written “Doubt is our product, since it is the best means of competing with the body of fact that exists in the mind of the general public.” (B&W, 1969). This statement has become famous as well, it was used in court to convict the industry of racketeering. All of this shows how the tobacco industry used science denialism as a tactic for continued capital growth. In order for them to continue to turn profit, there had to be significant doubt put into the public about the effects of smoking and the executives knew this. Overall, their tactics worked therefore why the fossil fuel industry followed in their footsteps.

II. Fossil Fuel Industries Climate Denial Campaign

The tobacco industry’s denial campaign and the fossil fuel industries denial campaign are always discussed together, this is due to the fact that the tobacco industry provided the roadmap for the denialist campaign of the fossil fuel industry. Just like the tobacco industry, the fossil fuel industry intentionally spread climate disinformation. Documents have been released, all the way back to 1990, that show the fossil fuel industry was curating campaigns of deception (Mulvey et al., 2015). The fossil fuel industry also knew that their products were not only harmful to the environment, but also the general population, yet chose to create this denialist campaign. This information was gathered through leaked documents between company executives in the coal, natural gas and oil industries. The idea that heat trapping emissions had the ability to alter the climate dates back to the late 1800’s, so anthropogenic climate change was not a new idea and was just made to look that way in

order to give the climate denial campaign more legitimacy (Mulvey et al., 2015). In 1988, Shell did a study on the greenhouse effect, however it was only released internally, within the company. In a report outlining the findings, provided by this study, there is a statement made acknowledging that fossil fuel combustion is a major source of CO₂ in the atmosphere and that they should look for a different approach for the energy industry (Griffiths et al., 1988). In this same document it is stated that “the effects of CO₂ would not be detectable before the end of century, therefore it would be tempting for society to wait until then before doing anything” (Griffiths et al., 1988). These statements show,, written into Shells’ report, that the fossil fuel industry knew about the greenhouse effect and the disastrous impacts that their products have on the environment, as well as that the effects would not appear for many years. This gave them the time to rewrite the tobacco industry’s playbook in order to fit their needs.

The fossil fuel industry, just like the tobacco industry, “hired” scientists to create scientific evidence that climate change was not due to humans. One of the most notorious scientists that the fossil fuel industry used was Wei-Hock Soon. Soon’s research was focused on analyzing climate change, however his research was funded by fossil fuel companies, like Exxon. Similar to the tobacco industry they also created an independent organization (Mulvey et al., 2015). One thing that sets apart the fossil fuel industries’ campaign from that of the tobacco industry is the role politics and politicians played. Not only was the fossil fuel industry funding scientists like Soon, but so were politicians that the fossil fuel industry had supported (Mulvey et al., 2015). Big tobacco had their fair share of political involvement however, unlike tobacco products, the United States and the majority of the Western World is built on the fossil fuel industry. This

provides the idea that fossil fuels are essential to the western reality and because it has become the largest industry in the world, it has political pull that has not been seen before. The fossil fuel industry did such a good job at copying the tobacco industry's playbook that they even ended up with many of the same actors, public relation firms, as well as nonprofit organizations (Mulvery et al., 2015).

Like the tobacco industry many of the internal documents have been leaked over the years. One document leaked was a memo from the American Petroleum Institute, which explicitly outlined how climate denialism would work. The memo states five important checkpoints that need to happen in order for victory to occur. These checkpoints are: 1) "average citizens understand (recognize) uncertainties in climate science; recognition of uncertainties becomes part of the conventional wisdom," 2) "media understands (recognizes) uncertainties in climate science," 3) "media coverage reflects balance on climate science and recognition of the validity of the viewpoints that challenge the current conventional wisdom," 4) "industry senior leadership understand uncertainties in climate science, making them stronger ambassadors to those who shape climate policy," and lastly 5) "those promoting the Kyoto Treaty on the basis of extent science appear to be out of touch with reality," (American Petroleum Institute, 1998). Out of these five checkpoints, needed for the industry to achieve victory, the last one is the most important. The petroleum industry is saying that they will have created a successful denial campaign when those supporting human caused climate change and the science behind it look like they are the ones supporting misinformation. This memo shows the goal of the denial campaign, just like the tobacco industry, was to create so much doubt around the scientific consensus so that they could continue to market and sell

their products as they had previously. The goal was to stop government intervention into the use and disruption of their product so these industries could continue to turn a profit, which they knew would be lost with regulation.

III. Path Dependency and its Relation to Capitalist Gain

The tobacco industry and the fossil fuel industry have more in common than just their playbooks for their denialist campaigns. Both of these industries exhibit the Jevon's Paradox and create path dependency. Over the past few decades both industries have focused a lot on the efficiency of the consumption of their products. For the tobacco industry this means switching from cigarettes to e-cigarettes which have a much higher intake of nicotine per inhale. This increases the rate it is consumed thus the efficiency of the product to deliver has increased. The fossil fuel industry striving for efficiency can be seen in their products like the transition to electric cars as well as their movement into big technology like social media. Many people forget how ingrained the fossil fuel industry is in their everyday lives, most people only equate this industry to that of the petroleum industry, however it is much more than that. All technology runs on some progressive system. Instagram, Facebook and TikTok are run on servers, which rely on fossil fuels. Electric cars still require fossil fuels to be built and for the technology for the car to be maintained and to run. This disconnect between the involvement of the fossil fuel industry and western lifestyle is indicative of path dependency. The demand for increasing the efficiency of technological developments has set western society on a path that inevitably leads to greater production and consumption. The industries creating these improvements are enabled with never ending capital gain as long as there is a continuous way to expand and increase efficiency. Fossil fuels path dependency has

happened through two paths. The first is through the reduction of the current effects on the existing system, therefore making the transition to a less resource intensive system becoming less feasible because it would require large startup costs and the current system is functioning fine (McGee & York). This can be seen within the fossil fuel industry with electric cars. Switching to electric or semi electric cars still requires mass amounts of fossil fuels, but is less per vehicle then before. Thus, more people use the vehicles because they are seen as more environmentally friendly. Therefore, the fossil fuel industry will be making the same amount of money, or more, then before without having to create a new system because this proposes a temporary solution that is economically beneficial. This then leads to path dependency. The second way this has happened is that with a focus on efficiency this can lead to mass amounts of innovation thus inevitably changing production, consumption and distribution of the resources, leading to more consumption of the resource overall (McGee & York). For fossil fuel this means expanding in industries like big technology and thus sparking continuous innovation for use of the fossil fuels, thus again creating a path dependency.

Unlike the fossil fuel industry, the tobacco industry does not relate directly to the Jevon's Paradox and path dependency, because it is not directly diminishing resources. However, through Big Tobacco's transition to e-cigarettes not only are they increasing the addiction to their product through increased amounts of nicotine per inhale, but they are also creating an increased consumption of electricity, which is mostly created through fossil fuels. These e-cigarettes not only need electricity to be made, but they also need batteries or they need to be continuously recharged. This then interlinks the tobacco industry to the fossil fuel industries path of dependency. The industries are

also interlinked through advertisement and who they advertise to. Both industries focus on the younger generation, creating dependency earlier on in an individual's life means that industry has created a user for life. The tobacco industry has been known for this, first with cigarettes then with e-cigarettes. Their advertisements use bright colors, catchy slogans, cool outfits and younger actors to draw the attention of the younger population (BIG VAPE DOC). The products themselves are even geared to appeal to the younger generation with things such as flavoring, first with methanol cigarettes, now through every flavor imaginable for e-cigarettes. Big Tobacco denies that these products and advertisements are geared to the younger population, however there are multiple leaked documents that prove otherwise (BIG VAPE DOC). The fossil fuel industry also gears its advertisement to the younger generation through the perception of the ideal lifestyle, such as turning 16 which has become such a milestone in American youth because one is able to get their driver license and in wealthier families get their first car. With the fossil fuel industry making headway in social media, which has gathered such a strong youth presence, many of these users do not know what a world without social media looks like because they have never lived in it. They have essentially become dependent on fossil fuels through the use of social media. Just like using cigarettes, using fossil fuels creates a dependency and this dependency is heightened through science denialists campaigns. The tobacco and fossil fuel industries use the same playbooks, rely on the same path dependency and target the same user; therefore, their products have created the same dependency. This all happens in order for these industries to continue to economically prosper.

Withdrawal From Products

I. Dependency Cessation Methods

The dependency on products of the fossil fuel industry and those of the tobacco industry have created a link between cessation methods that needs to be addressed. Since both of these industries' products are related through the dependency their products create, it is important to address how to stop these cycles of dependency. It is important to identify that these two industries do have one very distinct difference in their dependencies, the dependency of the tobacco products is on the individual bias whereas that of the fossil fuel industry is societal. Dependency on the tobacco industries' products is often coined as addiction. Therefore, its' cessation methods are disconnected from that of fossil fuels, however this should not be the case. The majority of the methods used to stop the dependency of nicotine products can also be transferred to decreasing the dependency on fossil fuel. There are some methods however that cannot be transferred which this study will also address. Vast amounts of research have been done on how to quit smoking, however barely any have been done on how to stop using fossil fuels. This study has already shown how these two industries' products are related to one another through their continuous cycles of dependency. This study will look at how to apply the research done on tobacco cessation methods to fossil fuel cessation methods, then further explain how to discontinue the dependency cycle by bringing in concepts of the Jevon's Paradox.

There are three methods that have been deemed as most effective for tobacco cessation, these methods are Nicotine Replacement Therapy (NRT), Champix and education (Heydari et al. 2014). NRT has provided the most long-term results compared

to all the other methods. At its most basic level NRT is just replacing how the nicotine is consumed as well as continuously lessening the nicotine consumption levels. This can be regulated through e-cigarettes or nicotine patches. The idea is to slowly remove the high of nicotine from the action of smoking a cigarette as well as slowly removing nicotine consumption as a whole (Heydari et al. 2014). This idea of slowly removing the consumption of something that has created a dependency can also be applied to fossil fuel consumption. NRT has also shown to have the most effective long-term success which would make it a beneficial method to transition to the lessening of consumption of fossil fuels (Heydari et al. 2014). NRT focuses on starting small and gradually building up to cutting off the use of the product. Fossil fuels have become so ingrained in everyday western life that to fully quit fossil fuels in one step would be extremely hard, almost impossible, therefore applying this method of slow cessation has a greater possibility of working and providing long term effects. One example of what NRT would look like as a method to cessation of fossil fuels is by first focusing on petroleum use. This could be done by switching the type of car one drives from a fully gasoline dependent car to a fully electric car. This is equivalent to going from smoking a cigarette to using an e-cigarette with less nicotine. In both cases complete cessation is not completed immediately it takes time to break dependency, especially in the case of fossil fuels. Using the NRT method for fossil fuel cessation would take years and dedication because of how ingrained fossil fuels are in society, but it does have the ability to slowly pull an individual as well as society away from the cycle of dependency that fossil fuels create.

Another method that has been effective for tobacco cessation is education/training, this idea can also be transferred to fossil fuels. For tobacco cessation

the education and training are for the providers of addiction recovery. The idea is to provide all health professionals, within all disciplines, knowledge based evidence as well as the most up to date skills in order to assist individuals in quitting tobacco (CDC 2019). Education and training on the most effective cessation methods, like NRT, will allow for more effective cessation rates because all practitioners will be up to date on the best ways to help an individual quit smoking instead of using outdated methods. This can also be applied to fossil fuels because there is barely any education/training out there about how to stop the use of fossil fuels products. For the people who want to stop using fossil fuels or even decrease their consumption, they do not have a place to go get help or information. Creating a network of individuals who want to decrease their dependency on fossil fuels would give people a resource for quitting fossil fuels, this does not exist today. This network has the ability to also provide information on how the dependency cycle works, the best ways to break this cycle, the effects of fossil fuels on the environment and lastly be a network of support. Another way NRT methodology could be transformed to apply to the tobacco industry is looking at the corporations that supply the items that use fossil fuels. These corporations are currently only responsible to bourgeoisie not to the people actually using their products. These corporations do everything to benefit their shareholders, so switching the central focus of the corporation away from the profits, of the bourgeoisie, to just providing products for the general population consumption, their products would allow more room for a slow transition away from fossil fuels because the main goal would not be external profit. Looking at fossil fuel use in the same light as nicotine use allows it to be seen as an addiction, which it has become because of the dependency cycle the industry created. Since it is an

addiction, it can be treated in many of the same ways other addictions are, therefore needing a support network which is currently completely lacking. There is so much research done on the dependency of fossil fuels and the effects they have on the environment, yet there is no network of people supporting each other in decreasing their dependence on fossil fuels.

II. Inapplicable Methods

Fossil fuels, unlike nicotine, do not create chemical dependence, they create societal dependence. Thus, meaning that there are no personal physical health effects felt immediately from quitting the use of fossil fuels. The dependency cycle that fossil fuels has created is rooted within the formation of western society and capitalism. Therefore, when looking at all the cessation methods for the tobacco products none of them have the ability to completely eliminate an individual's dependence on fossil fuels, however NRT and education/training do have the ability to decrease it. Tobacco products and the products of the fossil fuel industry share many traits, thus allowing for some of the effective cessation methods from tobacco products to be transferred to fossil fuels, it is also important to address the ones that cannot be transferred because fossil fuel addiction is not a chemical dependency. One of the methods highlighted as one of the best cessation methods for tobacco is Champix. Champix is a treatment that lasts 12 weeks, this treatment relies on tablets that can help decrease the withdrawal symptoms from stopping smoking. The treatment also has a built-in window of the first two weeks to continue smoking (NHS, 2018). This method cannot be applied to fossil fuels nor can any of the methods that solely rely on medication. This is because there is no way to remove all fossil fuels from an individuals life nor a medication that will help with the

withdrawal symptoms of discontinuing the use of fossil fuels. Fossil fuel dependency creates a phenomenon that is not seen in tobacco dependence and that is that fossil fuels rely on a dependent society where tobacco relies on a dependent individual.

III. Institutional Changes: Fossil Fuel Cessation

Unlike the tobacco industry's products those of the fossil fuel industry are ingrained within the functioning of western society, thus meaning capitalism. Decreasing the use of fossil fuels means restructuring the functioning of western society, because this society is built on fossil fuels. Due to the fact western society relies so much on fossil fuels, it would require a lot more than individual action because the individual can only do so much within a society that is completely reliant. Capitalism is one of the reasons western societies are so ingrained in this cycle of dependency with fossil fuels. Capitalism focuses on the economy and monetary values; thus, the reason Jevon's Paradox is so present within western innovation. Efficiency for capitalism means turning out more products with less expense, or in the case of the fossil fuel industry making more fuel-efficient cars so more people buy cars in general, therefore increasing profit. Profit is the goal of a capitalist society so the restructuring that is needed to counteract the Jevon's Paradox cannot happen under this system because profit cannot be a focus for sustainability. Under capitalism efficiency the ratio of output to input is increased, therefore missing the implications of the minimum entropy and the maximum flux principles resulting in completely overlooking the goal of ending the use of the certain resource (Giampierito & Mayumi 2018). The definition of efficiency in capitalism cannot coexist with sustainability, therefore in order to create a sustainable society that is not entrapped in the fossil fuel dependent cycle the function of capitalism would have to

be addressed. Capitalism intrinsically has uneven distributions of wealth built in, as well as the continuous desire to improve one's materialistic living conditions. Meaning that a society that functions under capitalism is inevitable to consciously experience the Jevons Paradox as it pretends to strive for sustainability (Giampietro & Mayumi 2018).

Addressing sustainability and decreasing societies dependency on fossil fuels means more than just technological innovations such as electric cars and solar panels, it means institutional and behavioral changes (Giampietro & Mayumi 2018, Wolfe 2011). If society continues to focus on technological advancement under a capitalist system, that focuses on profit maximization, then society will continue down the path of dependency on fossil fuels thus only creating more efficient uses of resources over continuously growing the amount of the resource used (York & McGee). In order to address fossil fuel dependency, the Jevon's Paradox and its place in capitalist society must be addressed first. Unlike the products of the tobacco industry those of the fossil fuel industry have been embedded in the functioning of the western capitalist society. Although some of the methods of cessation from nicotine can be applied to fossil fuels the outcome is not going to be the exact same. For nicotine users their outcome is likely to be complete cessation from nicotine dependence whereas for fossil fuel users its likely to only be decreased dependency, because without large scale societal changes, this dependency is unbreakable. There is however the possibility for the society, as a whole, to use the methodology behind NRT on a large scale in transitioning western society as a whole away from fossil fuel dependency.

Conclusion

