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Dismantling the Climate Denial Machine: Theory and Methods

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DISMANTLING THE CLIMATE DENIAL MACHINE: THEORY AND METHODS

Drew Mickolas, Trinity College Class of 2017

To my parents, Kiya and Daniel Page Jr.

This is a work worth crediting.

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INTRODUCTION

DREW MICKOLAS

The world is getting hotter and it is happening at a rate which humanity is not prepared to manage. This temperature increase is not merely due to the change of seasons, nor can it be explained by one unexpectedly hot month or two (Intergovernmental Panel on Climate Change, 2008). Rather, the very climate of the earth has changed, is still changing, and will continue to change. These changes are not "natural" in any traditional sense of the word; they are primarily caused by the release of carbon dioxide, or CO_2, into the atmosphere via human activity. As our activity continues, the concentration of carbon dioxide in our atmosphere rises, and our effect on the climate becomes ever worse (U.S. Global Change Research Program, 2014).

These facts are well-established and rigorously reviewed by physical scientists far more qualified than myself and they will not be argued here (but see Cook, et al. for an overview of the world's scientific consensus). Instead, I will consider the way in which our society has managed this crisis. In the 21st century, when our lives have been extended by the advances of modern medicine, and regularly carry around more data in our pockets than was needed to land men on the moon, we have yet to unify around the scientific method. Some individuals will not question the theories of scientists as they drive their cars or turn on their microwaves, but will mock the theories of the Big Bang, evolution, or climate change. These theories explain critical components of our world, and are held to just as rigorous a standard as any (if not more), yet are not accepted by much of the American public despite a clear scientific consensus (Cook, et al., 2016).

Acceptance of the Big Bang and evolution in modern society, though valuable, is generally not necessary to live a normal life: these theories cover events which are almost completely historical. The same cannot be said of climate change. The increase in temperature associated with climate change will dramatically shape how our economy, health and everyday

activities function for the remainder of humans' time on Earth if it is not mitigated. In democracies such as our own, the layman must know and internalize this fact in order to campaign on its behalf, support sympathetic politicians, and eventually change policy. Further, these campaigns must overcome opposing campaigns which inevitably arise in almost any political arena. We will discuss these opposing campaigns at length and how we can overcome them. In essence, our campaign must be stronger than its opposition, and for our campaign to be stronger, there must be many people that know the facts which drive the campaign. I ague that it is imperative that we have public consensus concerning the existence of climate change.

That is the intent of this paper: to create a public consensus in the United States on climate change. It will soon become clear that there are people who work to prevent this consensus; we will refer to their institutions as the climate denial machine. In addition to undoing the work of the climate denial machine, we will create our own institutions to create productive conversation about the existence of climate change, and, hopefully, eliminate the influence that the machine has had.

Our plan will be crafted in the next five chapters, each with its own objective. Each chapter will build on the previous one. In Chapter 1, we will lay out the essential facts of our research; that climate change exists, that there is no longer public consensus in the United States on climate change, and that this consensus is necessary to have policy reform succeed. This chapter lays the groundwork for this thesis to proceed. We must provide evidence for of the scientific consensus around climate change and the paradoxical lack of consensus among the public in order to build an argument about why it is necessary to create a consensus among the public. In the second chapter, we will explore the individual psychological foundations of climate denial; this will allow us to understand why people reject the existence of climate change

despite the scientific consensus. Mainly, climate denial is linked to anxiety over threats to capitalism, and is successively worsened through conservative media outlets. The third chapter will provide evidence of a concerted climate denial machine and examine these institutions. We will demonstrate how it explicitly uses the psychological variables from Chapter 2 to achieve its goals and why it does not want people to accept the scientific consensus. Chapter 4 will produce a general theory and plan to undo climate change denial based on information from both Chapters 2 and 3, so that we understand which psychological variables to undo and which climate change institutions need to be disabled. This chapter will suggest in broad strokes techniques we might employ to challenge the climate denial machine and build consensus around climate change among the public. Lastly, we will produce a full policy recommendation in Chapter 5 based on the plan drafted in Chapter 4. We combine the theory of the previous chapter with specific data on climate denier demographics and other relevant information. This chapter suggests, for instance, specific individuals and regions of the country to employ our techniques and lays out a specific plan to implement.

This plan is not meant to rid the United States entirely of climate change denial. There will be times throughout this work that severe obstacles to undoing denial will arise, and we must concede that some cannot be overcome completely, at least with any mortal amount of resources. However, that does mean that our plan is not able to significantly change public opinion and affect the political process. There have been countless political movements throughout history that have succeeded without unanimity, and we can (and must) be one of them. The counterfactual should always be considered as we face doubts over whether we will succeed; without any attempt, or even a disorganized attempt, policy reform is unlikely to pass

and our species' earthly existence is threatened. An imperfect but good plan is a plan worth using with this mindset. With these goals in mind, we proceed.

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CHAPTER 1: INTRODUCTION TO CLIMATE CHANGE

DREW MICKOLAS

Preface

Before we begin our long investigation into how we change the minds of climate deniers, we first need to ensure that our own view, that we believe climate change not only exists but is human-caused and overall negative for the planet, is epistemologically sound and serious enough to warrant action. This first chapter attempts to do just that, not only by citing research on the physical science behind climate change phenomena, but also social / political science to examine the sociopolitical consequences for not enacting reforms within the United States in a timely manner. Once this is done, we can move to Chapter 2, where we will detail the psychological mechanisms underlying climate change denial.

Climate Change and its Causes

Human-caused climate change, or anthropocentric climate change (ACC), is real, extensively researched, and of paramount consequence to humanity. Over 97 percent of actively publishing climate scientists conclude that human activity has caused mean global temperatures to rise, showing a clear scientific consensus (Cook, et al., 2016). In addition, the most prominent American and international scientific associations, academies, and government agencies have concluded that ACC exists, including the American Chemical Society, American Meteorological Society, American Physical Society, U.S National Academy of Sciences, U.S. Global Change Research Program, and the Intergovernmental Panel on Climate Change (American Association for the Advancement of Science, 2009). Though changes in climate have occurred through the history of the Earth, they have been due to natural changes in the planet's atmosphere, and took place over tens of millions of years. The Earth has been far hotter than it currently is (or is projected to be without substantive climate change reform), but the increase for the mean global temperature over the next 100 years is expected to be more than the increase over the entire

Cenozoic Era (~65.5 million BCE – present) (National Park Service, 2010). The Industrial Revolution spurred a vastly increased amount of greenhouse gases (GHGs) into the atmosphere, changing its composition far beyond that of natural variations over time, and making it retain heat for longer periods.[1] Evidence shows that the increase of GHGs has increased the mean surface temperature across the globe, and that the effects of such increases include extreme droughts, floods, and sea-levels rising (Intergovernmental Panel on Climate Change, 2008). Though the effects of such climate change will be beneficial for some locations, particularly those in colder regions where the temperature rising will make living more comfortable, the overall impact across the globe (and the United States) will be negative. To accommodate for such changes, very significant investments will be needed to counter the effects, like more droughts and heat waves, stronger and more intense hurricanes, rising sea levels, and (on average) noteworthy increases in temperature, leading to changes in agricultural seasons, precipitation patterns, and the melting of the Arctic Ocean's ice (U.S. Global Change Research Program, 2014). An analysis of current trends in GHG emission and the consequences of climate change predicts that, by the year 2100, if there is no policy reform, the U.S. (in both citizens' lives and the government's projects) will spend anywhere from 1.8% to 3.6% of its output on climate change's effects (Ackerman & Stanton, 2008). If applied to the current U.S. economy, we would be spending $3.2 trillion to $6.4 trillion (World Bank, 2016). Perhaps of most importance is that, due to the relation of GHGs to temperature increases, the longer we allow GHGs to enter the atmosphere, the more temperatures will rise. This trend is exponential and increasing. Therefore, in order to most effectively mitigate the effects of ACC, GHG emissions

[1] It should be noted that when this report refers to GHG measurements, unless otherwise noted, its measurements are of the volume of gases per their effect on heat absorption compared to the main GHG, carbon dioxide. These gases are commonly called "CO_2-equivalent gases".

must be sharply decreased as soon as possible (Intergovernmental Panel on Climate Change, 2008). Before the Industrial Revolution, GHG concentration in the atmosphere stood at about 280 parts per million (ppm), and is now at about 385 ppm but rising by about 2 ppm/year; the Intergovernmental Panel on Climate Change (IPCC) concluded in its 2007 report that limiting GHG emissions to 450 ppm in the atmosphere would be enough to keep global temperatures from rising above 2' Celsius, but more recent reports conclude that approximately 350 ppm is necessary (Hansen, et al., 2008). Climate change scientists, policy analysts and social scientists agree that, in all likelihood, the only feasible means to reduce GHG emissions to these safe levels is to enact public policies across the industrial world to curb allowances for emissions (Intergovernmental Panel on Climate Change, 2014).

Public Opinion on Climate Change and Policy Reform

Almost any publication on climate change science and the need to enact policy reforms takes for granted supportive public opinion and the mobilization of issue publics as necessary (though not sufficient) to significant improvement in emissions in the United States, given it is a republic and such large reforms are politically expensive to pass without the consent and interest of one's constituents (Dryzek, Norgaard, & Schlosberg, 2011). In addition, the U.S. has a unique role within international relations as a global superpower, one of the leading emitters of GHGs (second now only to China), and the main facilitator of climate policy treaties among world powers, most recently the Paris Agreement within the United Nations Framework Convention on Climate Change (UNFCCC) (The Guardian, 2016; World Resources Institute, 2014). As a means to influence other governments to lower emissions themselves, the United States benefits from having the moral high ground of aiming to, and succeeding in, lowering its own emissions, as countries around the world believe that the highest emitters of GHGs, as well as the richest

countries, should be the ones to produce the most reform (Pew Research Center, 2015). Therefore, maximization of U.S. power to influence GHG emissions rests on whether its population believes in climate change and is motivated to reduce its impact. The particular solution(s) chosen to combat climate change will not be discussed or argued for here: merely, for whatever solution is ultimately chosen, the U.S. must be prepared to enact it by having a citizenry accepting of policy reform.

Evidence of ACC and the associated policy debates had thoroughly reached the mainstream population in the early- to mid-2000s. In 2008, belief amongst United States citizens in global warming stood at around 71%, belief in its being human-caused was at 47%, and belief about its effects being "very serious" stood at 44% (Pew Research Center, 2009). While not perfectly representative of the views of scientists, it was clear that citizens were accepting the consensus and acknowledged the need for action. However, the trend was undermined by a few events that followed, most notably one colloquially referred to as "Climategate". In 2009, a server at the Climate Research Unit (CRU) at the University of East Anglia was hacked and internal emails were leaked onto the internet. Opponents of climate change cited a small selection of these emails to argue that the organization had conspired to exaggerate results of their findings and suppress contrary evidence, and the event was widely covered on both British and American media. Both university and independent investigations were done of the CRU, however, exonerating them of all charges and rejecting any foul play in their works. Soon after, the IPCC's 4th Assessment Report was found to have several errors (though some error is far from uncommon in scientific reports), leading to an independent examination of their review processes, and again finding no wrongdoing. Studies have since confirmed that trust in climate science and climate scientists are key factors in public opinion on ACC, and that these incidences

(particularly Climategate) negatively affected that trust in about a fifth of the United States population (Leiserowitz, Maibach, Roser-Renouf, Smith, & Dawson, 2012). In 2009, not too long after the incident, belief in global warming stood at 57%, belief in its being human caused was 36%, and belief in its being very serious was 35%. Fortunately, there has been a non-negligible upshift in public opinion since then, though belief in climate change's impact seems to be under-addressed. Belief in global temperatures rising now stands at 79%, belief in its being human caused is 48%, and having "a great deal" of concern for its effects is about 36% (Pew Research Center, 2016).

Chapter Summary

This chapter aims to detail exactly what climate change is, assert its existence, and explain why, without proper intervention, it creates serious problems for society at large. Additionally, it describes the context of public opinion on climate change, and why this is important to know when crafting solutions. This will lead into later chapters' analysis of how public opinion can be shifted, and what resistance we can expect in doing so.

Climate change is caused by the release of heat-absorbing chemical compounds into the atmosphere. These compounds take a very long time to break down, and their increasing numbers in the atmosphere additionally increases the heat they take in. The costs of climate change, if it proceeds unmitigated by policy reform, are severe, including mass floods, droughts, upticks in viral infections, and more. When the issue of climate change first came into the general public's knowledge, it was more or less perceived as a fundamental, nonpartisan concern for society. However, a series of leaks by hackers, which showed a biased selection of documents and emails about climate science research, was widely covered by mainstream media in the developed world and noticeably increased Americans' distrust of climate science research.

Other organizations would later capitalize on this distrust and continue with similarly negative and skeptical rhetoric. As of 2017, public opinion polls show that trust in climate scientists has mostly rebounded, but the years between seem to have created an atmosphere of political apathy towards climate change policy. To avoid the harms of climate change from becoming ever worse, the political apathy, obstructionism, and elimination of government research must come to an end. To ensure that this happens, we must organize and alter public opinion to create both belief in climate change and motivation to reform it.

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CHAPTER 2: LITERATURE REVIEW OF CLIMATE DENIER PSYCHOLOGY

DREW MICKOLAS

Preface

Our first chapter established there is human-caused climate change which will greatly harm the earth if it is not mitigated, and that swaying public opinion is necessary to introduce policy reform. Now, we introduce one of the key elements of public opinion: the psychology of those who do not believe in climate change, and why they do not believe. This chapter will act as a literature review that we will later refer to in Chapters 4 and 5, where more concrete policy recommendations will be formed. While the work done here will be essential to our later conclusions, it should be acknowledged that we will also incorporate an institutional analysis of climate denial organizations, which will be covered in Chapter 3.

Our explanation of the psychological factors of climate denial will be holistic. We will examine their demographics so we understand how they relate to society; we will examine what unique psychological traits they have; we will examine how the issue of climate change became polarizing among these people; and we will look at the arguments that climate deniers use to justify their position. This will allow us an insight into who climate deniers are, why they believe what they believe, what intensifies those beliefs, and what rationales defend those beliefs.

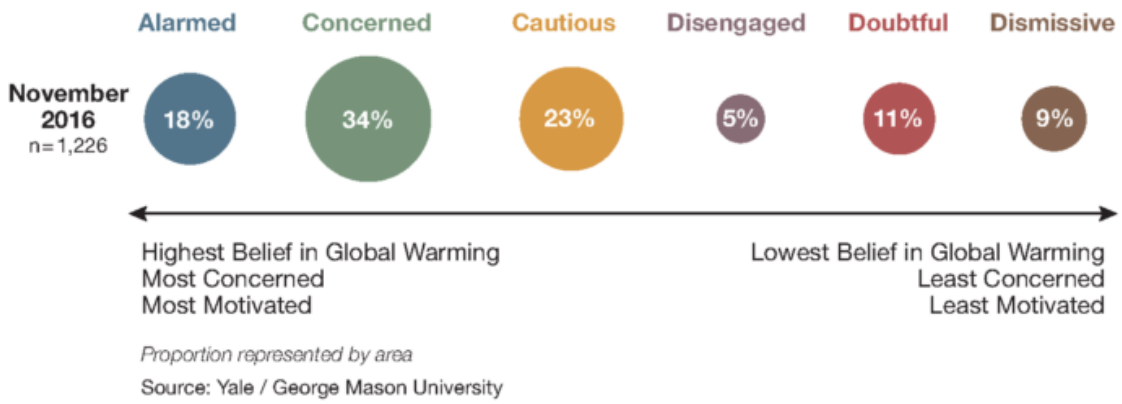
Demographics of Climate Deniers

When we talk about what a climate denier is, we can mean a variety of different things, all of which have some meaningful usage. We might refer to people who outright reject climate change, who do not actively believe in climate change, and / or those who reject climate change to the point of actively working against policy reform. Each of these are legitimate understandings of climate denial in a functional sense, since none of these groups' members would likely promote climate change policy reform. However, we must discern between them

and identify key characteristics about each group in order to know how to best combat their reasoning. On a related note, we must investigate whether there are other common sociodemographic attributes between these groups, not only to allow us to target individuals properly in our policy recommendation, but to try and understand how one's status may (if at all) affect their belief in climate change.

Types of Climate Denial

As stated before, there are a variety of different ways of interpreting climate change, several of which could justifiably be called climate denial, but we need to define these interpretations explicitly to easily discuss them and consider how to best approach them. Fortunately, prior research already exists on the topic. The Yale Program on Climate Change Communication has, over almost a decade of research, identified six discrete audiences for climate change communication in the United States. These groups are the Alarmed (actively worried and taking steps to reduce climate change), Concerned (worried and beginning to take steps), Cautious (worried but not yet taking steps), Disengaged (not at all interested in the topic), Doubtful (uncertain of climate change but do not believe it is human-caused if existent), and Dismissive (actively disbelieves and advocates for anti-environmental policy) (Yale Program on Climate Change Communication, 2016):



Each of these categories has a wide array of information available about them, including their religious habits, their political affiliations, and a variety of other details, like whether they view climate change as a moral issue. Since the goal of this thesis is to build methods of persuasion for non-believers in climate change, the Dismissive category is likely to have less value, but we will examine it for comparative purposes: as we have find later, Dismissives are polarized to the point that efforts to moderate their perspectives are all but lost. Instead, this work will focus mostly on persuading the Doubtful, for whom climate change is not viewed seriously but isn't actively detested as a concept.

The Dismissive population, in contrast to the other audiences of climate communication, has a very narrow view of the dimensions of climate change. On average, the Dismissives view it as only a political issue; only a third or less view it as an environmental, scientific, agricultural, health, lifestyle, and/or moral topic (Yale Program on Climate Change Communication, 2016). Further, the Dismissives are (on average) very religious, with about half being evangelicals, 29% accepting evolution, and 62% believing a literal interpretation of the biblical creation story (Yale

Program on Climate Change Communication, 2016).[2] Caring for the world's poor (which climate change will greatly impact) is viewed as important by only 54% of Dismissives, while caring for future generations stands at 76%. In a similar vein, few Dismissives believe that climate change reform would help the environment (8%) and future generations (6%) "a lot". The Dismissives also tended to have the most individualistic values of all climate change audiences, and their measurements for low empathy were nearly statistically significant. We will later discuss other studies which corroborate low empathy among populations of climate deniers which are most likely Dismissives.

These findings are reflective of many attributes we will come to expect of climate deniers; their conceptual framing of climate change is very limited, they are quite evangelical, they tend not to be concerned much with the welfare of those that are not directly relevant to their own lives, and their values are very individualistic. One interesting note is that, at least within this study, Dismissers' measurements for empathy were not statistically significant in their difference from the other groups, though it is uncertain if they would behave differently than their peers in other populations if made to empathize with people unlike themselves. Later studies will test this idea and find different results, so it could be that Yale's sampling findings were not representative in this regard, or their measure of empathy varied from other studies.

We will find that the Doubtful population, though it has a much more passive stance against climate change belief, is quite similar to the Dismissive populations. Doubtfuls hardly view climate change as a moral, spiritual or religious issue; respondents perceived them that way 8%, 5%, and 6% of the time respectively. Additionally, only ten percent believe their stance on

[2] It should be noted here that the belief in evolution in the US population is at 54%, and belief in the literal account of biblical creation is at 54%.

climate change reflects their core moral values. Their belief in evolution and biblical creation are essentially equal to that of the Dissmissives (39% and 62% respectively), and moderately higher for belief that climate change policy would help the environment and future generations (22% and 21% respectively). Perhaps the most relevant info is that the Doubtfuls are similarly individualistic to the Dismissives, and even lower in empathy, scoring the lowest score of any group (and was statistically significant).

We see a very similar picture when it comes to the attributes for Doubtful and Dismissive populations, which will make our work both easier and more difficult in certain ways. Both groups have a very narrow perspective on how climate change affects people's experiences, are rather religious (preferring evangelical Christianity in particular), and have lower levels of empathy than average. Where these groups have qualities are statistically different from the rest of the American public, they share those qualities, even if one group is more extreme than another. While it makes these groups easy to identify, and allows us to more easily generalize findings on climate denial psychology that do not describe individuals as Dismissives / Doubters, it also means that it will be difficult to distinguish between the two groups when cross-referencing the info we have on them (ex: looking for areas of high religiosity in the U.S.). For better or worse, when we find groups that are both very religious and highly individualistic in the United States, we can reliably expect that they will be either Doubtfuls or Deniers (or some mix).

Race and Class

Both those that are skeptical to, or completely deny, climate change tend to be white and male (Rainie & Funk, 2015). Further, there is a subgroup of this white male population (about 30% of the total) which is well-educated, affluent, and more conservative, for whom climate skepticism / denial is much more intensified (Slovic, 1999). Part of this may lie in the difference

in value systems which appear present among white males compared to other groups. Research finds that white men place significantly less value on altruism, self-interest and traditionalism in regards to environmental reform than do all other combinations of sex and race (excluding Native Americans, who were not tested), with the finders interpreting the results to say "the key variable associated with environmentalism and altruism may be membership in the most advantaged social structural or cultural group in the society, rather than race or gender per se" (Kalof, Dietz, Guagano, & Stern, 2000). The white male subgroup's intensified climate denial appears to confirm this theory, since those that are affluent and well-educated are by definition more socioeconomically advantaged, and showed statistically significant differences within the same race and sex.

The main conclusion behind these bodies of research, at least as they relate to white men and climate denial, is that those who are skeptical to climate change are subconsciously attempting to maintain their group's status. Those white males who have an individualistic and hierarchical worldview are inclined to reject the concept of climate change risk because it threatens their way of life via environmental regulation (McCright & Dunlap, 2011). Additionally, white conservative males have a much higher tendency towards system justification as a whole, because "the current industrial capitalist order… has historically served them well" (McCright & Dunlap, 2011). We will return to this notion shortly when we discuss high dominance orientation as a psychological characteristic of climate deniers.

Psychological Characteristics of Climate Deniers

When studied in the academic realm, climate change denial is most often investigated from a psychological perspective. This is because, given the enormous amount of evidence that anthropocentric climate change exists and the trustworthiness of the institutions from which the

evidence comes, there is essentially no rational basis to deny climate change, leading researchers to instead look for irrational bases. While we will cover belief frameworks in the next section of this chapter, it should be understood beforehand that the arguments used by climate deniers have, in all the cases I have personally investigated, used faulty logic and / or have false premises; the latter has been much more frequent. With that in mind, the core of our studies will be based on why people would reject the existence of climate change even though there is seemingly no intellectually honest reason to do so.

Low Empathy

One factor which is essential to understanding climate deniers is their typically low empathy. In this context, empathy is not synonymous with sympathy. There is no evidence to suggest that climate deniers lack the ability to care for the pain of others, in a sort of sociopathic way. Instead, the word "empathy" is literally applied, and means the degree to which an individual identifies with another individual or group. Low empathy in an individual would mean that his / her ability to identify with another is minimal, whereas high empathy would mean that he can greatly identify with others.

When talking about empathy, social psychologists tend to consider not simply whether one can empathize with others in general, but how his / her empathy ranges across different individuals, and for what reason. The main trait we will discuss in the context of climate deniers is low empathy with people of high social distance. Social distance is a term which describes "the extent to which individuals or groups are removed from or excluded from participating in one another's lives" (Dictionary.com, 2017). When someone is of high social distance, they are more excluded from the individual in question; for low social distance, they are more included. For example, a native-born American citizen would likely have much less

social distance from her neighbors than the citizens of Nicaragua, since her neighbors are more relevant to her everyday life and position in society.

This information culminates in two ways: (1) that low empathy (without regard for social distance) correlates with the predictor of climate denial known as dominance, which we will cover shortly, and (2) that low empathy for people of high social distance can make certain pro-climate-belief media ineffective at changing the minds of climate deniers. The study detailed below elaborates on this second point.

Interested in the effects of social distance on climate change communication, researchers showed subjects articles about individuals being negatively affected by climate change, and surveyed them before and after on their thoughts to gauge their change in belief. The control variable was an article about American citizens, while the other articles concerned people in foreign countries outside of the Americas. When "strong Republican" (i.e. very conservative) people were shown articles concerning people of high social distance, their interest in mitigation of ACC dropped noticeably. This effect is common in political communication, and is known as the "boomerang effect" – when someone expects interference with a variable to cause it to have a particular effect, but instead, it has the opposite effect. However, when this was done with people of low social distance, these conservative readers almost entirely resisted the boomerang effect, and were more informed on the dangers that climate change posed to people (Hart & Nisbet, 2012).

These findings on social distance will allow us to better avoid the boomerang effect in our own policies, by identifying an instance where it may arise, and how it can be almost entirely mitigated. This will allow us to inform climate deniers on the circumstances of climate change

without further polarizing them into a full rejection of climate science, which, as we will see later on, is a legitimate concern.

Dominance

Political psychologists have identified a native trait among people which they call "social dominance orientation" (SDO): a preference for group-based social hierarchies. The higher one's inclination towards SDO, the more they dislike when social systems are changed, particularly when they become less hierarchical. Since policy reform for climate change has the potential to diminish the wealth of very large industries and force changes in many aspects of people's lives via regulation, hierarchies are undoubtedly threatened in some way, even if not to a serious degree in the average citizen's personal life. In addition, high SDO also correlates with an inclination towards dominance over nature (NDO), meaning people are predisposed to think that humans are above nature and therefore not challenged by its changes (such as climate change) (Milfont, Richter, Sibley, Wilson, & Fischer, 2013). Conversely, high SDO is predicted by low empathy (and vice versa), which also could demonstrate a lack of interest in the consequences of climate change (making denial less meaningful to him/her) if one is in an affluent nation like the United States that can adapt more easily than others (Sidanius, et al., 2013). A random-sample survey found the following model to be the most accurate representation of how dominance and other factors relate to climate change denial via continuous regression modeling (Jylhä & Akrami, 2016):

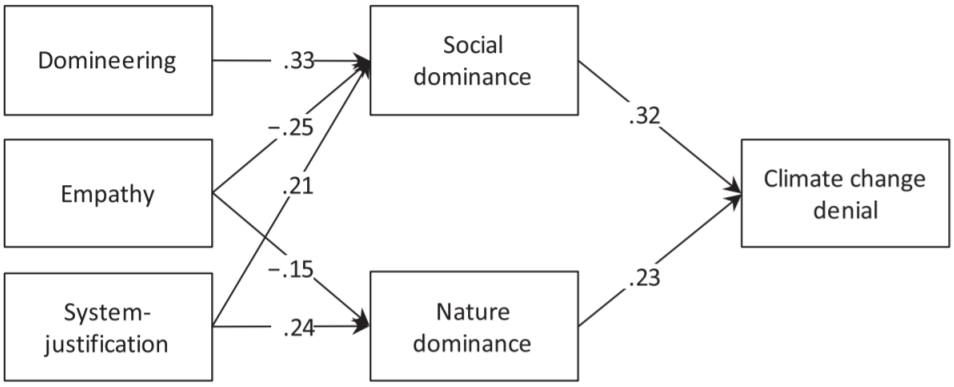


Fig. 1. Standardized structural relations explaining climate change denial (only significant, [$p < .05$] paths are depicted).

This study, while groundbreaking in its finding of SDO and NDO as primary attributes for predicting climate change denial, does have some limitations in applicability: (1) its lack of causality fails to demonstrate which way the relationship between SDO / NDO and denial operates, and (2) the study's survey took place in Sweden, meaning its behaviors may not directly transpose onto American psyches (or other countries, for that matter). However, considering that these are, above all things, human traits, one might reasonably conclude that dominance operates similarly in people across the world, but vary in intensity depending on one's sociopolitical environment. Therefore, the relationship between SDO/NDO and climate change denial may be more intense in the United States, considering its tenser relationship with climate change politics compared to an environmentally friendly country like Sweden.

The largest implications of this regression model come from what other human traits are associated with SDO / NDO. For instance, a study shortly before the one above found that women score higher in empathy, lower in SDO, and have stronger environmental attitudes/behaviors than men do (Milfont & Sibley, 2016). Further, SDO has been shown, between this study and others, to out-predict climate change denial than such factors as conservative political orientation, authoritarianism, individualism, distrust of media, and others.

Perhaps of most importance here, though, is that a study showing a newscast demonstrating evidence for ACC was able to decrease denial among those with high SDO and/or conservative political orientation, showing that, even in these populations, reasoning and communication is still persuasive (Häkkinen & Akrami, 2014). It would seem, then, that SDO is likely the best predictor of climate change denial that we will find, but does not cause people to further distrust climate change when exposed to counterintuitive information (i.e. polarize them). Variables of this kind will be examined in the next section.

Political Conservatism

Though conservative ideology correlates positively with SDO, the regression modeling of the study above found that conservatism was absorbed by SDO as the statistically significant link to climate denial (Wilson & Sibley, 2013; Jost & Thompson, 2000). However, conservative ideology does serve some utility in understanding how climate denial can become intensified. When someone is conservative, regardless of the correlating factors leading to conservatism, it can lead to increased polarization on climate denial due to a perceived threat of Leftism using environmentalism as a tool for political power (Hoffarth & Hodson, 2016). We will see greater evidence of this in the section on polarization, as well as the section on climate denier arguments. In general, conservatism has been linked through neuroscience to correlate with increased need to "to reduce uncertainty, ambiguity, threat, and disgust", as well as an enhanced dislike of these feelings, though current theories contend that it is causally related by the increased size of the amygdala that also correlates with conservatism (Kanai, Feilden, Firth, & Rees, 2011; Jost & Amodio, 2012). Regardless of the source of these traits, the knowledge of heightened anxiety to uncertainty and threats will become critical to the formation of our anti-climate-denial messages, as will be discussed later on.

Religiosity

Lastly, another critical factor is the interaction of religion with the threat of climate change. We have seen that high religiosity is common among climate deniers, but we have not yet seen how religion impacts belief in climate change, if it does at all. This is a rather important consideration, since not only are most climate deniers religious, but so are most Americans. If there is some essential attribute of religion which makes belief in climate change more difficult, we ought to know about it so we can understand what obstacles we will have in persuading climate deniers of varying degrees.

Fortunately, religiosity has not been linked to climate change denial, at least as of yet. However, belief in the apocalypse because of one's religion does affect his / her stance on climate change policy reform, which affects a lot of United States citizens. 41 percent of Americans believe that the Second Coming will happen by 2050, and 58 percent of white evangelicals believe this as well (Pew Research Center, 2010). Believing in the End-Times within a short time frame has been shown to decrease interest in policy reform to fix long-term solutions (including climate change), even among people which would ordinarily believe these problems exist, would desire solutions, and are concerned for the welfare of society as a whole. These findings even adjust for political affiliation and positions of privilege, and find similar results for other scenarios like high national debt, meaning that they most likely are separate from the effects of SDO and empathy (Barker & Bearce, 2012). To many believers, climate change may in fact be taken as a confirmation that the End-Times are approaching, rather than something is unrelated to the Gospel and is a human problem (Scherer, 2004). The study above found that 76 percent of Republicans professed belief in the Second Coming (in 2006), though it is unclear whether or not they believe it will be in their lifetime or not. This suggests a deep

trouble for our efforts if the problem is made out to be existent only in the long term, when many believe the End-Times will have already come. These results imply that we ought to emphasize the already present concerns of climate change, and then make clear that they will only get worse (in the short run as well) to these more religious audiences.

Polarization of Climate Denial

Climate change has always been slightly more believed by the Left than the Right, even when the concept was first introduced to the public, but over the years it became much more polarized, to the point that it is now more polarized than ever before (Dunlap, McCright, & Yarosh, 2016). Political polarization has risen across all public issues, however. Median Democrats have moved more to the political Left, and median Republicans have moved more to the political Right. At present, only 4% of Republicans are more liberal than the average Democrat, while only 5% of Democrats are more conservative than the average Republican, down from 23% and 17% respectively in 1994 (Pew Research Center, 2014). Perhaps the most serious statistics are those of each party's members' views of the other party: 11% of Democrats view the Republican Party favorably (down from 22% in 2009), and 8% of Republicans view the Democratic Party favorably (down from 30%); the trend does not vary much among left- and right-leaning independents either, respective to each party (Pew Research Center, 2016). This poses a critical problem: as each party's constituents begin to more and more dislike the other party, and align themselves more with the views of their own party, it can become difficult for these constituents to break from their party when their positions have an incorrect view of the facts. This is because of two psychological phenomena: (1) people prefer to receive information which confirms their previous beliefs, and (2) as people receive more information which

confirms their beliefs, those beliefs become more polarized, and they identify more with others that hold those beliefs as well. Below, we will explore how these phenomena were discovered.

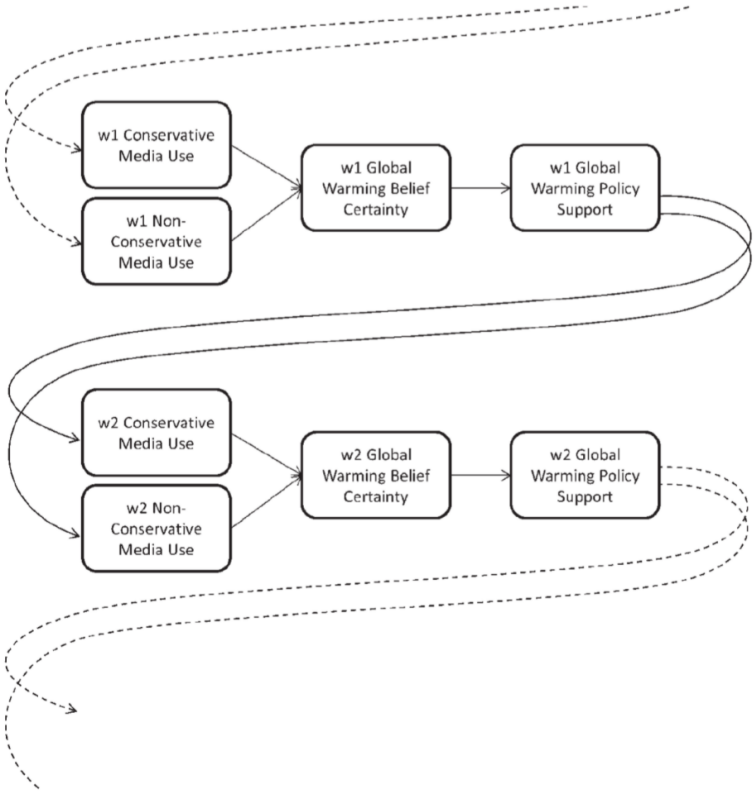
Confirmation Bias

Finding information on climate change, or what scientists think about climate change, is not too difficult if one has access to any online resource. The first results when typing "is climate change real" into Google are NASA's site on climate change information, and Wikipedia, which both explain the scientific consensus and explain why the problem is occurring (Let Me Google That For You, 2017). Yet, we've seen that the country is heavily underinformed on climate change: not just on whether it exists, but on whether other people think it exists. Only 47 percent of Republicans, for example, believe that "most scientists believe global warming is occurring"; the same response occurs for only 65 percent of the American public and 82 percent for Democrats (Dunlap, McCright, & Yarosh, 2016). The reason that communications experts give for this phenomenon is that people choose to, out of enjoyment and an avoidance of cognitive dissonance, seek information sources which correspond with their worldview (Knobloch-Westerwick & Meng, 2009). In other words, people are biased to confirm their pre-existing viewpoints, succinctly labeled as "confirmation bias". Confirmation bias is a rather well-known concept, so I will not dwell on it here, but its connection to political polarization becomes apparent when introducing the concept of reinforcing spirals.

Reinforcing Spirals

As we have demonstrated before, conservative-minded citizens are more predisposed towards climate change denial, and that conservatives are predisposed to view conservative media out of confirmation bias (Knobloch-Westerwick & Meng, 2009). But, it has not yet been

demonstrated that conservative media use contributes to global warming denial in viewers, nor that successive viewing continues to polarize denial (or whether the opposite is true for non-conservative media). To test this hypothesis, a study was performed which used a two-wave, within-subject panel survey of those who watched media that corresponded with their conservative/non-conservative political alignment. The following was found: (Feldman, Meyers, Hmielowski, & Leiserowitz, 2014)



Media of a given type, when watched (wave 1), intensified one's position on climate change and policy support/dissent, as well as the likelihood of consuming the same media later on (wave 2), which brought about similar intensification of beliefs to wave 1. The model continues indefinitely with the same effects so long as waves of in-line media use also continue.

What this study emphasizes is that media is a powerful tool for creating, particularly within the confines of climate denial, polarization which is independent of scientific analysis and evidence. Even aside from an interest of garnering belief in climate change, this demonstrates that people are apt to be convinced on either side regardless of the merit of the evidence utilized in the media they use. In the case of conservative media sources, this means that viewers are inclined to reject climate change, so where possible, we will want to interfere with this cycle of media consumption / polarization. Chapters 4 and 5 will detail suggested methods of interference.

Common Rationales of Climate Deniers

Despite the irrational factors we have discussed surrounding climate change denial, the rejection of climate change is not often discussed as a matter of mental biases in the public. Usually, it is supported as a rational conclusion by means of a series of arguments. While the evidence, and the trustworthiness of the institutions providing evidence, are very sound, it is necessary to consider what would constitute intellectually honest denial of climate change, were it to exist. Feminist epistemologist Heidi Grasswick builds a strong (if hypothetical and not holistic) case for climate skepticism:

"… Distrust in climate change science from a position of privilege could be justified and considered responsible if there were available evidence that the institutions of climate science are not working well, evidence that they are failing to produce high-quality research relevant to a group, or evidence that they are reporting results in ways that are manipulated in order to serve the interests of either the scientists or some other group… at the expense of one's own group (Grasswick, 2014)."

Evidence of the sort that Grasswick brings up has not presented itself, though, as we will find in the next chapter, there are organizations who attempt to make people believe that it has. This strategy often works: eight of ten climate deniers believe climate scientists are overstating evidence for their own interests, and nine of ten believe that the media is overstating it; also of note is that 47% of those unsure if climate change exists believe climate scientists overstate their results, and 60% believe the media overstates the problem (Borick & Rabe, 2012). Thus, if we want to persuade climate deniers, we must not only uncouple climate denial from its psychological influences, but also invalidate the arguments they believe.

Argument Framing

In our daily lives, when one hopes to counter someone else's argument, he or she is, by all conventional understanding, most able to do so by finding a contradiction in that person's claim, often by introducing some new piece of information which leads to the contradiction. This is to disprove the logic used by the opponent in the argument. But, we can each talk and argue about different aspects of a given issue, particularly when we talk about problems, in different ways. This is called "argument framing" in academic circles. We can consider whether or not there is a problem (diagnostic framing), what we should do about the problem (prognostic framing), and why people should support doing something about the problem (motivational framing). In order to most directly lead to a contradiction (and therefore counter the argument of the person we wish to convince), we ought to be arguing the same frame of the problem as our opponent: in the context of climate change, for instance, if I wished to contradict someone that was arguing climate change does not need policy reform (prognostic frame), I should offer reasons why policy reform is necessary in my own argument (also prognostic frame). In addition, a contradiction generally ought to have the same category of discussion within the argument

frame: for example, if the climate change policy contrarian said a given reform was unnecessary because it will have limited impact on the environment's wellbeing (science category), I ought to argue that the reform is impactful (also science category) if I wish to convince him or her.

One article wishes to explore whether or not climate believers and climate skeptics/deniers are using the same argument frames and dominant categories when they talk about the issue, by examining all relevant US newspaper editorials available on Lexis-Nexis from September 2007 to September 2009 that included the terms "climate change" and/or "global warming". (Hoffman, 2011) They also attended a climate denier conference and recorded all the speeches that day, again analyzing them for argument frames and dominant categories.[3] The findings showed this was very far from the case: whereas only 60% of "convinced" editorials used a diagnostic frame, 95% of "skeptical" articles did; similarly, "convinced" articles used a prognostic frame 80% of the time, whereas "skeptical" articles only used it 40% of the time (motivational frames were not too dissimilar). Furthermore, dominant categories were also quite different; skeptics emphasized science (typically in association with a diagnostic frame, to argue that science rejects that climate change is happening) whereas believers focused on risk (alongside a prognostic frame, to say that we ought to act because there is risk to not acting). Interestingly, both groups utilized political ideology as a dominant category, but under different frames: skeptics associated it with a diagnostic frame, contending that those who espouse climate change are politically motivated alarmists (as we have covered earlier), whereas believers used a prognostic frame to suggest interest in political compromise for a substantive reform, such of use of cap-and-trade policies favored by conservatives. Below is a statistical table from the study

[3] It should be noted that these editorials and speeches could be listed as using more than one argument frame or category at a given time, just like a typical argument may use.

showing more on the argument framing and issue categories of each type of article (Hoffman, 2011):

Table 6. Climate Change Convinced and Skeptical Articles by Issue Category and Frame Type[a]

	Diagnostic Frame				Prognostic Frame				Motivational Frame			
	Convinced (%)	Skeptical (%)	χ^2	*p* Value	Convinced (%)	Skeptical (%)	χ^2	*p* Value	Convinced (%)	Skeptical (%)	χ^2	*p* Value
Science	36.85	87.74	126.91	.000	0	7.74	45.49	.000	2.42	12.26	27.50	.000
Risk	39.97	9.68	50.29	.000	37.54	9.68	43.87	.000	12.63	24.52	13.44	.000
Technology	0	0			9.69	5.16	3.14	.076	0	0		
Economics	0.87	0.65	0.07	.787	5.19	3.87	0.46	.500	21.28	20.65	0.03	.863
Religion	0	0			19.72	5.81	16.95	.000	22.32	0	41.98	.000
Political ideology	23.53	58.06	68.35	.000	45.85	22.58	27.37	.000	5.02	0.65	5.95	.015
National security	3.81	0	6.08	.014	1.90	0.65	1.20	.273	6.75	0.65	8.82	.003

a. Percentage of articles that use a frame and category type one or more times.

This suggests we are, as the author puts it, "talking past each other" in regards to climate change debates. Believers are not typically addressing the arguments made by skeptics (and, by extension, those made by deniers to create skeptics) and therefore are not able to find contradictions which may persuade them.

Another telling aspect of the study was the series of arguments made at the observed climate denial conference. The speakers, 70 of which did not accept the scientific consensus on climate change and two of which did, contended that the peer review system in scientific research has become corrupted (calling it "pal review" rather than "peer review"), that belief in climate change and climate change policy reform were inextricably tied to global socialism and totalitarianism, and policy reform on carbon emissions would lead to economic depression. The speeches presented a rejection of climate science as the only means to ensure the continued freedom of society, with one speaker claiming "the environmental agenda seeks to use the state to create scarcity as a means to exert their will, and the state's authority, over your lives". In

summary, a rejection of climate change was viewed as "part of a larger culture war against liberal social and/or economic views" which the speakers (and presumably the audience) saw as a fundamental threat to their lifestyles.

Though this study was limited in scope by using only newspaper editorials to analyze people's arguments on climate change, later studies examined other methods of communication, like online chat boards, and found similar results (Williams, McMurray, Kurz, & Lambert, 2015). Whatever form our strategy against climate denial takes, it must be sure to answer these diagnostic questions in quick fashion to ensure that skeptics are able to consider, with minimal bias against the content, the arguments for belief in climate change science and the risks that come without that belief.

Chapter Summary

In the previous chapter, we have explained why climate change is a concern, what difficulties currently lie in solving it, and what steps appear necessary to be able to solve it in the future. The most crucial step is to alter public opinion so the public believes in and cares about climate change. Considering how massive the scientific consensus on climate change is, and how serious the dangers are if it is not mitigated as much as possible, denial of climate change's existence seems unintuitive at first glance. To best understand how to diminish climate denial, it is essential to comprehensively examine the literature on the subject, to understand what variables contribute to climate denial, how it may spread, and why efforts to educate the public have not been as thoroughly successful as other scientific realizations.

Academic investigation into climate denial has mainly interpreted it as a psychological phenomenon. This is mainly because it lacks an external justification and tends to exist only in

those that share a specific series of psychological traits in common, even if those traits may come about from the influence of the deniers' environment(s). Climate change denial is largely among those who are in the most advantaged social or cultural group in society, and within capitalism, it tends to be those who are white, male, and conservative. These factors, alongside a limited empathy for people unlike themselves, cause these individuals to have little interest in climate policy reform, and much interest in protecting the status quo which benefits them. Thus, they are inclined towards climate change denial subconsciously, seek cognitive consistency, and feel threatened when their viewpoint is challenged by those who accept climate science. However, not all people who reject climate change reform have these traits, or even reject climate change science. Apocalyptic Christians, who believe in the Christian Rapture, for instance, pose a unique problem in that they may believe climate change and yet be apathetic because of genuine belief that humanity will be unaffected.

Climate change deniers often argue that there is insufficient scientific evidence of climate change, or that existing evidence is illegitimate because of flaws or biases in research methods or peer review. This is almost entirely false, and a variety of meta-analyses of climate research has corroborated their trustworthiness, yet these beliefs persist among climate deniers. Unfortunately, available content analyses of pro- and anti- climate change arguments reveal that mainstream media, climate scientists, and climate spokespeople have largely failed to address these criticisms directly. Instead they appear to focus primarily on the potential dangers of climate change when talking to these groups, seemingly taking for granted that the evidence of these effects will be accepted at face value. Lastly, a proportion of the most polarized climate deniers tend to isolate their social and political news and conversations into an 'echo chamber' of those who also (fiercely) deny climate change. This population, alongside the aforementioned

Christian groups, may be too set into beliefs inconsistent with climate policy reform to be convinced otherwise.

This literature review suggests two significant themes which we can use when we begin to form solutions: (1) climate denial is largely a subconscious bias to protect one's own interests, and (2) climate deniers' arguments to protect these biases often go unanswered by climate believers. After Chapter 3 examines the institutions which contribute to the creation of climate denial, we can consider what mechanisms we can use to undo these biases and arguments in Chapter 4, and turn our findings into solutions in Chapter 5.

2017

Dismantling the Climate Denial Machine: Theory and Methods

CHAPTER 3: DENIAL MACHINE ORGANIZATIONS

DREW MICKOLAS

Preface

As of this writing, Donald Trump is the president of the United States, and has appointed Scott Pruitt, a proud climate change "contrarian", to head the Environmental Protection Agency (Davenport, Senate Confirms Scott Pruitt as E.P.A. Head, 2017). Pruitt, former Oklahoma attorney general has been an avid opponent to President Obama's environmental regulations, and one of the most well-known climate deniers in the country (Davenport & Lipton, 2016). Rex Tillerson, former CEO of ExxonMobil, has been picked to be the new secretary of State, offering the fossil fuel industry an unprecedented amount of political contact to the leader of the United States' foreign affairs (Nedig, 2016). In addition to appointments, the Trump administration has currently and historically aimed to dismantle climate science institutions and beliefs. Trump's transition team previously requested the names of all Department of Energy staff whom contributed to climate policy reform, which many pundits predict is a precursor step to fire them and take away experienced employees from future administrations (Dixon, 2016). This was followed by a confirmation that the administration plans to cut at least 50% of staff at the EPA (Siciliano, 2017). Donald Trump himself has insisted that "the concept of global warming was created by and for the Chinese in order to make U.S. manufacturing non-competitive" (Trump, 2012). Trump has made close to 100 references via Twitter alone to climate change as a hoax (Trump Twitter Archive, 2016). During the presidential campaign, Trump promised to withdraw from the United Nations Paris climate agreement entered by President Obama, but the administration's members have conflicting views on the matter and no decision has been made at the time of writing (Davenport, Top Trump Advisers Are Split on Paris Agreement on Climate Change, 2017). Nonetheless, his choice of Pruitt for head of the EPA, his continued

unpredictability, and the Republican-controlled Congress does not bode well for the future of climate change policy in the United States or its international agreements (Diamond, 2016).

Climate change did not appear to be, at least by any conventional metric, a key issue during the recent election cycle, and certainly not framed as an issue which will affect human civilization for as long as it lives on the planet. There was not a single question on climate change during the presidential debates, though Hillary Clinton did mention Trump's infamous Chinese conspiracy claim, and made passing comments of her support for climate change policies (Sheppard, 2016). Polling finds that climate change had below average importance to constituents of both parties this election cycle (Newport, 2016). Even if not a large talking point of the Democratic vs. Republican race, the fact that climate change was seemingly not a significant factor in the minds of citizens, whose welfare will be affected in serious ways by it, means that climate deniers (including Trump) were politically salient enough to not hurt their chances of success. This is a problem whose solution requires a deep institutional analysis of how climate deniers operate and convince laymen that climate change is either not real or not a great enough cause for concern that it should be on the national debate stage.

Describing Science Denial Movements

Describing the climate denial movement requires also describing what a science denial movement is. It may be simple to picture a person or group disagreeing with a scientific viewpoint that we, many others, and maybe even most scientists accept and call that science denial, but what we will be discussing is much more than mere disagreement. The largest reason why science denial individuals and groups are a public concern is because they engage in what has been coined "science abuse". To effectively discuss science abuse in a nonpartisan and productive fashion, of course, definitions and examples need to be produced to force

accountability for the entire political spectrum. To that end, we must start by detailing what science abuse is. Political commentator Chris Mooney provides a clear definition of science abuse that can be used for both the political Left and Right. Since the end goal of science abuse is to distort the scientific method to form denial, science abuse is a means to science denial and the key tool of the science denier movement. It is defined as "any attempt to inappropriately undermine, alter, or otherwise interfere with the scientific process, or scientific conclusions, for political or ideological reasons" (Mooney, 2005). In addition, Mooney names ten distinct categories of science abuse, listed below: (Mooney, 2005)

#	Category	Definition
1	Undermining science itself	Aiming to discredit the scientific method without argument, like calling evolution "just a theory"
2	Suppression	Stalling or otherwise aiming to prevent release of scientific findings
3	Targeting individual scientists	Aiming to delegitimize specific researchers to discredit scientific institutions as a whole
4	Rigging the process	Controlling who is selected to research and deliver information on a given policy or research topic
5	Errors and misrepresentations	Deliberately misstating facts or "cherry-picking" results
6	Distortions	Changing research findings to accommodate a political view while not considering the information in its full context
7	Magnifying uncertainty	Targeting the scientific method's concept of scientific uncertainty and exaggerate it to imply no meaningful conclusion can be made at all
8	Relying on the fringe	"Cherry-picking" not results but the researchers of those results
9	Ginning up contrary "science"	Funding/generating studies to produce "science" favorable to one's own interests to create false controversy

10	Dressing up values in scientific clothing	Post-hoc contending that one's decisions were made for a "scientific" reason rather than some alternate reason based on values

It is equally important to note what science abuse does not include. Notably absent from the list are actions like: criticizing one's research methodology, arguing and justifying that a certain topic or subtopic is under-researched, and noting difficulties in policy implementation (for topics related to science policy). It is because these are each acceptable under a philosophy of science; they do not attempt to undermine the process, especially for personal benefit, but instead point out gaps in knowledge or method that could then be remedied to produce more effective research. One ought always to remember that skepticism is inherent to the scientific method, whereas mechanisms for denial are not. Later sections will show the contrast between these legitimate methods and those of the climate denial machine and similar movements.

Organized efforts to cause disbelief towards scientific findings are not a recent development, nor an uncommon one, but it is important to closely examine the definition of science abuse to understand why it is more potent and dangerous than other, similar behaviors. Scientific skepticism movements can be found essentially anywhere that an unintuitive finding is made. Even among the Left, and against commercial interests, there have been scientific skepticism movements. One such movement has been against genetically modified organisms (GMOs) and their usage in, or as, food, despite the consensus in the scientific community that they have no adverse effects in humans (National Academies of Sciences, Engineering, and Medicine, 2016). Conversely, it is true that scientists have sometimes overhyped science relating to issues supported by the American Left, such as the potency of embryonic stem cell research on curing diseases (Vastag, 2001). It is also without question that American scientists are, on average, more liberal-leaning than the general population (about 80% identify as Democrats or

lean Democratic), and this has affected the topics which get researched and the modes of research in which they are investigated (Pew Research Center, 2009). Harvard University cognitive psychologist Steven Pinker notes that inquiries into the genetic basis for human behavior, being highly politicized, have been largely avoided by the Leftist scientific community which prefers viewpoints of "nurture over nature", leaving a critical gap in research (Pinker, 2002). But, on the whole (especially where climate change is concerned), organizations which aim to deny the science of a given topic (1) are associated with one or more industries which produce greenhouse gases directly, and (2) tend to attack the scientific community not for abstaining from certain areas research due to their partisanship, or for exaggerating the potential utility of their studies, but for allegedly tampering with its results of their publications as a means to some political agenda or personal success (Jacques, Dunlap, & Freeman, 2008).

Historical Examples of Science Denial Movements

Cigarette Health Risks

One of the most well-acknowledged science denial movements is that over the negative health effects of cigarette smoking of the 1950s and 1960s. Due to litigation, many internal memos on the topic have come to light. Culminating around 1964, when the United States Surgeon General released a report tying smoking to lung cancer, chronic bronchitis, heart disease, and emphysema, cigarette companies (also called "Big Tobacco") believed they needed to counter these statements to protect their profits. (Mooney, 2005) As cigarette company Brown & Williamson documented about their public relations strategy: "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. It is also a means of establishing a controversy". This trend continued into the '80s and '90s, when secondhand smoke was identified as a human lung carcinogen by the Environmental

Protection Agency (EPA) in 1992. The cigarette company Phillip Morris helped to fund a new group known as the Advancement of Sound Science Coalition (TASSC), which marketed itself as a grassroots-based, independent group of watchdog scientists and experts advocating "sound science" in American public policy. Phillip Morris documents reveal that they avoided discussion of their connection to the TASSC in all media inquiries as well. The TASSC went on to criticize the EPA's secondhand smoke report as well as the EPA's work in general, though it did so amongst a myriad of other environmentally-related denial movements. In 1995, when the 103rd Congress' Republican members began to form their policy language, Newt Gingrich (then House Minority Whip) adopted "sound science" and "junk science" as political buzzwords. "Sound science" quickly spread among Republican senators, as a Knight Ridder article suggested, to be used as a code word, not for research that matches the scientific method, but research whose findings support deregulation of a given industry, regardless of its merit. The affected industries donated heavily to Congress soon after, with Republican senators received over $1.5 million in campaign funds over the first half of the year, outdoing Democratic Party's earnings tenfold and demonstrating the political value of business loyalty. Even to the present day, Republican Congressmen receive about five times more funds from tobacco lobbying than do Democrats (OpenSecrets, 2016).

Pesticides and Harms to Nature

Industries have long been searching for a type of pesticide which can allow crops to grow without being eaten by insects or other life, without having negative impacts on the crops or environment around them, but due to the difficulty in crafting a poison which kills only undesirable forms of life, many mass produced forms have failed. The most infamous instance of this problem arose in the form of a chemical called DDT, which was used regularly in the United

States until it was shown to likely have carcinogenic effects on humans and was banned in 1972 by the EPA (US Enivronmental Protection Agency, 2016). The World Health Organization now only permits use of DDT as a preventative measure against malaria in specific African countries. There was large scientific controversy over DDT at that time, but it was more a clash of utilitarian calculations than a dispute over the evidence (Conis, 2010). However, there was a push at the turn of the century, with a variety of right-wing think tanks and PR firms, to test the public's interest in another marketing of DDT by denying the relevance of any prior scientific conclusions on DDT, calling the reports "junk science" and gaining the support of some United States senators (Swartz, 2007). While the DDT science denial movement seems to have lost virtually all of its momentum, the mechanisms it used are reflected in other movements of its kind.

A modern version of pesticides that has replaced DDT, known as neonicotinoids, has been conclusively found to be a threat to pollinating creatures, cause air and water pollution, and harm a variety of other kinds of animals (McGrath, 2014). There has been an especially dense collection of research on the harm to honeybee populations as a result of neonicotinoid use, including significant damage to their reproductive health and brain structures, though they are likely not the only contributing factor to their decline (Williams, et al., 2015; Hill, 2015; Grossman, 2013). Neonicotinoid manufacturers have claimed, in stark contrast to the extensive literature reviews on the subject, that "there is… no direct correlation between neonicotinoids use and poor bee health", but have largely avoided the press on the issue (Kuenzle, 2013). The trade association firm CropLife America, whose political action committee spends about $2.5 million a year on average, advocates for many of these manufacturers (OpenSecrets, 2016; CropLife America, 2016). Other agricultural corporations, like Monsanto (also defended by

CropLife) have bought out bee research organizations and producing reports contrary to the rest of the available literature (Gustin, 2013). It should be noted that the effects of neonicotinoids do help to produce more food – it is very difficult to contest that other forms of legal pesticide are just as effective – but the debate is hardly ever on the value clash between food yield and environmental impact, and more on a denial of the basic scientific conclusions (Bates, 2015).

Hydraulic Fracturing and Water Quality

Hydraulic fracturing, commonly referred to as fracking, has arisen as a contemporary means of retrieving oil from the earth by injecting chemicals to break up its layers, connecting it to the very lucrative fossil fuel industry. Though there have been efforts for companies to be required to disclose the chemicals used in their fracking projects, many of those companies, like ExxonMobil, have lobbied to include loopholes to prevent such chemicals from being revealed to the public. The new bills only allow the chemicals to be shown to state officials and medical personnel, and making it a Class 1 felony to distribute the information elsewhere (Currier, 2012). Where they have been revealed, the chemicals have been found to contain hundreds of known human carcinogens and radioactive ingredients (Committee on Energy and Commerce, 2011). Both geological research and anecdotal reports strongly corroborate the argument that fracking contaminates surrounding groundwater with these harmful substances, which then inevitably enter the drinking water of nearby citizens, causing serious health effects (Vengosh, Jackson, Warner, Darrah, & Kondash, 2014; Greenpeace, 2016). Though the EPA began its own investigation into the health effects of fracking in 2010, they were stalled and forced to end the study when fracking corporations refused their attempts to study their working sites (Banerjee, 2015). Aside from fossil fuel companies contributing to the climate denial movement (to be explored later), they have also rejected the notion that fracking has any danger to the public, like

all the other movements here in their marketing prime (Urbina, 2011). Though there is no definitive evidence on whether there are serious consequences to fracking, this rejection is made without research to support it, and since fracking corporations have actively resisted research on the effects of fracking, the industry is responsible for both the suppression and misrepresentation of science.

Ozone Layer Damage

Our earth has a layer in its stratosphere of a molecule called "ozone". The ozone layer protects life from some of the radioactive elements of the sun's ultraviolet B (UVB) rays that otherwise contribute to forms of cataracts and skin cancer, adverse effects in plant life, and destruction of phytoplankton, which are at the bottom of the marine food chain and are therefore necessary for many other forms of life to exist (US Environmental Protection Agency, 2016). These UVB rays are now able to more easily pass through the atmosphere due to a hole in the ozone layer, which is caused by pollutants called chlorofluorocarbons (CFCs) which react with the ozone molecules (National Georgraphic, 2015). Though legislation was passed in 1996 banning the use of CFCs in industrialized countries (which produced 90% of them), there was an enormous movement before its passing which believed CFCs were of no harm and that theories that they could hurt the environment were ridiculous. DuPont, the inventor of CFCs, advertised in 1975 that "should reputable evidence show that some fluorocarbons cause a health hazard through depletion of the ozone layer, we are prepared to stop production of the offending compounds.". However, after evidence had been found and widely accepted, DuPont noted the evidence was "a science fiction tale… a load of rubbish… utter nonsense"; representatives of the company went on to attempt to delay policy to limit CFCs by testifying in Congress, noting "we believe there is no immediate crisis that demands unilateral action [on CFCs]" (Greenpeace,

1997). Despite the scientific consensus of the time, DuPont and other companies continued to deny evidence concerning the ozone layer until it was clear that a prohibition would be passed in its markets, at which time they divested from the CFC industry and made a large profit doing so.

Describing the Climate Denial Movement

Science denial, though it applies to many different topics, stays largely the same when used by a given commercial industry. The methods and incentives of climate change deniers are not much different from science deniers already mentioned. Below I detail why interest groups are committed to preventing climate change reform, how they allocate their resources to prevent reform, and what institutions and techniques they use to discredit climate science.

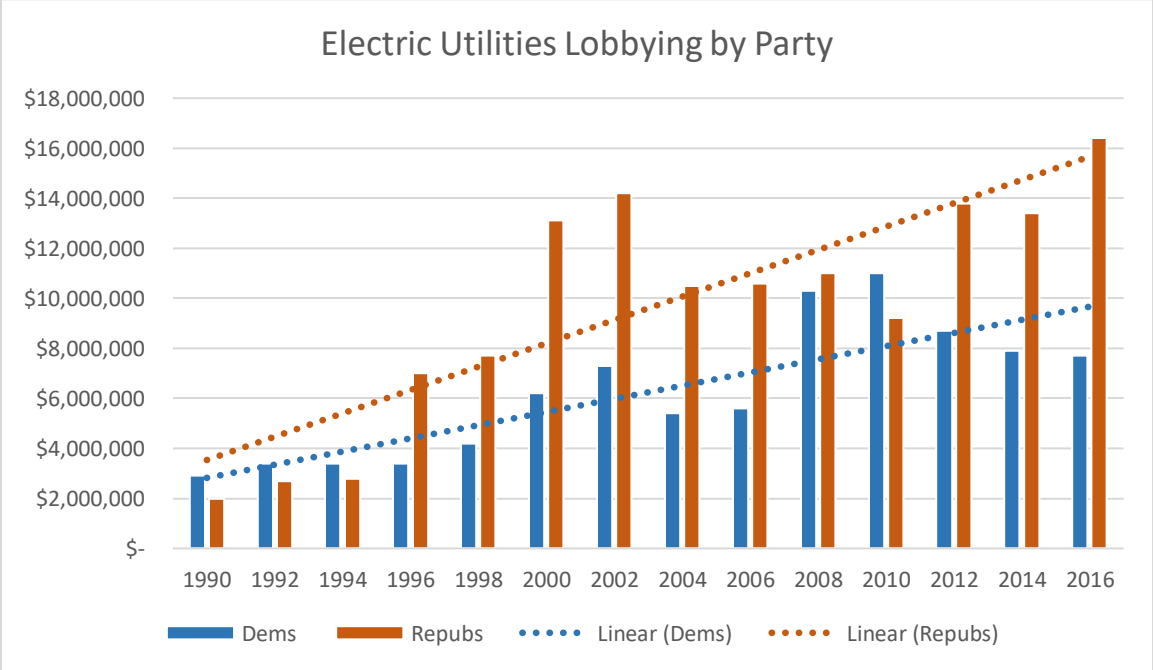
Interest Groups and Climate Denial

Like these other interest groups and their resistances to reform, a myriad of interest groups in the United States, and indeed, around the world, have stake in the sorts of policies (or lack thereof) that are made to reform anthropogenic climate change. Exhaustive analysis of each of these denial organizations shows that they are each connected to a small selection of conservative think tanks, by the reports of scientists which specialize in different areas, funded by the very areas they review (Oreskes & Conway, 2010). At present, greenhouse gas emissions are heavily tied to economic output, so the larger an economy is, one can expect more economic power to be involved in producing GHG emissions: the top ten GHG-emitting countries produce 70% of GHGs annually, and of those ten, eight have an above-average GHG-per-capita ratio (World Resources Institute, 2014). Therefore, those economies which produce the most GHGs tend to also have very strong investments in the sectors which produce them, and would endure more pressure for change (and potential loss of profit) if policy is passed. The industrial sectors

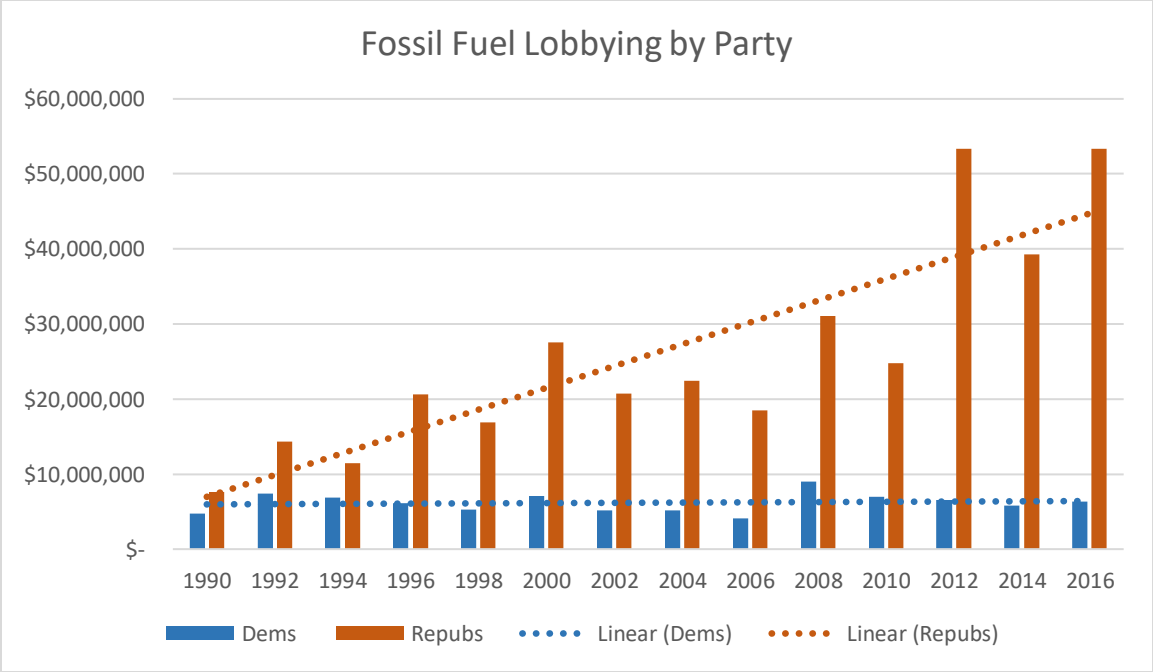
in the United States which produce the most GHGs include, in order of their total emissions, electricity production (two-thirds of which come from fossil fuels), transportation (via burning fossil fuels, over 90 percent of which is petroleum-based), industry (the majority of which is from fossil fuel burning, though chemical reactions to produce goods is also significant), commercial and residential (fossil fuels used for heating, and waste disposal), and agriculture (mainly from livestock emissions) (U.S. Environmental Protection Agency, 2016). Though policy reforms to be more GHG-efficient would (at least somewhat) interfere with the short-term economic goals of each of these sectors, it is clear that the fossil fuel industry, since it is directly tied to the GHG production in the majority of these fields, has the most at stake, likely losing a great share of its market if reforms require alternate fuel sources. As a result, the fossil fuel industry spends hundreds of millions towards climate denial groups (Brulle, 2013).The fossil fuel industry also spends the fifth-highest amount on U.S. lobbying of any industry in 2016, investing $88,939,177 (OpenSecrets, 2016), and sixth-highest overall since records became mandated in 1998, investing $1,875,519,592 (OpenSecrets, 2016). Also of interest is that the electric utilities industry, though indirectly tied to GHG emissions via fossil fuel use, was third-highest in lobbying spending overall, spending $2,155,275,427 (OpenSecrets, 2016). This demonstrates that both American fossil fuel companies and their business partners are willing to spend large amounts of money to lobby to influence government policies.

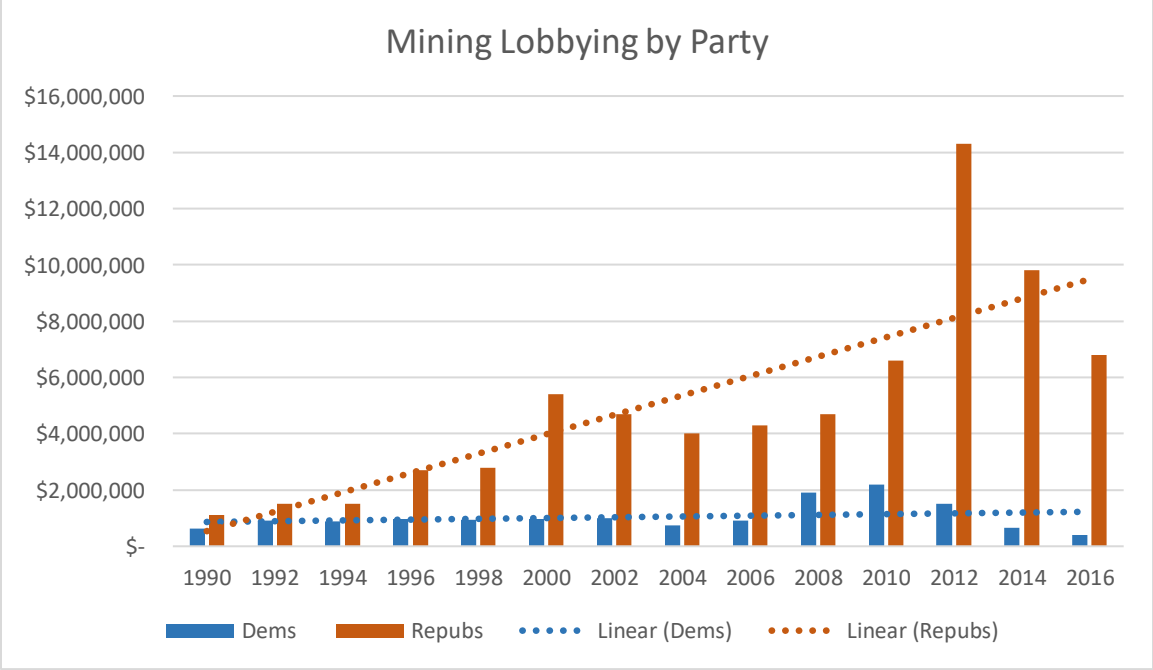
Though it is clear that these groups lobby, observing their lobbying trends and how they have changed over time will strength the argument that the industries are interested in promoting climate denial. Though these groups lobby both sides of the political aisle, within Congress, it is clear that the Republican Party is granted the most funding, receiving roughly double that of Democrats since 2012 from the electric utilities industry, and about eight times that of

Democrats from the fossil fuel industry (OpenSecrets, 2016; OpenSecrets, 2016). Interestingly, these groups' funding discrepancies all sharpened around 1996-2000, when climate change became a more pressing issue for the voting public. Even if it is far from the financial powerhouse that the fossil fuel industry is, the same trend (but even more exaggerated) can be found for lobbyists with similarly vulnerable priorities, the mining sector (OpenSecrets, 2016):



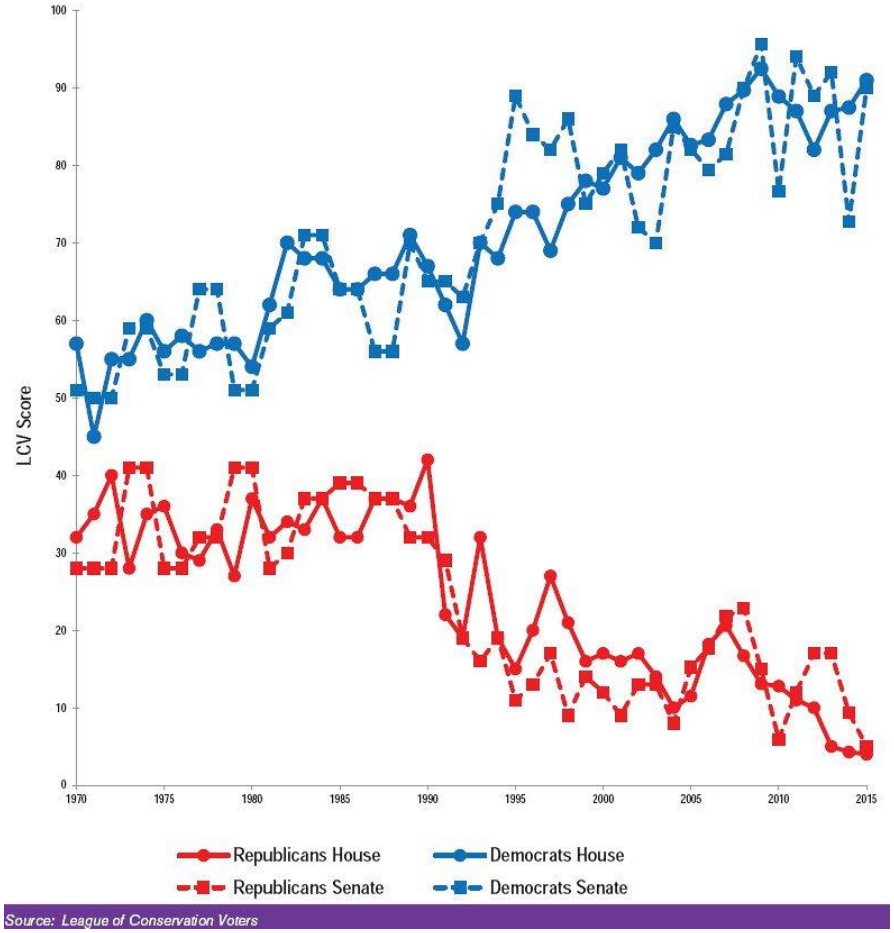
(OpenSecrets, 2016)





Right before this funding change, there was a sharp change in how Congress voted on the environment, with Democrats beginning to vote much more pro-environment and Republicans beginning to vote more anti-environment. The League of Conservation Voters compared their scores of Congressmen across the House and Senate (divided by political party) since 1970,

showing this trend rather clearly. It should be noted that lobbying records have only been publicly available since 1990, but considering how pronounced the changes are in that time span, the correlation should not be ignored (Dunlap, McCright, & Yarosh, 2016):



Though the Republican Party is, by ideological principle, more friendly to corporations than the Democratic party, this drastic change in priorities and lobbying over time might also suggest the possibility of quid pro quo agreements forming, or that they have already formed, between Republican senators and GHG industries. Many political dangers appear possible if Republicans do not acknowledge the power of their funding base: if a given Republican senator was to break from the rest of the party and simultaneously accept climate change science and the need for significant policy reform, they may lose much of their current earnings necessary for re-

election, and possibly lose fellowship with their fellow Republicans. Therefore, to keep this financial and political support, these senators have a strong and sustainable incentive to align themselves with corporate interests, regardless of their private positions.

Climate Denial Machine Organizations

Significant parallels exist between the historical science denial campaigns and their connections to industry that can be observed today in the climate denial machine. Similar to Big Tobacco's use of the TASSC and the DDT producers' media push, the climate denial machine utilizes a select group of fringe scientists, policy experts and seemingly legitimate members of the press to alter public opinion, and financially invests in them using many of the same techniques. Among these key players are conservative think tanks, front groups for the fossil fuel industry, conservative politicians funded by GHG-relevant industries, and conservative media outlets.

These groups provide "complementary and mutually reinforcing roles in the effort to promote denial of the significance and reality of climate change – especially via the strategy of questioning the scientific evidence for global warming" (Elasser & Dunlap, 2013). Essential to climate denial machine's arguments is that climate scientists are "alarmists" who exaggerate their claims and the consequences that come from them as a means of getting political and scientific clout. However, empirical analysis of climate science reports found that climate scientists actually tend to *understate* their claims, possibly to minimize backlash from the inevitable climate denial machine's response (Freudenburg & Muselli, 2010). However, the climate denial machine's audience appears open to the message of exaggeration regardless, and as the political psychology section of this text will show, it is highly potent among those predisposed to climate skepticism.

The nation's conservative media plays an especially potent role in the climate denial machine, as a means of delivering a message in a way not only consistent with that of its other "arms" of communication, but also by tying denial/skepticism (or apathy at minimum) of climate change to conservative ideology and reinforcing belief via successive use of such media (Feldman, Meyers, Hmielowski, & Leiserowitz, 2014). In other words, climate denial has been heavily tied to conservative identity politics, making someone who is classically conservative feel psychologically obligated to reject climate science for the continuity of their ideology. Later chapters will expand more on this topic, but it is important to consider when predicting the impacts of these organizations. For now, we ought to consider how this psychological phenomenon was able to spread and maintain itself across the country.

First, conservative think tanks received a massive influx of funding, notably by industry groups related to GHG emissions, starting in the 1980s and 1990s when two key events occurred: (1) the Reagan administration sharply decreased funding for policy research organizations like think tanks, and (2) private foundations and corporations vastly increased their contributions to conservative think tanks, allowing them to outnumber liberal think tanks two-to-one and outspend them three-to-one (Rich, 2004). Similar to the discussion of Gingrich Republicans and the rise of the "sound science" industry ties, conservative think tanks used this investment to massively expand their infrastructure and maximize their influence over United States public policy. However, this came at the expense of being obligated to advance the climate denial movement or risk loss of funding, especially because the government could no longer provide them with a "safety net" of cash; being some of the largest markets available on Earth, the electric utilities and fossil fuel sectors could provide more than almost anyone. As a result, about 90% of climate denial books published through a company (less so for self-publishers) have a

connection to a conservative think tank (Dunlap & Jacques, Climate Change Denial Books and Conservative Think Tanks: Exploring the Connection, 2013). In conjunction with fossil fuel companies, these organizations would create large national associations as front groups for their biased reports, with many of the agents having directly worked in other science denial campaigns like those of the TASSC for tobacco use (Dunlap & McCright, Climate change denial: sources, actors and strategies, 2010).

Second, the rise of partisan media in the late 1980s to early- and mid-1990s, during which conservative outlets like Fox News and the Rush Limbaugh radio program were established, allowing a medium through which conservative ideology could be broadcast on a very routine basis (McCarthy & Farhi, 2011; Rush Limbaugh Show, 2013). These networks and programs have enormous ratings, and often demonstrate a misleading, if not explicitly anti-climate change message on science, despite the scientific consensus, though Fox News has shown minor improvement in accuracy in recent years (Union of Concerned Scientists, 2014). Limbaugh in particular has been a critical proponent of climate science conspiracy theories, claiming that science organizations and even universities are part of a liberal conspiracy for indoctrination towards global socialism, and often uses isolated weather occurrences (or lack thereof) to denote the state of the climate as a whole (Rush Limbaugh Show, 2016). Similarly polarized conservative media outlets have arisen in the age of the internet, with self-proclaimed "alt-right" organizations like Breitbart News and InfoWars regularly publishing conspiracy theories about climate change being a hoax, and climate scientists participating in a conglomerate to deceive the public for their own ends (The Weather Channel, 2016; Daniels, 2015). Fake news sites, particularly on social media pages, have also contributed to misinformation campaigns on climate, and evidence suggests that not only are people very

ineffective at identifying fake news articles (Domonoske, 2016), but those with conservative ideologies might be even more vulnerable due to a need for cognitive consistency (Ingraham, 2016), and preliminary analyses suggest fake news is roughly twice as popular among conservative social media sources than liberal social media sources (Silverman, Strapagiel, Shaban, Hall, & Singer-Vine, 2016).

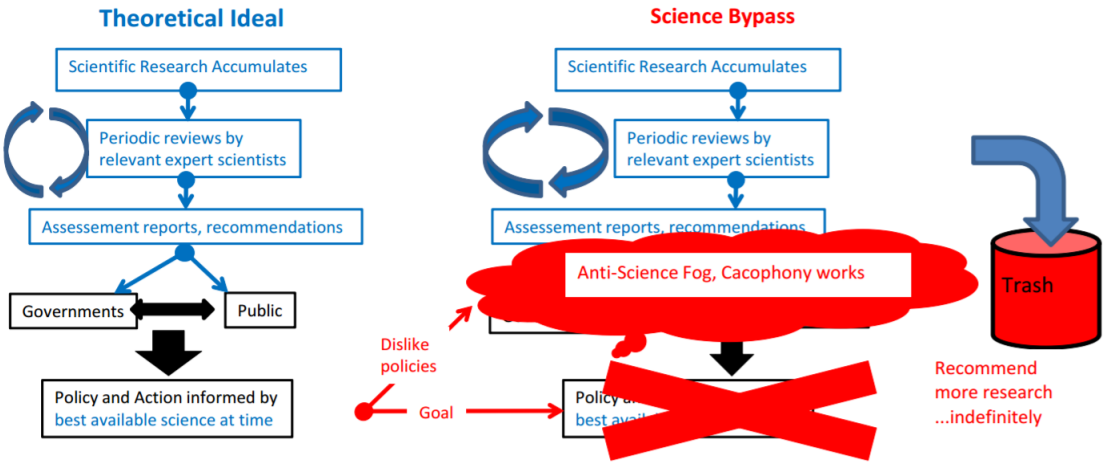
Each of these factors further intensifies the psychological connection of conservativism with climate change denial, among a group whose need for cognitive consistency is already higher than the average. As a result of the vast collection of allies and media connections of the climate denial machine (particularly given their coverage relative to the level of scientists skeptical of ACC), for those that are already psychologically predisposed towards climate skepticism, it seems it will be difficult to convince them without directly tackling the approaches of these organizations.

Climate Denial Machine Tactics

During Ronald Reagan's administration, there was the first large attempt to undo environmental regulations in the United States, which was met with severe backlash from liberal groups, whom were able to capitalize on the scientific consensus around environmental risks and hazards that these regulations protected against. Conservative think tanks learned from this lesson and began to question the merit of the science itself, instead of whether or not it is most beneficial to keep the regulations for other reasons (Dunlap & McCright, Climate change denial: sources, actors and strategies, 2010).

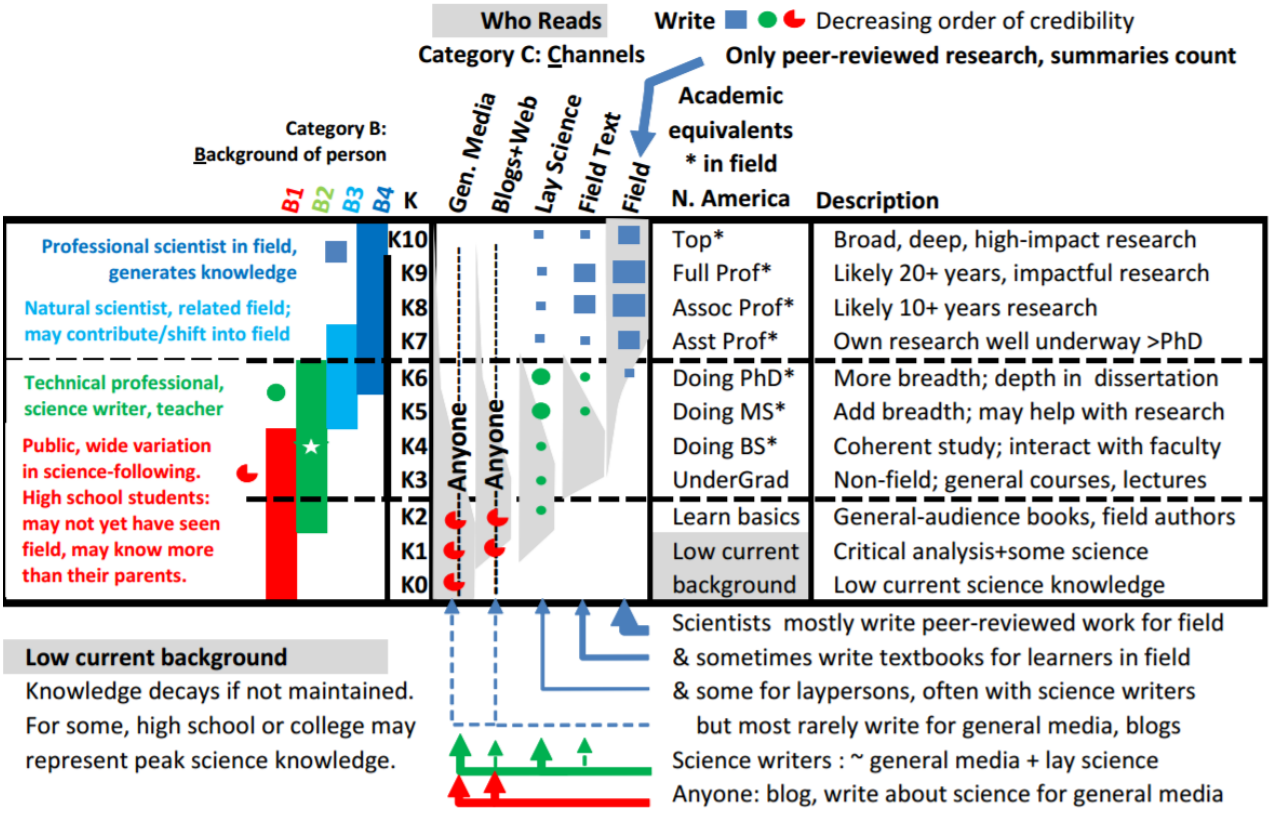
Below is a representation of the science policy process compared to the process when it is interfered with by science denial. The left-hand side indicates what would ideally happen if

science could not be interfered with by outside political forces; it would review information and provide recommendations, at which point the government and public would seriously consider them and act accordingly. The right-hand side details what science denial organizations aim to do: when they dislike the policies outlined in recommendations by expert scientists, they obscure the significance of the science behind the recommendations, no matter their merit, and continue to do so as long as it is effective for them (Mashey, 2010):



The intention of climate deniers who are connected to industry is to prevent the last step: policy and action on relevant issues. By interfering with the step which enters the public sphere, it can perpetuate the research indefinitely by raising doubts where non-experts do not know better. Aside from producing media which supports climate denial, they attempt to introduce as many "experts" as possible as contrarians to divide the existing consensus. Because these individuals are not truly experts but are meant to appear as such, climate denier organizations judge and prioritize their use by their expertise and relevance to the field of climatology, so that the public will view their work as favorably as possible against those of the consensus. The kind of person they wish to use will vary depending on whom they wish the information to reach; the graphic below describes the background that a climate denier voice ought to have to be salient

for a given channel, and which backgrounds are perceived as more credible than others (Mashey, 2010):



This representation should not be surprising among a science denier movement; we have seen this before in EPA reports and with groups like the TASSC, and two more infamous events are mentioned below.

Climate deniers capitalize on almost any sense of doubt or room for scrutiny available among climate scientists in order to discredit climate science as a whole, most notably one event colloquially referred to as “Climategate”. In 2009, a server at the Climate Research Unit (CRU) at the University of East Anglia was hacked and internal emails were leaked onto the internet. Opponents of climate change cited a small selection of these emails to argue that the organization had conspired to exaggerate results of their findings and suppress contrary

evidence, and the event was widely covered on both British and American media (Leiserowitz, Maibach, Roser-Renouf, Smith, & Dawson, 2012). Both university and independent investigations were done of the CRU, however, exonerating them of all charges and rejecting any evidence of foul play. Soon after, the Intergovernmental Panel on Climate Change's 4th Assessment Report was found to have several errors (though some error is far from uncommon in scientific reports), leading to an independent examination of their review processes, and again finding no wrongdoing, though this too was very widely publicized. Studies have since confirmed that trust in climate science and climate scientists are key factors in public opinion on ACC, and that these incidences (particularly Climategate) negatively affected that trust in about a fifth of the United States population (Leiserowitz, Maibach, Roser-Renouf, Smith, & Dawson, 2012). Even during the ongoing investigation, the American Enterprise Institute (largely funded by ExxonMobil) sent out letters to scientists offering $10,000 each for their services to undercut the results of the IPCC's conclusions (Sample, 2007). Criticism of the scientific community as a whole has also been an essential tool to defend the seemingly outlandish nature of rejecting climate change in the current day; fewer journals are accepting the work of conservative think tank scholars who produce climate denial work, forcing them to go to non-scientific outlets and not hold themselves to peer review, so these individuals claim that scientific organizations (even the US National Academy of Sciences) are compromised by liberals and an environmentalist agenda (Michaels & Balling, 2000; Lindzen, 2008). There is little denying that these climate denier organizations have committed acts of science abuse; the sole event of Climategate amounts to an incredible targeting of individual scientists to discredit all study, let alone all the subsequent misrepresentations of information on media outlets, the magnification of uncertainty

among those who argue for more research despite wide consensus and ever-mounting evidence, and the host of fringe climate denier publications.

One other critical understanding of how delaying ACC policy reform is realized is by associating climate policies with a change in the dominant social paradigm. As will be explored much more later, those most susceptible to climate change denial strategies are typically the most socially advantaged groups in society; in the United States, this is undoubtedly non-poor, white males (Slovic, 1999). The more conservative and educated these individuals are, the more climate denial seems to be intensified in these populations, and research suggests that the main factor pushing these extreme beliefs is that they are subconsciously motivated to maintain the status quo which benefits them; the more benefitted they are, the more likely and more intensely they will be disposed to climate change denial (Kalof, Dietz, Guagano, & Stern, 2000; Jylhä & Akrami, 2016). Considering the current social paradigm is one predominantly run by capitalist institutions, this seems to justify why attacks are consistently made by conspiracy theorists to make out ACC reform as a movement towards global socialism and the end of American prosperity (Rush Limbaugh Show, 2016; Hoffman, 2011).

American mainstream media's attempt at nonpartisan balance has incidentally helped climate change denial/neoskepticism come across as legitimate, often displaying climate denial machine information sources as comparable to the consensus on climate change by posing debates as one-on-one standoffs, especially in TV debate forums (Boykoff & Boykoff, 2004; Dunlap & McCright, Climate change denial: sources, actors and strategies, 2010). In other words, though the science is "in", so to speak, the media presents the two perspectives equally, as if there is not truly consensus for what science has to say. Such approaches are found to increase uncertainty among viewers and lead them towards political inaction (McCright &

Dunlap, 2003; Boykoff & Roberts, Media coverage of climate change: current trends, strengths, weaknesses, 2007). Referring back to Mann's six stages of denial, all that a climate denier must do on a media outlet to encourage skepticism to the science is show distrust in any of the six stages. With neoskepticism mostly at play now, the conversation tends to begin around steps 3 or 4, but nevertheless leaves much room for escape from policy reform without prior preparation (Mann, 2013):

1. CO_2 is not actually increasing.
2. Even if it is, the increase has no impact on the climate since there is no convincing evidence of warming.
3. Even if there is warming, it is due to natural causes.
4. Even if the warming cannot be explained by natural causes, the human impact is small, and the impact of continued greenhouse gas emissions will be minor.
5. Even if the current and future projected human effects on Earth's climate are not negligible, the changes are generally going to be good for us.
6. Whether or not the changes are going to be good for us, humans are very adept at adapting to changes; besides, it's too late to do anything about it, and/or a technological fix is bound to come along when we really need it.

Sadly, there is also an exploitable imbalance in how different media forms affect someone's concern about climate change and its policy reform; climate change films and articles about climate change both tend to decrease environmentalist concern if from a denier perspective, but if from an affirming perspective, do not conversely raise environmental concern (Greitemeyer, 2013; Hart & Nisbet, 2012). Thus, attempts at equalizing the content of a given medium between climate change affirmation and denial appears to, on average, cause more skepticism rather than create balance between the two options.

There is a newer but very concerning tool for interest groups to use when attempting to change the perceptions of citizens, which is targeted advertisements built on social media and

television analytics. Business firms associated with these different media outlets can, in conjunction with voting records and product purchases, find out who is most open to a political message, usually for the prospect of a vote. Such analytical firms were used during the recent presidential campaigns and during Chris Christie's reelection run (O'Connor, 2014) and can target either specific TV shows (and there are significant correlations with ideology for certain ones), or even within TV audiences, target specific viewers. The same is true of Facebook's "sponsored content", and Facebook's political sales department will even help to compile audiences which match your ideal demographics (Detrow, 2015). Personality quizzes, a very popular medium on platforms like Facebook, are also used by political groups to narrow down what sorts of beliefs people are likely to have or would have if given proper media focus; as will be demonstrated later on, this is a particularly lucrative area for climate deniers, because many people are highly predisposed towards denial through certain, easily-tested psychological traits (Funk, 2016). Recently, Facebook revised its terms of service to note that fake news is banned on its site, and Google has taken steps to prevent fake news sites from using its AdSense network (Reuters, 2016), but without any known metric by which news will be judged to be real or fake, it remains questionable whether this standard would or will be held to news articles which project climate denial stories; both InfoWars and Breitbart News, mentioned earlier as proud displayers of this belief, still have active profiles on Facebook. This becomes even more difficult to compensate for, since Facebook is well known to have divisions in what type of content people see due to its algorithm (Vongkiatkajorn, 2016).With this in mind, the world of climate denial, or at least political motivation on behalf of climate denial, seems to have a much smarter tool with which to work; using statistical analysis of the well-known demographics to lead one to climate denial, certain falsehoods or misrepresentations of truth can be shown to viewers in order

to change their stances. Though there does not appear to be any research on climate denial being used by such mediums other than the persistence of these false news sites and false narratives on social media as a whole, it ought to be watched careful since it is a potentially dangerous tool.

Due to the ever-increasing definitive nature of climate science and the public generally accepting that some form of climate change exists, it has been difficult for climate denial institutions to maintain the basic, flat denial that it has in the past with the press and general public, though it persists among those who peruse highly polarized media sites. In response, climate "neoskepticism" has risen as a new countermeasure against ACC reform implementation (Stern, Perkins, Sparks, & Knox, 2016). Climate neoskepticism is denial, one step removed: neoskeptics contend that climate change exists, and that it may even be anthropogenic (though this point varies), but is not worthy of policy reform, and may even be beneficial to humanity. Since this denies the results associated with climate science, it merely removes one aspect of climate denial to make the underlying arguments appear more legitimate (U.S. Global Change Research Program, 2014). This transition has been seen before among other science denial movements, such as that of DuPont's public relations with CFCs, as a means of delaying policy implementation for as long as possible for further profit. Greenpeace's analysis of climate denial organizations shows that they have indeed been decreasingly arguing against the scientific consensus that ACC is happening and increasingly focusing on how serious the effects will be (Greenpeace, 2015). Though this may frustrate individuals who became comfortable with fighting flat denial among climate deniers, the analogue with DuPont may give us reason for positivity: this transition could be interpreted as a gradual push forward in the Deny, Delay, Divest theory.

Chapter Summary

In the previous chapter, we outlined what psychological factors contribute to denial and why it has been so difficult to reverse. However, climate denial has varied from other rejections of scientific findings in modern history, in that it is very widespread, goes against an incredibly strong consensus (and media movement to argue in its favor), and brings a serious risk due to people's lack of belief. This can be widely explained by an effort within various industries to create an air of obscurity and distrust around climate research and climate researchers. This chapter has been dedicated to examining how industries organize to obscure scientific findings, why they do so, what evidence there is that this happened for climate change science, and what methods industries have used to obscure the science.

"Science abuse" is a term which varies from typical rejection of science by the layman: it is a systematic approach to damage the scientific method by unfairly making a piece of research, a researcher, or scientific research as a whole appear intellectually compromised. Science denial movements have used science abuse in order to effectively delegitimize a scientific finding. This makes it easier for individuals to deny the findings regardless of the research's merit, likely creating a section of people who, by the processes described in Chapter 1, will find the research unappealing and subconsciously leads to denial. Various industries have used these techniques throughout United States history; tobacco, fracking, pesticides, and more. However, these results have (at least in these examples) lasted for a finite period of time; as a result, these industries have configured their science abuse strategies to first flatly deny, then attempt to obscure the legitimacy of research to delay reform as long as possible, and then finally divest from that market before its value is compromised. This pattern will be colloquially called "deny → delay → divest".

The movement associated with climate change denial (which we will call the "climate denial machine") compares neatly with the science denial movements that came before it, and even includes many of the same members, buzzwords, and strategies, though these institutions have tweaked and updated their methods over their decades of operation. The climate denial machine understands that for those holding free-market individualistic beliefs (i.e. most American conservatives), climate change is a phenomenon that they cannot easily solve under their worldview, and they use the psychological phenomena identified in Chapter 1 to their advantage when attempting to create denial. Additionally, the conservative mind is unique in how it reacts to media, in that it tends to be much more emotionally reactive, creating greater potential for subconscious suggestion where cognitive dissonance exists in these individuals. Perhaps most important, the climate denial machine capitalizes on the media's pursuit of fairness and free expression to manipulate people's impressions away from legitimate scientific findings, by ensuring that climate denial is perceived by the public as similarly legitimate to climate science. To hide its corporate ties, the climate denial machine conceals its financial and social underpinnings by using "front" associations which operate as public relations firms on its behalf. All of these factors combine to make it very difficult for the layman, especially one who is predisposed to find climate change cognitively dissonant, to identify the climate denial machine as an agent of science abuse, and therefore not a source to be trusted with such a grave matter.

If there is any hope in convincing the conservative layman of the dangers of climate change before the damage is too significant to mostly reverse, it must be done by taking away these vital tools from the climate denial machine as soon as possible. The next chapter builds upon the literature on climate denial psychology from Chapter 2 and the institutional context of this chapter to create a means of undoing the psychological variables that the climate denial

machine relies on. After this, it will be fleshed out into a holistic policy recommendation in Chapter 5.

2017

Dismantling the Climate Denial Machine: Theory and Methods

CHAPTER 4: COUNTERING CLIMATE DENIAL PSYCHOLOGY

DREW MICKOLAS

Preface

Thus far, we have covered the concerns of climate change, the psychological mechanisms which have contributed (and continue to contribute) to the rise and persistence of climate change denial, and the institutions which capitalize on the policy impacts of climate change denial. Now, we begin to consider a potential strategy for how to counteract these psychological mechanisms and forces, so that in our final chapter some policy recommendations can be made to reduce climate denial with this information. For the most part, we have seen that the psychological mechanisms underlying climate change denial are due to a perceived threat to the individual; belief in climate change could challenge their identity, their sociopolitical status, their moral philosophies, and so on. We have also found that low empathy towards people of high social distance is a key variable concerning climate change denial, and that people with high empathy for these persons are (on average) more likely to believe in climate change and support climate change policy reform. Perhaps most importantly, we have discussed the common arguments and justifications that people have made concerning why they believe climate change does not exist, and how these allow climate change denial to persist. So, if possible, we ought to decrease the perception of threats to these individuals, increase their empathy for people affected by climate change, and debunk their arguments in a way that does not further polarize their mindsets on the issue.

This chapter will suggest strategies on each of these fronts. First, we will begin by proposing free-market policy reforms for climate change, so that climate science is not viewed as anti-capitalist and so people see it as a benefit to the economy, themselves, and the people they care about. Next, we use the anti-authoritarian anxieties of conservatives, combined with our analysis of the climate denial machine, to point out science abuse and show clear evidence of

who is manipulating evidence and rhetoric to benefit themselves. Then, we discuss how to talk about climate change in media so that we properly and directly address the beliefs of current climate deniers, while also defusing common counterarguments before they arise. Finally, we establish parameters for selecting climate-believing conservative spokespeople to help us spread our message. Combined, these factors should allow us to (1) allow climate policy reform to be perceived as a non-threat and a benefit, (2) disable common talking points of climate deniers, (3) make people distrust climate deniers more than climate scientists, and (4) expand the dialogue among conservatives about the reality of climate change and the need to solve it.

Reversing Psychological Inclinations Toward Climate Denial

In a certain sense, it is rational from the perspective of a climate denier to reject the scientific consensus on climate change. This is not because the consensus is false, or that the denying person will directly benefit from disbelieving it, but instead because the denier sees the existence of climate change and the need to stop it as a fundamental threat to their way of life. They mitigate this potential dissonance by "removing" the problem. This motivation for denial is more successful when the denier does not see people he/she identifies with beginning to suffer from the effects of climate change. We have seen a host of evidence of this phenomenon as well as a variety of ways that the climate denial machine makes it worse.

Climate change policy reform does not need to dramatically reshape the structure of society, of course, so this view held by climate deniers is false. Our job is to deconstruct this misunderstanding, but it is not as simple as merely telling climate deniers that their perspective is wrong (though that will be included later in this chapter). Our actions and words towards climate deniers must be formed with an awareness of the perspective these people have in order to influence them. To that end, we will work to change climate deniers' psyches in two ways: (1)

reduce the perception that climate change reform is harmful to their way of life, and (2) make climate change more worthy of concern by making its primary victims more easily relatable to the deniers.

Perceptions of Threats

Climate change is not easily solved by free-market means; as we have seen in Chapter 3, the industries most closely associated with climate change have strongly resisted regulation, research, and even public belief concerning climate change. However, in Chapter 2 we found that most climate deniers strongly justify our predominantly free-market society, lending to the belief that it can solve any public problem through the self-interested transactions of individuals. This creates cognitive dissonance when these individuals see that climate change is affecting society but is not being dealt with, and evidence suggests these people are then inclined to disbelieve climate change exists to remove the dissonance's discomforting effects. The empirical cases we examined in Chapter 2 corroborate this theory. Our analyses of climate denier conventions and articles, alongside public polling, found that those who reject the existence of climate change believe that climate scientists overstate their conclusions because of partisan bias. This allows the climate deniers to continue to have faith in their free-market philosophies by rejecting the existence of a problem it is not equipped to deal with.

Climate deniers are correct to think that climate change reform would require some action by the government. However, climate change policy does not need to be considered an enemy to capitalism (or capitalists) and can instead be conceived as a pro-economy, pro-United States policy solution. To change this perception, we need to both challenge the anti-capitalist rhetoric of the climate denial machine and communicate our own nonpartisan approach to solving climate change.

This task is simpler than it may first appear, because we can emphasize the growth of certain parts of the economy via alternative energies rather than the limitation of fossil fuels via regulation; this allows us to continue to reduce fossil fuel emissions via multiple policies, instead of prioritizing less popular ones. The alternative energy sector has significantly increased in its market shares and job quantities over recent years, becoming a much larger (and quickly growing) force in our economy (WorldWatch Institute, 2016). As a result, the limitation of fossil fuels and the increased subsidization of alternative fuels are increasingly becoming desirable for the economy even when not considering the implications of climate change. Framing segments of climate change reform as a sort of robust economic subsidy can be viewed as an update to aging American resources as well as a job creator. An analogous policy platform was seen across both parties during the 2016 presidential election in the form of infrastructure spending – few objections were made, and it was considered a way to increase full-time employment across the country, which was a very popular idea (Fitzsimmons, 2016). This angle aims to make climate change policy both relevant and positive to the average climate denier; whether or not they personally are unemployed, the notion that their area could be soon populated with new, good-paying jobs is a salient one, if opinion polling is to be believed (Auter, 2016).

It may also be wise to tie environmental energy subsidies to other conservative pro-economy, pro-United States movements, like energy independence and international relations. It could be (and has been) argued that moving towards creating most of our energy from natural, sustainable resources like air and solar power would be ideal to prevent us from becoming overly reliant on other nations, thereby limiting the amount of control they have over our actions (Kaenel, 2016). This perspective is not meant to be interpreted as pro-capitalist but instead anti-globalist; we have seen a deep concern that the concept of climate change is meant to create a

unified, authoritarian world government, or at the very least expand international laws to be more restrictive on the rights of individuals. Suggesting that climate change policies could open the potential for more isolationist policies (even if these policies are never created) may help to diminish these worries of climate deniers. On a related note, China has recently risen in international power since the United States has begun to roll back its climate policies under the Trump administration, allowing it a platform to be perceived as a world leader. Conservatives typically show serious concern over the influence of China, so we may be able to capitalize on these worries in establishing a pro-climate change platform (Wike, 2017).

Environmental regulations in particular are unpopular among conservatives and climate deniers, but they will almost inevitably have to be used in order to sufficiently decrease our production of greenhouse gases. This is likely where the most significant problems of our platform will appear; regulations are a well-known conservative talking point, and are typically discussed by conservative outlets as a means for the Left to restrict the rights of individuals, while also harming the economy (though whether these effects are viewed as Leftists' goals or are merely side effects will often vary). If regulations must be used, and it seems that they must, we must ensure that they are perceived as positively as possible amid the backlash they will almost inevitably encounter.

Political commentary aside, climate change regulations have likely not been a threat to economic growth; most states in the country have successfully decoupled economic growth from growth in greenhouse gas production (Saha & Muro, 2016). Properly regulating industries associated with the release of greenhouse gases requires training that creates full-time positions for employees, while also serving the interests of the United States by mitigating the effects of climate change. That being said, the benefits of audits and bureaucracy are not likely to be a

well-received subject among conservatives, even if the private sector is hiring its own auditors (which it typically does). We also must run counter to the near-universal notion among conservatives that regulations never have positive effects for business which may create a resistance to our platform not dissimilar to climate denial as a whole. When combined, these factors make discussing regulations very difficult among climate deniers without incurring more negative reactions than positive ones. Therefore, regulations should be less of a priority when introducing climate policy with these groups. We must talk of climate change regulations to the general public, but concerning channels where we most frequently find climate deniers, such talks should be pursued at a time and place when the listening populations are much less polarized against them. To that end, we can discuss other, less inflammatory types of climate change policy until belief in climate change is less polarized overall, taking the other approaches in this section as well as those later in this chapter.

Empathy and the "Other"

We have encountered plenty of evidence that people who deny climate change are not (on average) able to empathize as successfully as non-deniers with people of high social distance. Current theories argue that this lack of empathy allows climate change (belief in climate change) to be viewed as less important by the denier, because the results are not as consequential to anyone they care about (Hart & Nisbet, 2012). This poses a problem: even if climate deniers are interested in the benefits of economic subsidies to new industries, they may still be disinclined to support climate change efforts because they find them worthless. Inevitably, we will not be able to convince everyone of the merits of climate policies, but we would stand to do better if we could convince current deniers that people are legitimately in harm's way if we do not take collective action. Increasing empathy is a very difficult task, given that it is deeply tied to both

one's personal experiences and neural structure; however, we also understand that deniers' empathy is still more or less average towards people of low social distance (Bernhardt & Singer, 2012; Hart & Nisbet, 2012). Therefore, instead of discussing the effects on people of high social distance to the deniers, we would find most advantage discussing people of low social distance – notably, people the deniers personally care about. I recommend appealing to the protection of deniers' children, not just in a general sense as has been common in political rhetoric, but by discussing the detailed consequences on their lives if the deniers choose not to support broad reforms. The additional benefit of empathy is that it enables deniers to consider the effects of their actions and beliefs mostly without the interference of their ideologies. Not only do deniers now have an incentive to listen, but the element of compassion forces them out of an abstracted, almost cold calculus in which one is most concerned if the facts line up. In this case, the facts we present will not line up with the climate deniers' understanding of the facts so this presents us with an opening for them to consider the consequences of their viewpoint if they are in fact wrong. These moments are unlikely to be singular and revelatory, but instead a series of empathic shifts towards believing in climate change through the bias of love for their family. Here, we are most definitely using the unconscious mind of climate deniers to win their favor, but it is towards an epistemologically sound conclusion that also happens to grant safety to their loved ones in supporting it.

Redirecting Elitist Anxieties of Conservatives

Up until this point in the chapter, we have discussed how to frame climate change policy reform in a light which will appeal to conservative minds and unconsciously influence climate deniers to consider the ethics and reasonability of their viewpoint. In essence, we have aimed to eliminate conservative objections to climate change policy. Nevertheless, the conservative mind

will continue to linger in these individuals even if we help them to change their minds through these methods. We have previously detailed that conservatives are, on a neurological level, much more prone to dislike (and act reactively towards) uncertainty, ambiguity, and threats (Kanai, Feilden, Firth, & Rees, 2011; Jost & Amodio, 2012). As a result, I speculate that the removal of the climate science "boogeyman" will not leave previously climate-denying conservatives satisfied and non-anxious without some new perceived threat. This is because conservatives' tendency to react so strongly against threats likely makes the thought of one threat (i.e. climate change conspiracies) suddenly vanishing seem unsettling in itself, unless there is an explanation found in yet another threat (i.e. the climate denial machine) (Hoffarth & Hodson, 2016). Fortunately, our analysis in Chapter 3 leaves us well equipped to detail the story of the climate denial machine and make them out to be a threat in much the same way as climate scientists were.

Though researching what factors most strongly cause someone to find a person or group threatening is a difficult task, and has not been done in the context of climate science as far as I have found, I will outline my hypotheses here based on the information we have collected over Chapters 2 and 3. Based on these hypotheses, I aim to create a preliminary strategy to redirect conservatives to find the climate denial machine threatening and justify their previous perceptions of threats by the denial machine's manipulation.

Strategies

Our literature reviews on the climate denial machine and the psychological variables surrounding climate denial leave us rather well prepared to consider the ways in which we can make the climate denial machine appear threatening to conservatives, though we do not wish to be intellectually dishonest as they were. The best analogy we have available is likely the events

of Climategate. As discussed in Chapters 1 and 3, a biased selection of emails was released from a university's climate science research section, distributed online, and was given massive media coverage, which led to significant drops in trust of climate scientists in the United States. These steps can be generalized to be of more use to us:

(1) Find incriminating evidence on the group you wish to have perceived as a threat

(2) Spread the evidence so it is easily accessible to the populations you wish to influence

(3) Create media coverage to compound upon the impressions of the shared evidence

The key difference in our own behavior, of course, will be that we must find legitimate evidence, and ensure to the best of our abilities that the evidence is legitimate before spreading it.

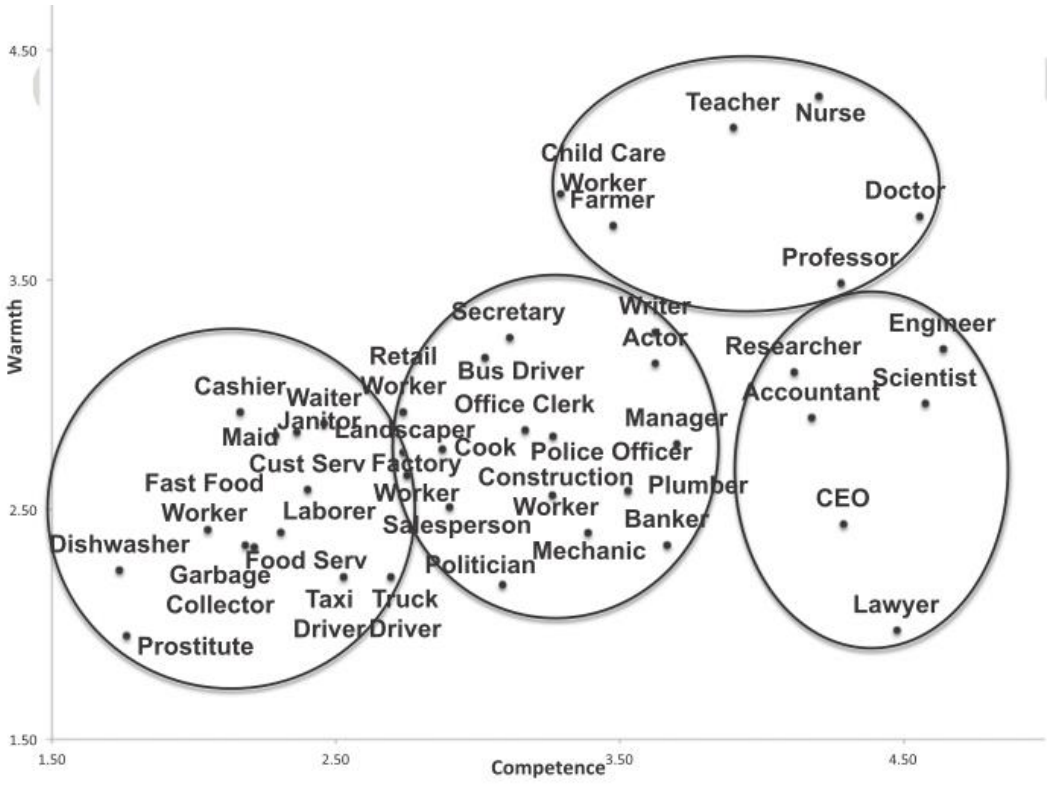
It is important, however, to create contrasts between the climate denial machine and climate scientists when it comes to incrimination. Climate science, like essentially all science, is held to a very high standard of objectivity and peer review. It is expected that the results created by science come from a falsifiable and well-reasoned base which is not polluted by partisanship. The same standard is not held to most other institutions, including those mainly heading the climate denial machine.

Yet, this potential weakness becomes a strength when we consider the interaction of the climate denial machine on the scientific process. We can name a myriad of examples of science abuse, a concept we exhausted in Chapter 3, that have been committed by the climate denial machine and its associated branches. We can explicitly identify institutions which have funded and operated front groups which produce "scientific" reports to give the air of legitimacy to their claims. We can note a myriad of times, across institutions and across scientific topics, where the same individuals have been brought in to create a cloud of uncertainty about scientific findings

to extend the process of Deny → Delay → Divest for as long as possible. In essence, we can say of the climate denial machine, "These people tried to break science and hurt people for money."

This claim couples two factors which I predict will be damning in the eyes of the public: (1) the climate denial machine created a rhetoric to make money even if it seriously hurts the lives of Americans and (2) they manipulated the institutions that we trust. The latter is especially powerful because for as sacred as we view science as a society, these people (successfully) conspired to undermine it for decades. This level and systemization of science abuse rivals, if not surpasses, all of the charges made by the climate denial machine against scientific organizations.

It should be acknowledged that not all Americans appreciate science or scientists in the same capacity. American citizens generally are very happy with science; a great majority think it has improved the quality of life of people, believe American scientific achievements are among the best in the world, and consider government funding for scientific research worthwhile in the long run (Funk & Rainie, 2015). Compared to most fields of work, scientists are viewed to be very competent, but for many, they are still not trustworthy. Some have predicted this phenomenon is due to not being perceived as warm individuals, which almost always receive admiration and a sense of internal pride when linked with competence (Huber, 2014).



Overall, I argue this means that people respect science, even if they do not always respect scientists. What this allows us to do is create appeals to the studies that have benefitted the world and made America the power it is today (as most people believe).

Another important aspect of ensuring our methods are effective is personifying the climate denial machine so that it is seen as something that can sensibly be ascribed blame. I believe this to be an important component of our platform because of two comparable attributes of climate denier behavior: the use of Al Gore as the face of climate science among deniers and the consistent use of front organizations by science abusers. The climate denial machine has ensured that no individuals of reputable status are directly tied to activities which abuse science, and attempts to make out climate believers as science abusers; for instance, Al Gore is often mentioned in climate change discussions among conservatives, and is considered so illegitimate a figure that his belief in climate science makes climate change seem immediately untrustworthy.

Of the accounts we examined, it appears the largest criticism made of Gore is that he heavily profited from his documentary *An Inconvenient Truth*, again lending to the belief that climate science exists only for the gain (fame, money or otherwise) of those on the Left (Hoffman, 2011).

In our own strategy, we may choose to identify individuals in the climate denial machine who are quite visible to the general public, difficult to remove from the public eye once his / her reputation starts to degrade, and are very easy to dislike (particularly for conservatives). A recent example where this was particularly potent in U.S. politics is Martin Shkreli, often called "Pharma Bro" and "the most hated man in America," who incidentally helped to create a dialogue about the private sector's free reign on drug pricing after his company bought a drug license and raised the price over fifty times the original. Figures like Shkreli will be hard to come by in our case, because his behavior was not only very directly tied to the suffering of others, but he showed virtually no remorse for his actions, embraced his media presence for some time, and acted and communicated in ways many thought to be highly distasteful. It can be expected that the climate denial machine's calculative nature will prevent such a figure from easily arising, but with enough investigation, we may be able to find someone that we expect will act similarly and has a past associated with climate science abuse.

This last step, while providing a crucial transition between climate denial and the rejection of climate-denying institutions, is filled with potential ethical pitfalls. This plan must be sharply distinguished from villainization of the individual(s) in question in order to be humane. We will not seek to slander or mislead; rather, we will bring attention to lies, distortions, and conflicts of interest by individuals within the climate denial machine. We are not suggesting to scapegoat any individual, but we must speak truth to power and challenge those who lead the

climate denial machine. This redirection of distrust must be due to well-investigated, neutral demonstrations of the individuals' character and actions. To that end, I will first list the potential ethical concerns that come up from this plan:

(1) The easily disliked nature of the individual will make it easier for us to produce slanderous materials rather than ones which merely reveal their character and actions.
(2) Our strong interest in revealing their corrupt activities (if / where they exist) and creating distrust towards them provides us an incentive to less closely screen the information we investigate and release to the public.

These are serious issues which need to be addressed, even if they are ultimately manageable. To prevent these concerns from becoming reality and interfering with both our goals and moral compasses, we must tightly tailor our strategy; I suggest the following rules to counter each of the above concerns:

(1) Where easily disliked attributes are concerned, only describe the actions within the media through video or direct quotation; allow the individual(s) to speak for themselves rather than offering analysis.
(2) All releases of information on these targets must include only thoroughly vetted and confirmed information from reliable sources, preferably who are available for future comment and elaboration.

This narrowing of the techniques we will use in creating distrust towards specific climate deniers should ensure that our actions are justified and representative of the reality of their behavior. However, when put into practice, we must exercise caution in case there are other variables which I have not identified here which could jeopardize our ethics in different ways.

Where moral ambiguity comes into place, we must side towards the least detrimental result, even if it limits the potency of the results we get in our media reports.

Defusing Common Rationales of Climate Deniers

Having discussed how to interact with climate deniers' unconscious minds, we can now move on to directly challenging their arguments. As we covered in Chapter 2, the claims made by climate deniers are ones which have almost always already been considered and rejected by climate science researchers, but are believed to legitimate counterarguments nevertheless. Furthermore, Chapter 2 examined the notion of argument framing, where we found that people on both sides of the climate change debate are using different argument frames and, therefore, failing to contradict one another and force the other side to consider the validity of its point(s). We must account for both of these traits of climate change communication if we wish to remove all justifications of climate deniers and the climate denial machine.

Falsified Claims

Climate science has considered the phenomenon of climate change for several decades and has had significant time to use the scientific method and academic critique to verify its findings. Over those years, many objections came out against evidence and theories associated with climate change, and while those objections did sometimes alter our understanding of the phenomena causing or relating to climate change, no successful objection found that there was another, superior explanation for the observations now associated with climate change (Cook, et al., 2016). Still, these objections often arise within the climate denier literature and editorials and, in non-academic circles, the understanding of climate science can be so limited that deniers instead talk about weather. These objections are so varied and unlimited that it would be virtually

impossible to cover them all, let alone in a project such as this, but what can be said is that each of them deviates from a long and carefully constructed scientific theory, which by definition explains the data associated with climate change with as few assumptions as possible.

Our concern is not to directly answer every objection that is made about climate science, but instead answer those that have significant media attention or could rise in popularity. In the cases where these objections are just newly trending reiterations of old objections, that attribute should be pointed out so and quickly explain why it was rejected, so that it appears insignificant as a response. However, we ought to enter conversations about these objections with more than the mere finding that "climate change exists". It must be clear that there has been significant research to determine the human role in climate change and the dangers it poses. To that end, we consider what climatologist Michael E. Mann calls the "six stages of climate change denial" (Mann, 2013):

7. CO_2 is not actually increasing.
8. Even if it is, the increase has no impact on the climate since there is no convincing evidence of warming.
9. Even if there is warming, it is due to natural causes.
10. Even if the warming cannot be explained by natural causes, the human impact is small, and the impact of continued greenhouse gas emissions will be minor.
11. Even if the current and future projected human effects on Earth's climate are not negligible, the changes are generally going to be good for us.
12. Whether or not the changes are going to be good for us, humans are very adept at adapting to changes; besides, it's too late to do anything about it, and/or a technological fix is bound to come along when we really need it.

This is a holistic representation of the objections that climate deniers can make to sufficiently block interest in policy reform. To respond to each of these sufficiently is essentially to eliminate any rational basis for climate denial. Thus, I have adapted Mann's stages into our own "seven stages of climate change communication":

1. There is scientific consensus on the existence, causes, and solutions to climate change.

2. CO_2 is increasing.
3. There is evidence of warming in the climate due to CO_2 increases and other GHGs.
4. This warming is due in part to human behavior.
5. The human impact is significant and the effects of continued greenhouse gas emissions will be serious.
6. These significant changes to the climate are generally going to be negative and widespread.
7. We will have a difficult time adapting to the changes in climate if they persist, we are able to fix climate change now, and we cannot rely on a technological fix to save us.

Having our conversations begin by asserting these as well-grounded scientific facts will allow us to immediately reject objections made by climate deniers. By the time their objections come to light, it will have already been made clear that these are the findings of a vast majority of scientists and to deviate without significant evidence is to be intellectually dishonest. Because these facts will only be accepted based on a well-grounded consensus, stage 1 must be emphasized; it is stage on which all the others rely.

In many types of media, such as on cable news interviews, it will be difficult to immediately begin the conversation with all of these facts. Thus, we need to prioritize which ones we mention to ensure they have maximum impact. Given that stage 1 establishes the others, that is what must begin every conversation; if a false claim is made, we can at least say "scientific findings actually show [corrected claim]". Making it clear that the findings are well established and very widely accepted means that the notion of a controversy is immediately shut down. Without obscurity, the climate denial machine must be bolder in its rejection of scientific institutions, and if we couple this approach alongside our reveal of the machine's science abuse history, it becomes much more likely that all but the most polarized members of the public will find their representatives untrustworthy.

<u>Argument Framing</u>

In Chapter 2, we investigated the notion that climate believers and climate deniers are "talking past each other" in regards to the arguments surrounding climate change. We found a selection of studies which determined that believers and deniers have been using distinct frames of argument when discussing climate change, as well as different relevant topics; thus, even when each side's members encountered arguments from the other side, they were not having their viewpoints challenged (Hoffman, 2011; Williams, McMurray, Kurz, & Lambert, 2015). The solution to this issue is rather straightforward: when combatting the arguments of deniers, aim to directly contradict their perspectives. For example, we observed in these studies that about 90% of arguments made by climate deniers used a diagnostic frame of argument, and of those argument frames, most centered around topics of science, mainly to question the scientific validity of climate change. In contrast, most convinced arguers used a prognostic frame and risk topic, so they were not challenging the arguments of the deniers. Not only should we challenge pro-denial arguments with direct contradictions, but we should increase the proportion of pro-belief media which uses the frames and topics of deniers. This allows us to maximize the amount of climate deniers who view arguments that run directly contrary to their own viewpoints.

Setbacks

We previously encountered that there were certain populations who would not be receptive to the idea of climate change policy reform, even if they accepted the rational bases from which we argue it is necessary. The most prominent of these are evangelical Christians who believe in an Armageddon within the century (Barker & Bearce, 2012). While receptive to helping with short-term sociotropic issues, the medium- to long-term effects of climate change are viewed either as non-problematic or indicative of a Rapture-like event, which they view as both necessary and unstoppable. Given that is reasonable for them not to aim to change

something which is literally irrelevant or inevitable, we are unlikely to change their perspective unless we remove their belief in Armageddon altogether, which is a very difficult task. Our best hope in these circumstances is to promote climate change reform for the short-term effects on individuals, since they believe people will still be on Earth to experience them. However, since the effects of climate change increase more sharply as time goes on, the observed harms in the short-term are unlikely to be a sufficient cause for significant reform among these Rapturers. We can, however, promote the direct benefits of policy like jobs and wealth as we have with other populations; under the reasoning of this group of Christians, these reforms will seem harmless at worst, and beneficial at best. This is an enormous group of people, and may be the greatest obstacle we face in our efforts; as said in Chapter 2, forty-one percent of Americans believe that the Second Coming will happen by 2050, and of Americans, fifty-eight percent of white evangelicals believe the same (Pew Research Center, 2010). While we can promote these benefits to these groups, we are better off focusing on less religious populations if we wish to have maximum impact.

Trusted Sources of Climate Deniers

I discussed in the section from Chapter 2 on political polarization that as people watch media which corresponds with their view on climate change, the viewers continue to become more polarized. Thus, to prevent further polarization, we need to eliminate consistent viewership of climate denier media as much as possible. There are two main ways that we can do this: (1) cause people to watch different media and (2) change the nature of the media's view on climate change. Both are exceedingly difficult tasks, but may be accomplishable to a certain degree.

Changing the political media outlets that an individual will observe is difficult mostly because of the ties of partisanship to personal identity; people will choose to watch conservative

media because they identify as conservatives, and subsequently identify as conservatives more intensely through watching conservative media. We are unlikely to change the pervasiveness of partisan media any time soon, let alone the psychological effect it has on individuals. Thus, if we wish to eliminate the viewership of media which is climate denying, we must ensure that their viewers have a similar, non-denying outlet to which they can easily migrate. This is no simple task and would require not only the assurance that such non-denying outlets exist, but that one could orchestrate the loss of interest in the previous outlets. Consequently, I do not recommend this option unless the opportunity arises to do so easily, which I expect to be exceedingly rare.

While also difficult, we may have more luck in swaying the viewpoints of some conservative outlets. Naturally, not all conservative spokespeople are climate deniers, even if they are employed at businesses who mostly deliver climate-denying reports. We may be able to form partnerships with those spokespeople who see the need to address climate change, and have them advocate on behalf of more conservative-friendly aspects of climate policy reform. Priority ought to be given to spokespeople who have the largest viewership within the most climate-denying regions whose viewers are not mostly believers in the Rapture. This strategy will maximize the amount of coverage our message receives by climate deniers, while also ensuring those deniers have incentive to change their viewpoint. Our approach has a secondary benefit, which is that the advocacy for belief in climate change by a conservative spokesperson will encourage the separation of climate denial from conservative identity, while also granting a level of trust from the shared identity. These relationships will be crucial to creating a peaceful and ongoing dialogue about the reality of climate change, since the lack of resistance in building rapport with our audience will allow us to be much more successful than we might be otherwise.

Chapter Summary

Thus far, we have examined why climate change is worrisome and needs reform, what psychological variables contribute to climate denial, and how the climate denial machine influences people to reject climate change research. Next, we need to create a plan to reaffirm belief in climate change to bolster incentive for policy reform. However, in order to do that, we must combine our knowledge of climate deniers' psychology and sociocultural influences to find out how to undo the incentives that create disregard for climate research and arguments, and instead, ultimately, lead them to believe in climate change. That has been the goal of this chapter. Finally, in Chapter 5, we can combine it with other data to identify climate denier populations, media outlets, and spokespeople to create a concrete policy recommendation.

Dissecting the different reasons why people deny climate change allows us to take more effective steps to counter those reasons directly, and create unique strategies for each of their reasons. As we explored in Chapter 2, with the exception of apathetic populations driven by religiosity, climate change denial largely stems from system justification, low empathy for high social distance individuals, and personally identifying as a conservative (with conservatism's link to climate change denial). Thus, we need to undo these links by (respectively) making climate change policy harmless (or at least seem harmless) to the current sociopolitical order, use people of low social distance to deniers to cultivate empathy, and use level-headed, well-known conservative figures to build trust and create dialogues with climate deniers about legitimate climate science. Additionally, we may be able to use the uncanny levels of anti-authoritarianism among conservatives (including climate deniers) to direct distrust away from climate scientists, who use a horizontal, peer-reviewed system of fact checking, and instead towards the network of donors and front groups which manipulate people into becoming climate deniers in the first place. However, we must be quite cautious here in order to avoid allowing this to be framed as a

Leftist agenda, which may cause the opposite of the intended effect by further linking climate belief exclusively to the Left.

With these generalized strategies, we can now take our theories and put them into a policy suggestion to be implemented in concrete places and in concrete ways. Chapter 5 will concern itself with this project, but it has only been possible with the context that has been provided with the previous chapters to this point. To that end, when we begin plotting our recommendations, we must be sure not only to plan with these strategies in mind, but with the institutional analyses and minute psychological details we have made to this point; they may determine whether the proposal is only effective in the abstract, or understands the field enough to effectively lead to change in public opinion on climate change.

2017

Dismantling the Climate Denial Machine: Theory and Methods

CHAPTER 5: POLICY RECOMMENDATION

DREW MICKOLAS

Preface

We have reached the final stage of this project: suggesting a policy recommendation to reduce climate change denial in the United States. In Chapter 1, we described climate change and its negative effects; in Chapter 2, we analyzed the psychology and argument structures of climate deniers; in Chapter 3, we studied the climate denial machine and its effects on climate change policy and belief; and in Chapter 4, we used prior theory to craft plans to reduce climate change denial in the United States. Now, we aim to take the strategies from Chapter 4 and create explicit recommendations for climate science organizations and other nonpartisan institutions to enact. These plans are not capable of entirely ending the phenomenon of climate change denial, nor are they intended to do so. Instead, they are designed to help reduce the proportion of citizens who deny climate change so that they may be motivated to enact policy reform and work to mitigate climate change's effects. Though this project has limitations due to scope and time, I believe that the recommendations outlined here can produce effective results and should be enacted.

The themes of our plan are threefold: (1) recommend climate change policy reforms which appeal to conservatives in order to continue mitigating greenhouse gas emissions, (2) expose the climate denial machine to the general public, and (3) influence conservative media to discuss the dangers of climate change and nonpartisan policy reforms. If each component is enacted, these plans will reduce greenhouse gas emissions, strengthen conservatives' interest in climate change policy, and reduce trust in climate denial institutions. These effects should not only mitigate the effects of climate change beyond the status quo, but may even increase support for more significant climate change reforms in the near future.

Proposed Climate Change Platform

Chapter 1 detailed the need for climate change policy reform; now, we begin to suggest forms of reform which will likely be viewed positively by conservatives who would otherwise resist climate change policies. These policies will not only be framed in terms of conservative values to appropriate audiences, but will be created and written by nonpartisan and/or conservative organizations, lending to their legitimacy. While these policies are unlikely to completely decrease greenhouse gas production to safe levels, they will still have a positive effect on the environment and should be pursued.

Policies

We will recommend two main policy reforms concerning climate change: increased short-term state subsidies for alternative energy companies and the instatement of local, state and/or federal carbon taxes. Subsidy and tax rates will not be considered here. Because the aim is to first produce a set of policies which are appealing to conservative voters and would not face significant backlash provided they are reasonable in the amount of money they pay out and take in (respectively). Additionally, I will not discuss which level of government to pursue for the carbon tax bill(s) because this is beyond the scope of the current project.

Short-term economic subsidies provided by state governments have already been demonstrated to easily make the United States operate entirely from clean, renewable energy resources by 2050 (The Solutions Project, 2017). As we explored in Chapter 4, these subsidies can be made out to be an enormous benefit to the national economy and provide a surge of new, well-paying jobs. Furthermore, the diversity in alternative energy resources, ranging from geothermal to wind to ocean tides to roof solar panels, permits job creation in areas where resources are largely insufficient to produce other utilities. All the while, these innovations will rapidly increase the process at which we reach completely greenhouse-gas free, renewable

energy. The Solutions Project, a nonprofit, outlines expected returns for these short-term investments. For instance, in my home state of Pennsylvania, it is expected these alternative energies would provide about 400,000 new jobs where people are employed for 40 years or more, prevent over 3,000 air pollution deaths a year, save $21.6 billion in health costs annually (~2% of the state's GDP), and save over $12,000 per person annually when combining the savings from energy, health, and climate spending (The Solutions Project, 2017). Considering the enormous benefits that are outlined by these programs, and the use of private organizations to produce this energy, we should not expect incredibly high resistance from conservatives if our evaluation of why they dislike climate change policies is to be trusted. However, those that still believe coal and similar products should be economic mainstays may be upset with this policy. While this number is relatively small and may be offset by the advantages mentioned here, we may be able to overcome this division by mentioning the quality of life improvements that come from moving beyond coal (Riffkin, 2015). Coal is notoriously dangerous, with a long history of mining disasters, known ties to various lung diseases, and coal dust explosions (United States Department of Labor, n.d.; Laney & Weissman, 2014; Centers for Disease Control and Prevention, 2011). All of this avoided by switching to alternative energies, in addition to providing more economically sound jobs as these energies eventually expand, with or without subsidies.

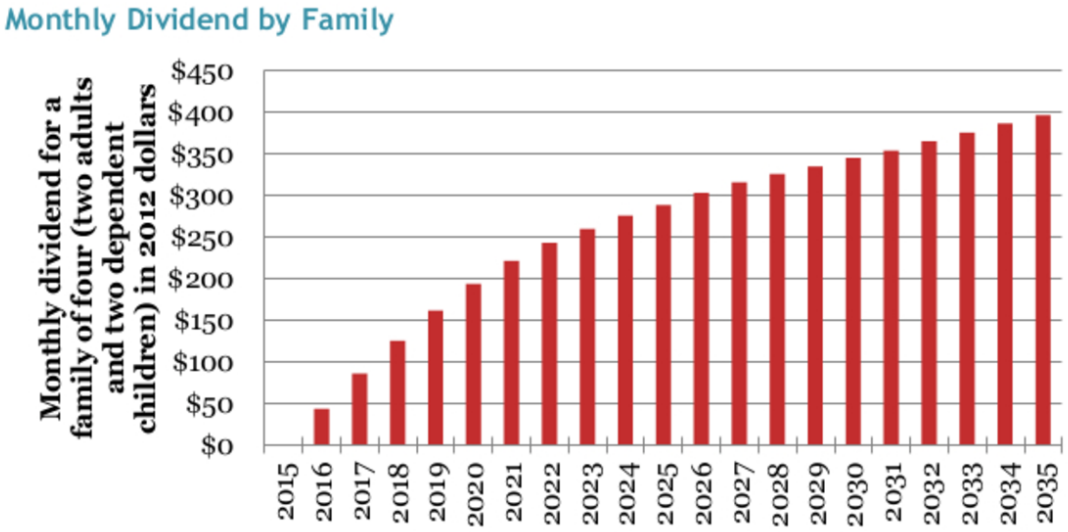
The notion of a carbon tax originated from conservative scholars and is still lauded by them to this day; it is argued that the effects of carbon emissions should incur a direct penalty, which is delivered in the form of a tax, and is then redistributed to the people affected. This redistribution is not viewed as a matter of equity but of compensation for losses caused by the greenhouse gas producers. When redistributed, the funds of the tax may be offered at a flat

amount to all citizens of the relevant government body or it may be scaled to benefit those who are most affected, most in need, or some other metric. For our purposes, I maintain that the use of a flat tax is ideal; it prevents the tax from being perceived as a government tool for equity, which is a typically disliked concept among conservatives. A flat redistribution is considered the most agreeable among those who dislike equity programs while it will not necessarily draw the ire of liberals since it improves upon the status quo. To ensure that American businesses are still able to compete with others around the world, and so companies do not decide to leave the United States, experts also agree that we ought to implement import fees on products who do not institute their own carbon tax and rebate industries who export to those countries (Citizens' Climate Lobby, 2016). This also allows the United States to also pursue its role as a leader in climate policy.

Framing of Policies

As mentioned previously, neither of these policies will be framed to conservatives as tools for equity. Instead, they must be perceived as means to desirable improvements in employment, energy savings, and healthcare costs by minor alterations to existing markets. Depending on how effective our blame of the climate denial machine is, we may be able to further reinforce the necessity of a carbon tax as a punitive measure for their wrongdoings, which may allow us to increase the tax rate. We might also rely on the support of a variety of analysts at conservative / center-right think tanks, including the R Street Institute, the Niskanen Center, and the American Enterprise Institute, though we must be careful of some of the links they have to the climate denial machine (R Street Institute, 2014; Niskanen Center, 2015; American Enterprise Institute, 2015). However, we should only do so if we believe their contribution will give greater legitimacy and breadth in understanding among conservative academics and

politicians, since these are the frequenters of conservative think tank publications. The policies themselves must be framed as providing immense benefit for little cost, and should focus on individual benefits to voters and not abstract the information to a wider population; this will ensure that social distance does not deter interest in the policies' results. For example, nonpartisan group Citizens' Climate Lobby calculates that a family of four would receive a sizeable amount of money each year from the carbon tax, starting from only an initial fee of \$15/ton of CO_2-equivalent gas emissions and rising \$10/ton/year (Citizens' Climate Lobby, n.d.).



(Citizens' Climate Lobby, n.d.).

Perhaps the greatest element of this policy (at least for our purposes) is that its benefits are easily understood by citizens, even climate deniers; they will be directly receiving money if the law is passed, rather than the funds going towards "big government" programs. This forces those who see climate policy as fundamentally bad to reconcile it with their own self-interests, especially amidst the other, more passive benefits that these programs espouse. The policies break all the conventions typically associated with climate policy and are easily demonstrable as a good change even for those in positions of power within society. As a result, we should expect

significantly less resistance and have the potential to sway voters who would otherwise be apathetic towards or against traditional climate policies.

Exposure of the Climate Denial Machine

As we recommend these policies, we must try to eliminate the inevitable pushback of the climate denial machine, as is natural from their Deny → Delay → Divest behavior. In Chapter 4, we explored how to do this by identifying specific institutions of the climate denial machine and the actions of specific members of the climate denying machine, and using the media to expose their actions and to the public. Here, we will find potential climate denial machine members who would be well suited for this role, outline general plans to spread their information, and detail the responses we may receive and how we should react to them.

Ideal Target

By now, we are very familiar with the fact that climate denial machine consistently uses front groups to disguise the source of their funding which can make it difficult to know who is to blame. Nevertheless, we have established that identifying individuals who are active in the climate denial machine would be in our best interests. I detail below a well-known politician who I have identified as an active participant in the climate denial machine. It should be noted that individuals who are exposed will be publicized to people across the nation, rather than selecting multiple people and targeting them by geographic region. This allows us to create a story with much less research than would otherwise be necessary and also allows citizens to focus on one climate denial machine member rather than multiple. This keeps our message short and potent.

Scott Pruitt is the new head of the Environmental Protection Agency and was considered one its most committed opponents before being appointed to the position. Under his (and Donald

Trump's) leadership, the agency has greatly reduced its projects and spending. Pruitt rejects the scientific consensus that CO_2 emissions are the primary contributor to climate change, though he concedes that such changes exist and are likely to be somewhat caused by humanity (Dennis & Mooney, 2017). In February of this year, Pruitt was ordered by a judge to release his email records with fossil fuel industry representatives, as is required under public records laws; these records reveal incredibly close connections, including an assortment of personal meetings, phone calls, and dinners with fossil fuel industry members (Dennis & Mufson, 2017). Many of these interactions had Pruitt's office requesting policy recommendations from oil and gas companies like Devon Energy, though Pruitt defended these interactions as merely listening to his constituents. Nevertheless, he also received over $300,000 from the industry while working as Oklahoma attorney general (Dennis & Mufson, 2017).

The greatest benefit to targeting Scott Pruitt is that his position as EPA chief makes him incredibly vulnerable to weakening both the Trump White House and the reputation of climate denial if he resigns. He is associated with an administration whose president's poll numbers (at least as of writing) continue to fall, he has many counterparts in other departments who are either under criminal investigation or have already resigned due to public upset, and he lacks the confidence to brazenly contradict the scientific consensus on climate change when pressed hard during interviews (Wang, 2017; Gallup, 2017; Shear, 2017). If more evidence can be found that suggests his relationship with fossil fuel companies, particularly Devon, are more than mere friendliness, he can be charged with corruption, and weaken trust with both the Trump administration and their informants. This victory would also raise grounds to legally object to the sweeping administrative changes that the EPA underwent under Pruitt's command, which could

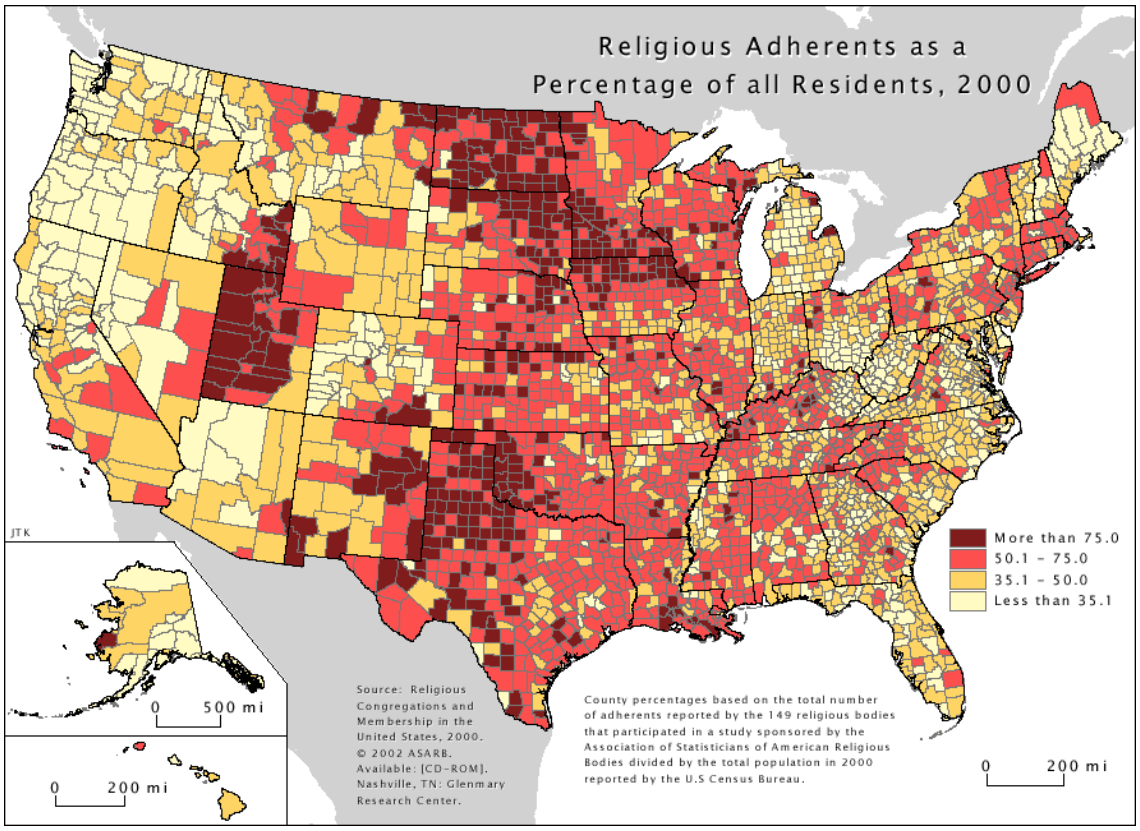
potentially restore many regulations which protect the public, both concerning climate change and other environmental topics.

Altering Conservative Media

We have spoken at length about the ways in which conservative media channels further polarize conservatives against climate change policy reform when they reject the scientific consensus on climate change (Knobloch-Westerwick & Meng, 2009; Feldman, Meyers, Hmielowski, & Leiserowitz, 2014).This is something which is most effectively countered by changing the content that these channels provide, and we can ensure that we choose the most effective channels by investigating what attributes their viewership have. The first section below will investigate these viewership attributes; the second, the kinds of methods we should use; and the third, the conservative spokespeople we should request assistance from in our mission.

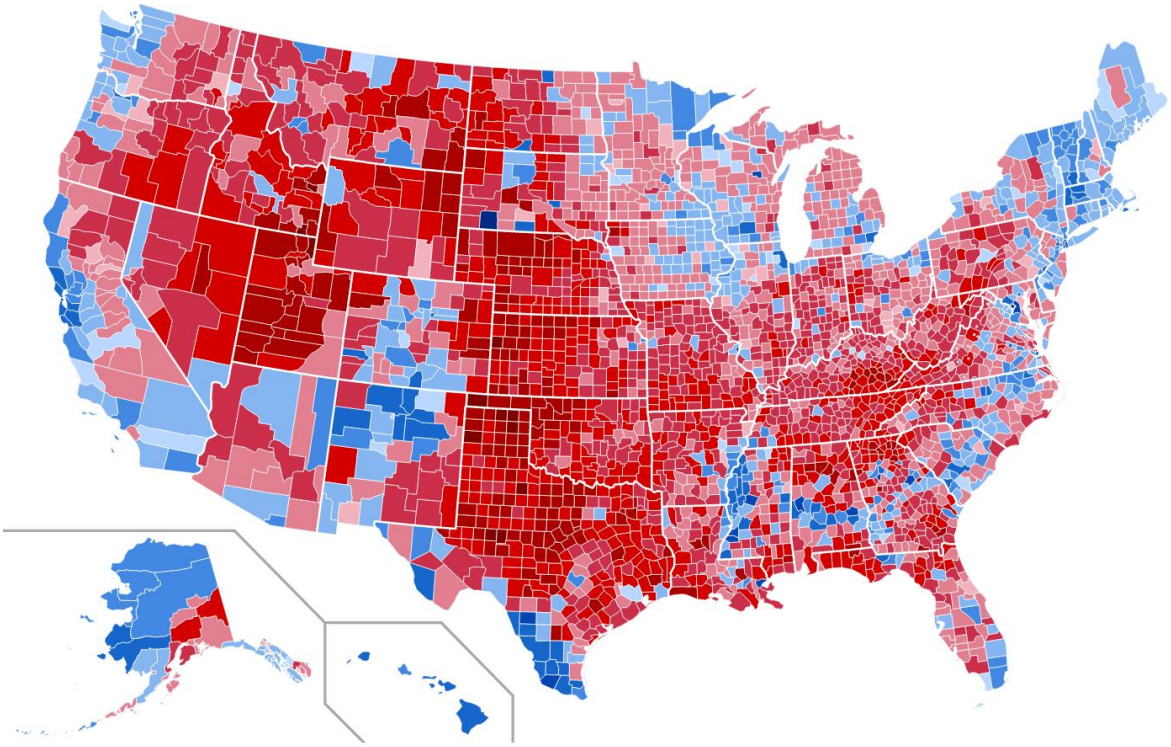
Demography / Geography

We aim to find out where viewers are most likely to be climate deniers, but also can be convinced. To that end, we can see where the variables that we have researched in previous chapters are most prominent, and cross-reference them on a United States map. For example, we discovered that belief in the Rapture will significantly decrease interest in traditional kinds of climate change reform; we can use percentage of religiosity per county as a proxy for this concept in the figure below and see where those kinds of citizens live.



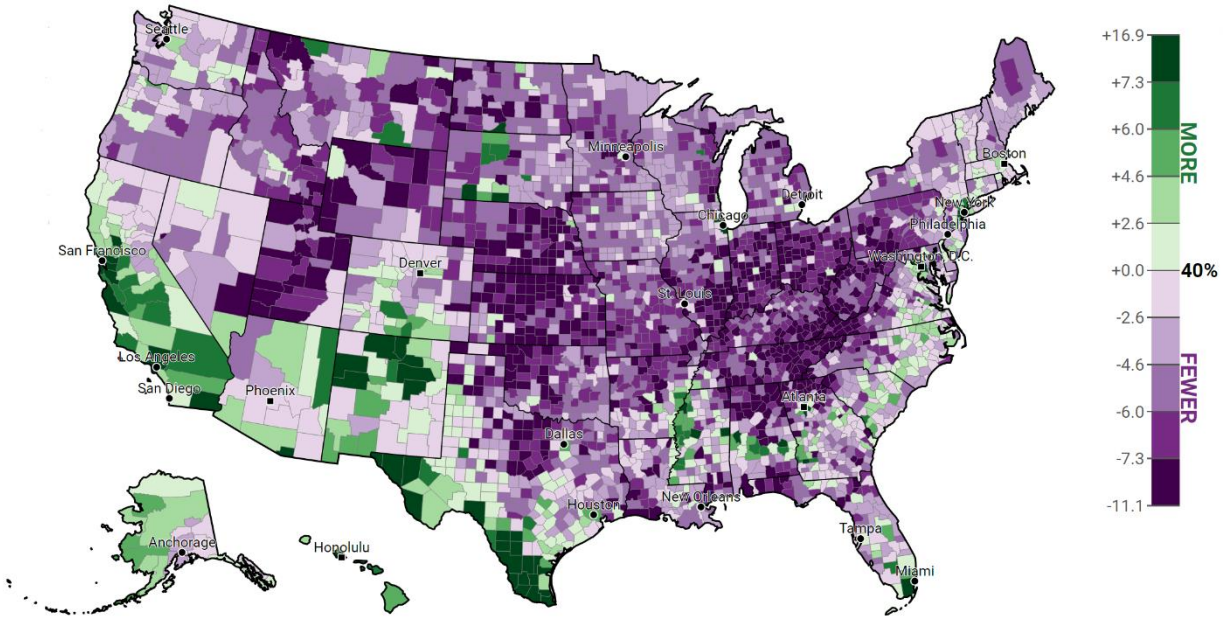
(JayMan, 2013)

We see three areas where we can expect minimal progress: upper Texas, Utah, and most of the Dakotas. While these are known as mostly conservative states, it is clear that there are areas where religiosity is not as high but conservatism is prevalent. Consider this proxy in the figure below for political polarization, the results by candidate's percentage of the vote for the 2012 presidential election.



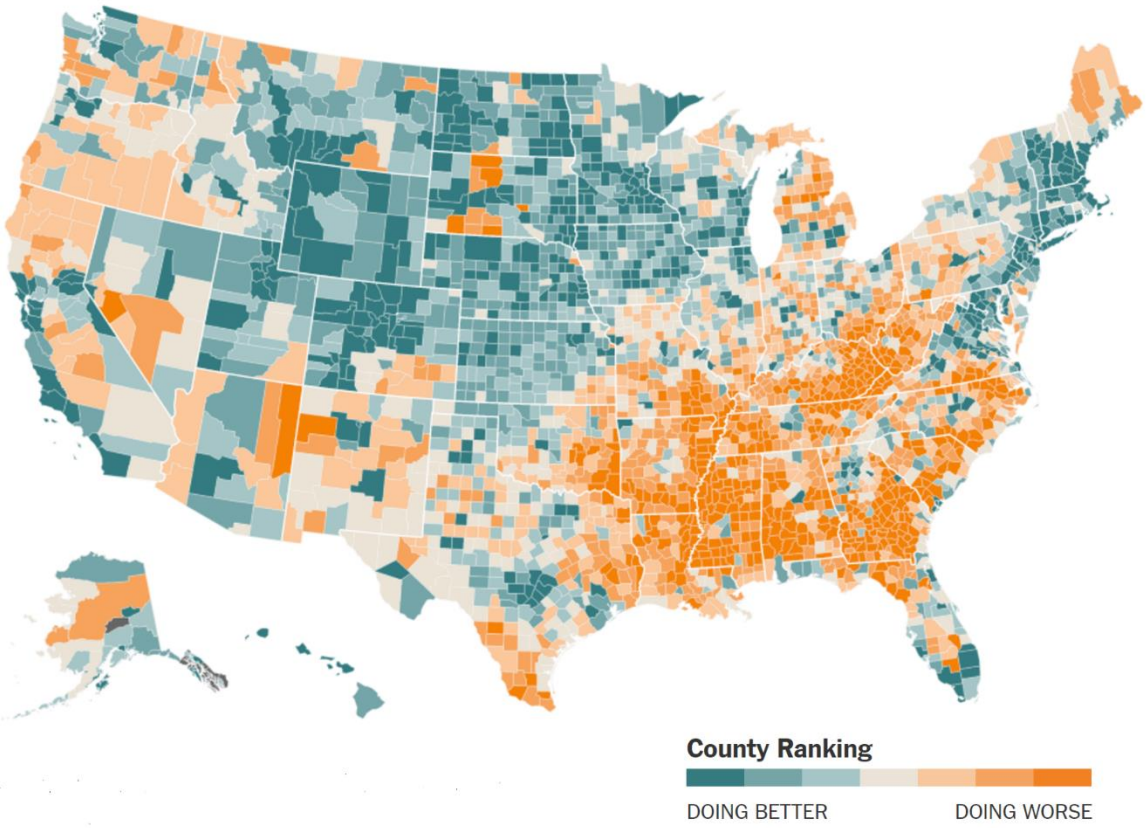
(Wikipedia, 2017)

One can see that, while the three aforementioned areas are most certainly conservative, other areas of the country are as well, such as the area surrounding Tennessee, and the stretch from Nebraska to Oklahoma. We will also encounter that many psychological variables, which are proxied here through responses to a survey conducted by the Yale Program for Climate Change Communication, yield similar results. The map below presents the results, compared to the national average, of respondents that agreed "global warming will harm me personally," which will act here as a proxy for personal concern.



(Marlon, Howe, Mildenberger, & Leiserowitz, 2016)

Our goal is to influence those areas which are conservative, low in personal concern of climate change, and are not believers in the Rapture. Using these three maps now and continued research in the future, we can isolate the counties which meet these three attributes, which still appear to be mostly those areas around Tennessee and through Nebraska to Oklahoma. Our final map shows areas of the country where people are struggling the most, based on a composition value of education, median household income, unemployment rate, disability rate, life expectancy and obesity (Flippen, 2014). This measure will stand as a potential proxy for interest in a policy reform which provides more jobs, like our alternative energy subsidies.



(Fippen, 2014)

In all, this multivariate view of people's attributes allows us to narrow our considerations down to a few isolated regions. These will be the ones whose channels we will mainly target for our advocacy, though we can always expand to other regions of comparable attributes if our resources and connections make it possible.

Methods

In order to reach these people within conservative media, we must ensure that they do not perceive our intervention as a sort of liberal hostile takeover. This would only give credence to the existent paranoia about liberal authoritarianism surrounding climate change policy. Thus, we cannot do such things as air pro- climate change ads amidst programs which are anti- climate

change and expect the viewers' narratives to change. Instead, we must actively find interested conservative participants in these media regions to advocate for our platform on their channels. As discussed in Chapter 4, this method will maximize trust and salience of our message. This outreach can vary considerably in depth depending on the resources of the organizations using this plan. For example, we may aim to only cooperate with local news stations and radio shows within the Tennessee and Nebraska regions; alternately, we may have the finances and connections to be able to reach national television. Any progress would be positive, but we should aim to reach as many potentially cooperative spokespeople as possible so as to maximize the spread of our message.

Additionally, our interactions with the media, whether through our own representatives or through spokespeople that we engage with, ought to follow the rules outlined in Chapter 4. Namely, we should apply the seven steps of climate change communication and the use of climate deniers' framing. We want to be directly contradicting the claims and beliefs of climate deniers with hard evidence, rather than immediately progressing to suggesting policy reform (at least in these channels). From a trusted source, this information should be salient and could positively affect the beliefs of climate deniers considerably.

Ideal Conservative Spokesperson

Though it is beyond the scope of this current project to identify conservative spokespeople who would be a good match for our platform, I will offer an example of an individual I have identified as being supportive of our measures. He will serve not serve as an essential partner for our work (though his help is welcomed), but instead should be seen as a model for the type of person we may pursue within any given type of conservative media.

Chris Wallace was the first person I considered for this type of conservative advocacy after seeing his performance as moderator during the first presidential debate, which was met with high praise across the partisan divide (Hackett, 2016). He delivered himself in a balanced and nonpartisan fashion, despite being known for his position on conservative news station FOX, which we had found earlier to be the most watched news station in the United States. Recently, his interview with Scott Pruitt was "panned by both climate change advocates and skeptics alike" and followed essentially the same protocol created in Chapter 4's seven stages of climate change communication, mentioning the key facts at the beginning of the conversation and following up on the lack of controversy within the scientific community (Wang, 2017). Due to these instances, Wallace is a respected spokesperson across the political spectrum and it is clear that he understands and acknowledges the consequences of climate change. His commentary is balanced and is perceived as such according to several cited articles. Wallace's reputation and history combine four key traits that we ought to value when choosing spokespeople: trustworthiness to conservatives, nonpartisanship, belief and concern of the effects of climate change, and respect across the partisan divide. If we can find these traits in others and they agree to advocate on our behalf, we can expect them to serve our cause well.

Chapter Summary

Throughout this chapter, we have created a multifaceted strategy which aims to reduce climate denial and climate-denying policies in a multitude of ways. Firstly, we aimed to encourage the passing of two separate policies on climate change, namely an increase in alternative energy subsidies and the implementation of a carbon tax. Secondly, we aimed to expose quid pro quo ties to an individual associated with fossil fuel companies in order to dismantle the reputation and political power of the climate denial machine. Lastly, we aimed to

isolate potentially swayed climate deniers and create a model for spokespeople that will assist us in depolarizing them. The construction of these strategies could not have been done without the careful building of evidence throughout the first three chapters, alongside their combination into explicit theories in Chapter 4. This chapter is the culminating piece in this thesis.

However, the information and plans presented in this text are not meant to be read and applied in isolation. There are many related and intersecting topics which undoubtedly will affect the ideas developed here. In many ways, this is a first step in a long process to improve policy and outcomes on climate change. The research, ideas, and policy proposals developed here should be understood as a guide to begin to mitigate the effects of climate change, in part by increasing understanding for its long-term ramifications.

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CONCLUSION

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As we conclude our examination of climate change denial and its reduction, we ought also reflect on the steps we took throughout. We began with Chapter 1, which introduces the premises of our work: that human-caused climate change exists, that it is harming the planet, that we need public consensus on climate change to produce sufficient policy reform, and that such a consensus does not currently exist. Chapter 2 produced a literature review on the psychological influences of climate change denial, which allowed us to understand why someone would reject the scientific consensus on climate change. In Chapter 3, we analyzed the basis of science abuse, the institutions of climate change denial, and how the two are linked, which allowed us to see how the climate denial machine perpetuated denial among United States citizens. Chapter 4 took our studies from Chapters 2 and 3, and used them to craft general plans on how to interrupt the goals of the climate denial machine, while also beginning to undo the psychological variables of climate denial and create our own institutions to move citizens towards climate change belief. Lastly, Chapter 5 took the general plans of Chapter 4 and produced explicit policy recommendations.

These recommendations offer promising advances in our efforts to reduce greenhouse gas emissions, but it is unlikely that they alone will be sufficient to stop global temperatures from rising. There will need to be more climate policies implemented, and to that end, we will have to produce yet greater majorities in public opinion, or increase the potency of our movements. Additionally, these policies will need to be implemented far beyond the United States, and beyond even global superpowers; wherever greenhouse gases arise, we will need to moderate them to prevent significant warming. Each of these topics is not only deserving of its own research, but of paramount importance.

I would also like to credit the people who have helped me throughout the process of writing this work, which is my largest piece to date: my family and friends, who provided me with support and patience; my advisor Rachel Moskowitz, who took on the enormous project of teaching me to manage such a large document; and the Public Policy and Law department at Trinity College, for further empowering me to produce literature that can shape the world.

Lastly, I would like to reflect upon the seriousness of this writing and those like it, as was done in our introduction. Setting aside from the fate of our planet, the fate of our cultures and democracies depend on a shared understanding of reason and knowledge. This understanding allows us not only to create masterpieces and accomplish feats that can dramatically reshape the human experience, but creates a healthy consensus on facts on which we can rely. This conclusion extends far beyond climate change policy, or even science policy; whenever there are facts at the center of our debates, we must not give in to a factual nihilism, or else we stand to break the policymaking process entirely. Without good policy, we stand to lose almost everything. I hope that our considerations in this work will convince you of this point, and if it does, I hope it stays with you as you read far different works.

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