Department of Political Science

Bachelor in Politics Philosophy and Economics

Chair in Sociology

CLIMATE CHANGE DENIAL: THE OTHER SIDE OF THE COIN OF ENVIRONMENTAL PROTECTION

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ACADEMIC YEAR 2015/2016

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Introduction

Just recently, at the end of 2015, the oil giant ExxonMobil was put under investigation over claims it lied about climate change risks[1]. The New York attorney general is investigating whether ExxonMobil misinformed its investors and the public on the threats of climate change and the potential risks of business prospects involved in it[2]. Democratic presidential candidates Hillary Clinton and Bernie Sanders both demanded for investigations into Exxon, after exposure on Exxon's conduct[3]. In fact, it seems Exxon knew about the dangers of climate change for ages, but continued to sow doubt about climate science. It must be seen whether such action could amount to fraud and violations of environmental laws. A report issued by Greenpeace (2010) revealed the company had spent more than $30 million casting doubt about scientific evidence on climate change, before making a public commitment in 2008 to end such funding of climate change denial activities[4]. However, Exxon continued to fund denial groups and campaigns through secretive donors, or simply off the record in a covert manner (Greenpeace, 2010). Exxon is only one amongst the many fossil fuel industries that have been supporting the climate change denial movement.

We all know how controversial and debated climate change is, and there is infinite literature on the causes and effects of global warming, as well as on measures to combat climate change. So why is climate change still such a massive issue today? What is it that encouraged inaction and spread confusion? Has denial contributed to provoke this paralysis? If so, how deeply rooted is climate change denial? What are the dynamics of the climate change denial movement and what are its effects on policy-making, economy and society? In this respect, you may say that the climate change denial movement is the other side of the coin of environmental protection. This thesis investigates the complex network behind the climate change denial machine, which involves many other actors besides the fossil fuel industry. Furthermore, it seeks to emphasize the degree to which the climate change denial movement constitutes a significant, organized and well-coordinated effort.

[1] The Guardian: Two-faced Exxon: the misinformation campaign against its own scientists - Dana Nuccitelli (Nov 2015)
[2] The Guardian: ExxonMobil under investigation over claims it lied about climate change risks - Suzanne Goldenberg (Nov 2015)
[3] Ibid.
[4] Ibid.

It must be said, that to understand what climate change denial is and the implications of its efforts, one must first comprehend the reality and the repercussions of climate change and global warming, as illustrated in Chapter 1. Climate change denial developed quickly in the last couple of decades, and grew from being a counter-movement to an established "well-oiled" machine. The history of climate change denial will be delineated in Chapter 2. On the political level, the American Republican government, tightly rooted in its conservative ideology, legitimized the movement and its denial of global warming became in time an increasingly politicized and partisan issue. The intricate web of denial actors, clarified in the first part of Chapter 3, includes conservative think tanks, contrarian scientists, conservative media, contrarian politicians and front groups, as well as fossil fuel corporations. Obviously, massive corporate funding backs all the denial campaigns set in motion by all the actors present in the denial network; the funding flows not only through official channels, but is also laundered in such a way as to obscure its origin. This will all be revealed in the second part of Chapter 3, where the funding strategies of the climate change denial machine are exposed. One of the strengths of the denial movement rests in the many strategies they have set up through the years to perpetrate the myth that their actions are justified in the name of authoritative "sound science" against the mainstream "junk science" of the consensus. Climate change denial arguments and strategies are uncovered in Chapter 4. Although the climate change denial movement was born in the USA and it is there that it developed mostly, it rapidly spread to other nations, as presented in the last part of this thesis, Chapter 5, and set up both an international network and a solid community of climate change denial.

Chapter 1: Climate Change and Climate Change Denial

What is Climate Change?

The first scientist to claim that climate change was underway was Guy Stuart Callendar in the 1930s, when he found that atmospheric carbon dioxide and average global temperatures were starting to rise[5]. Today, climate change is no longer a claim, but an established scientific fact. In 2007 during the Bali Climate Conference, UN Secretary General Ban Ki-moon stated: "we gather because the time for equivocation is over, climate change is the defining challenge of our age. The science is clear; climate change is happening, the impact is real. The time to act is now[6]." In over 10,000 peer-reviewed scientific papers, as well as summaries from the UN Intergovernmental Panel on Climate Change (IPCC), scientists have demonstrated that both CO2 levels and global temperatures have increased (Washington and Cook, 2011). In its Fourth Assessment Report, the IPCC held that: "warming of the climate system is *unequivocal*, and is now evident from observations of increases in global average air and ocean temperatures, widespread melting of snow and ice, and rising global average sea level" (emphasis added)[7]. Scientists believe we have entered a new geological era called the Anthropocene, characterized by human domination on the planet (Jamieson, 2011). By burning fossil fuels, such as oil, coal and natural gas used in homes, cars and factories or by destroying forests, humans release CO2, which accounts for 80% of the total greenhouse gas emissions (Al Gore, "An Inconvenient Truth"). But what are greenhouse gases (GHGs)? GHGs are like a blanket around the Earth, as they radiate heat back and warm the atmosphere by trapping the infrared radiation emitted from the Earth (Haydn and Washington, 2011). GHGs include water vapour, CO2, methane, nitrous oxide and halocarbons.

[5] Forward by Naomi Oreskes, Haydn Washington and John Cook, Climate Change Denial, Heads in the Sand, Routledge (2011).
[6] Haydn Washington and John Cook, Climate Change Denial, Heads in the Sand, Routledge (2011).
[7] Ibid.

Humans are affecting the natural balance of GHGs in the atmosphere and are enhancing the greenhouse effect. Increasing GHG concentrations means increasing temperature, as the energy absorbed has to go somewhere. This is called the anthropogenic global warming (AGW) or anthropogenic climate change (ACC), which was first announced back in 1988 by climate modeler James E. Hansen.

This means that a major climate shift could raise sea levels by several metres, possibly send many species extinct and disrupt agriculture in an overpopulated world. We could be facing a radically different world, where stresses on natural systems and the human society that nature supports, would be much greater (Haydn and Washington, 2011). The consensus is thus that climate change is happening, and that humans are responsible for the increased global temperatures over the last century. Hansen (2008) defines the "tipping level" or "point of no return" as a climate state beyond which the consequences are inevitable and uncontrollable. Washington and Cook (2011) also talk about "runaway climate change".

The economics behind climate change is one of the main reasons such a massive debate has evolved around the issue. To simplify enormously, one could say that too many business and economic interests would be lost if action against climate change were undertaken. And we all know, when status, assets and benefits are involved it makes all the matter more complicated and especially non-negotiable for those who lie on the "losing" side. In this regard, a Citibank report, illustrated two scenarios linked to the possibility of a transition to a low-carbon economy and future[8]. The report was published by the Citi Global Perspectives & Solutions (GPS), a division within Citibank (America's third-largest bank), and it presented two scenarios: an "Inaction scenario" which prescribes the business-as-usual path, and an "Action scenario" which involves transitioning to a low-carbon energy mix[9]. The study found that the "Action scenario", which comes up to a total of $190.2 trillion, is actually cheaper than the "Inaction scenario" for $192 trillion.

In 2005, Sir Nicholas Stern, had already reached more or less the same conclusions (Jamieson, 2014). The Stern review was published to "understand more comprehensively the nature of the economic challenges and how they can be met, in the UK and globally". The Review called for awareness, because it moved the economics of climate change from the orbit of partisan think tanks to the sphere of

[8] The Guardian: Citi report: slowing global warming would save tens of trillions of dollars – Dana Nuccitelli (Aug 2015)
[9] Ibid.

politics and governance (Jamieson, 2014). N. Stern concluded in his report that "the costs of stabilizing the climate are significant but manageable; delay would be dangerous and much more costly" (Stern, 2005).

As found in the Stern Review's conclusions, Figure 1 illustrates the projected impacts of climate change on the Earth's ecosystems and resources.

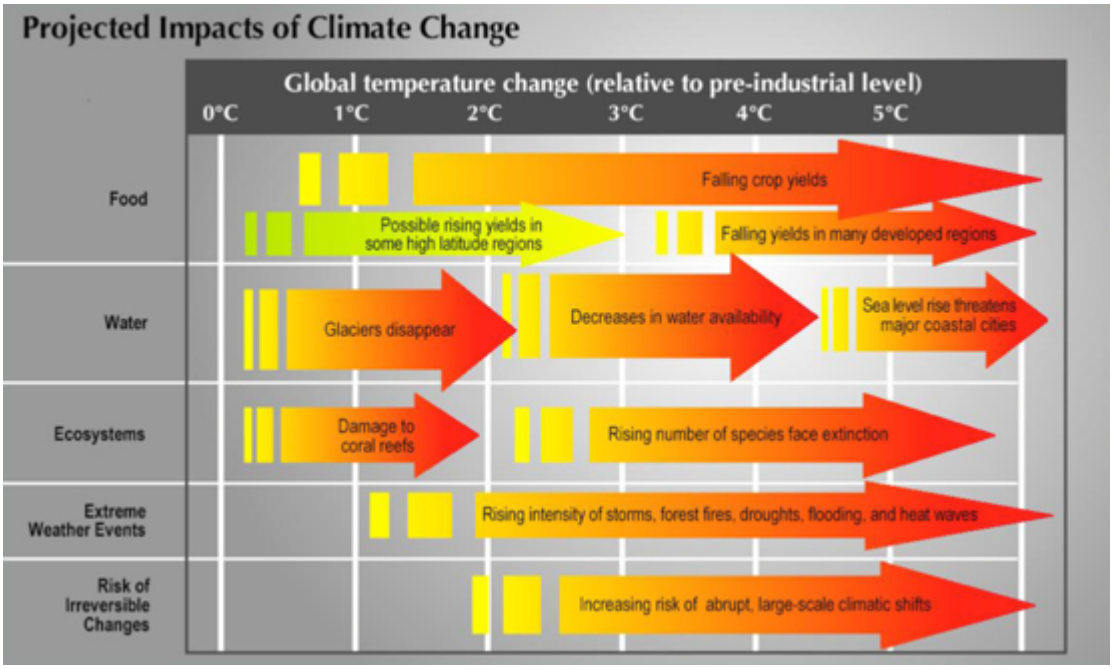

Figure 1 - Projected impacts of climate change (Source: Stern Review on the economics of climate change, 2006).

What is Climate Change Denial?

To deny is to refuse to admit the truth or existence of; in this context, a denier is a person that refuses to accept the overwhelming scientific basis of climate change[10]. There is an ongoing debate over whether it is more appropriate to use the word climate change 'skepticism' rather than 'denial', however, it must be noted that skepticism is an inherent feature of science and is a common characteristic to scientists[11]. In fact the Oxford English Dictionary defines skepticism as "a seeker of the truth, an inquirer who has not yet arrived at definite conclusions", while denial is the outright refusal to believe something no matter the evidence (Washington and Cook, 2011). It is something very different. As John Cook, author of "Cimate Change Denial: Heads in the Sand" wrote on his website Skepticalscience.com: "Skepticism is not believing what someone tells you, investigating all the information before coming to a conclusion. Skepticism is a good thing. Global warming skepticism is not that. It's the complete opposite of that. It's coming to a preconceived conclusion and cherry- picking the information that backs up your opinion. Global warming skepticism isn't skepticism at all." However, some use the term "skepticism" with the same meaning as "denial".

Peter Jacques, Riley Dunlap and Mark Freeman (2008) hold that environmental skepticism denies the seriousness of environmental problems and is a tactic of an elite-driven counter-movement designed to combat environmentalism. The successful rise of this tactic has contributed to the weakening of government commitment to environmental protection, especially in the USA.
In the USA, the term "contrarians" is often used for climate change deniers (Washington and Cook, 2011). Myanna Lahsen distinguishes between "contrarian scientists" that participate in the denial of climate change and "skeptical scientists" who are skeptical of the new generation of climate modelers that have replaced them but have not joined the campaign to deny AGW.
Climate change denial first emerged in the USA, where it developed into a well organized and coordinated "denial machine" (Dunlap and McCright, 2011) including multiple actors of both the public, political sphere and the industrial, corporate bodies.

[10] Greenpeace, "Dealing in Doubt: The Climate Change Denial Industry and Climate Science", 2010.
[11] Riley E. Dunlap, Climate change Skepticism and Denial: An Introduction, American Behavioral Scientist (2013).

The main aim of the climate change denial campaign is to prevent the formation of a consensus for political action on climate change (Jamieson, 2014). The motivations for participating in the denial campaign vary from economic (e.g. fossil fuel industry) to personal (e.g. the celebrity status enjoyed by few individuals), but they all share opposition to governmental regulatory efforts to ameliorate climate change (Dunlap and McCright, 2011). Jamieson (2014) attributes the success of the denial industry to its extensive funding, which is what allows it, not only to suppress the belief in the science, but also the belief that there is a consensus about the science. The strategy is backed up by the fact that scientific ignorance is prevalent, and it is easier for denial to "take root". From a political point of view, the denial community characterizes itself by a strong conservative ideology, universally shared by those who "assault mainstream climate science" (Dunlap and McCright, 2011).

Stefan Rahmstorf (2005) holds that deniers come in three types:
(i) "trend" skeptics or those who deny the warming trend;
(ii) "attribution" skeptics or those who accept the trend and attribute it to natural causes;
(iii) "impact" skeptics or those who accept human causation of the warming trend but claim that the impacts will be beneficial or benign.

Biologist Peter Doherty (2009) instead, classifies deniers in four even more specific categories:
(i) "outright deniers" who suggest that the IPCC is a fraud and climate scientists are fools;
(ii) "combative confrontationalists" who automatically adopt a position in opposition to any general consensus;
(iii) "professional controversionalists" who are keen to seek recognition by being part of a prominent public discourse;
(iv) "conflicted naysayers" who may have worked closely with the mining industry, and feel a strong sense of personal loyalty towards it.

Ulrich Beck and Anthony Giddens define this era as "reflexive modernization" when advanced nations are "undergoing critical self-confrontation with the unintended and unanticipated consequences of industrial capitalism" (Dunlap and McCright, 2011) and they must account for centuries of unprecedented prosperity, generated by energy stored in fossil fuels. In this sense, the corporate and conservative forces behind the US denial machine are a source of "anti-reflexivity".

It is difficult to describe the climate change denial machine, because on one hand, it is a complex network of forces and actors, and on the other because those involved in denial campaigning and denial funding mask their efforts and sources of support.

Biologist Jared Diamond (2005) has argued in his book "Collapse" that societies that deny or ignore their environmental issues tend to collapse. Just like the parable from Pliny the Elder, that tells of an ostrich sticking its head in the sand to make problems disappear, doesn't work, neither does denial of climate change (Figure 2). Denial of climate change is thus, not only life threatening, but also society-threatening (Washington and Cook, 2011).

Figure 2 - Humoristic representation of deniers "sticking their heads in the sand" (Source: www.skepticalscience.com)

E. Zerubavel (2002) described the social dimension of "ignoring" as the sociology of denial, an in doing so, many people in society take part in co-denial. Denial is the elephant in the room we don't see, however as soon as we start to acknowledge the elephant, it starts to shrink (Washington and Cook, 2011). In this respect, sociologists have found denial of denial, so that "not only does not one want to listen, but no one wants to talk about not listening" (Zerubavel, 2006).

Deniers have long focused on uncertainties involved in climate science, however, just because some parts of climate change are still uncertain or poorly understood, it doesn't mean that there isn't a "preponderance of evidence" that is very well understood (Schneider, 2009). As a matter of fact, do we need absolute proof to act on the many, already certain risks of environmental damage to the Earth and humanity? When such proof is finally available it may be too late to halt climate change. Therefore, it becomes a matter of assessing probability and responding to risk (Washington and Cook, 2011). The study of the public response to global warming comes from Beck's "risk society" (1992). Beck and Giddens (1999) hold that "manufactured risks", present in our contemporary society because of the process of modernization itself and which include environmental disasters, are marked by a high level of human agency.

Chapter 2: The History of Climate Change Denial

The history of organised attacks on climate science, scientists and the IPCC sets out some of the key moments in the campaign of climate change denial started by the fossil fuel industries, and retraces them to their sources.

Initially, contrarian hostility to climate science had its source in the 1940s, 1950s and 1960s during its birthing process (Jamieson, 2014). Climate science was a new field, the "new kid on the block" and wasn't understood well out of the community nor did it have an acknowledged "place at the table" and its own funding sources. Climate science was in fact viewed as threatening other established fields with extremely high resource demands, justified in terms of its own priorities. During the following decades (1970s and 1980s) American climate science spread quickly on the international scene, especially to Europe, where the environmental movement was beginning to pick up steam (Jamieson, 2014).

At the time, many contrarians advocated the "wait and see" policy, which, from a purely economic perspective, means acting when uncertainties are lower and thus there is less risk involved. However, climate scientists warned against this type of approach because as the Charney Report (Verner E. Suomi, 1979) put it: "a wait and see policy may mean waiting until its too late."

The campaign against climate change intensified just as global action on climate change has become a higher priority for government policies. Just like the tobacco industry and misinformation campaign reached a peak as government regulation of it was about to be enacted[12]. The US "denial machine" involves many actors, which will be analysed in more detail in the following chapter. For the time being, however, it must be said that the denial machine is a well-oiled, organized and coordinated machine, involving a network of fossil fuel corporations, conservative think tanks, contrarian scientists and various "front groups", which Hoggan (2009) also calls "Astroturf groups" (Dunlap and McCright, 2011). The term derives from "AstroTurf", an American brand of synthetic grass carpeting, which bears resemblance to natural grass: the term was adopted as wordplay to the notion of "grassroots". In fact, also Washington and Cook (20011) talk about "greenscamming"

[12] Greenpeace, "Dealing in Doubt: The Climate Change Denial Industry and Climate Science", 2010.

which indicates that these groups masquerade as environmentally conscious groups, but actually work against the interests implied in their names.

In the US, environmental skepticism exploded after the Cold War and the emergence of global environmental concern stimulated by the 1992 Rio Earth Summit. In the 1990s various lobby groups were set up to prevent the passing of government regulation to avert climate change (e.g. the Global Climate Coalition – GCC or the Information Council on the Environment- ICE)[13]. The collapse of the Soviet Union in the 90s, and the Rio "Earth Summit" led conservatives to substitute the disappearing "red threat" for the new "green threat" (Dunlap and McCright, 2011). The year the Berlin Wall fell (1989), the Marshall Institute issued a first report attacking climate science. Rather than denying global warming altogether, the initial denial scheme was to blame global warming on the sun[14]. The strategy echoed the tobacco industry's one in relation to smoke consequences on health.

Denier scientists Jastrow, Seitz and Nierenberg published "Global Warming: What Does the Science Tell Us?". However, even though the temperature increase of the 1940s was the effect of the sun, there has been no increase in solar output since the 1970s, so the above theory was rejected by the IPCC, as only CO2 explained the recent warming[15]. In this scenario, the creation of the IPCC in 1988 and the subsequent emergence of the UN Framework Convention of Climate Change (FCCC) from the UN Rio Summit generated fears of international action to reduce carbon emissions from fossil fuels (Dunlap and Jacques, 2013). Fears crystallized around the Kyoto Protocol of 1997. The Berlin Mandate of 1995, the first conference of the parties of the FCCC, laid the groundwork for Kyoto. After the conference, the climate change denial industry went into high gear: many American business interests universally opposed any agreement that imposed a restriction on their behaviour while failing to restrict that of their competitors, and a series of articles by the Wall Street Journal accused climate scientists of altering results in the IPCC report calling them "alarmists" (Jamieson, 2014). The corporate sector issued partisan analyses of the devastating costs that America would suffer if carbon emission restrictions were to be imposed. Even ExxonMobil CEO and Chairman, Lee Raymond, stressed the potential risks of the Kyoto Protocol's implementation for the economy: "Although the science

[13] Greenpeace, "Dealing in Doubt: The Climate Change Denial Industry and Climate Science", 2010.
[14] Naomi Oreskes and Erik M.Conway, Merchants of Doubt, Chapter 6: The Denial of Global Warming, 2010.
[15] Ibid.

of climate change is uncertain, there's no doubt about the considerable economic harm to society that would result from reducing fuel availability to consumers by adopting the Kyoto Protocol or other mandatory measures that would significantly increase the cost of energy. Most economists tell us that such a step would damage our economy and almost certainly require large increases in taxes on gas and oil. It could also entail enormous transfers of wealth to other countries[16]."

On the governance level this was set out in the Byrd-Hagel Resolution of July 1997, passed unanimously by the Senate, which laid out the US's opposition to the Kyoto Protocol on economic grounds (Carlarne, 2010).

In this "cauldron of conflicting pressures", the adoption of the Kyoto Protocol only made it worse. The Protocol met nearly universal opposition of the business community and the Republican controlled Congress prohibited the use of Environmental Protection Agency (EPA) funds in the implementation of the Protocol. Europe on the other hand, was moving faster and environmental consciousness was surging. The US resisted EU proposals on the grounds that it complied with Kyoto only by engaging in emissions trading within the "EU bubble".

The division between the USA and Europe on the urgency of taking strong action on climate change continues to this day. In a simplified manner, one could describe the policy of the United States government as following a first frame of action in avoiding damage to the economy as a result of GHG emissions cuts, while the European Union is following a second one in averting a global environmental disaster (Grundmann, 2007). The negotiating process in the framework of environmental protection is characterized by American rejectionism, in particular with Reagan and Bush Administration policies that "do as little as possible on climate change" (Jamieson, 2014). Vig and Faure (2004) hold that the US resistance to environmental protection is a serious concern for international relations: "the USA and the EU are following divergent paths in one of the most critical areas of contemporary policy and governance-protection of the natural environment".

In May 1990 the IPCC released its First Assessment Report where it stated that greenhouse gas emissions would "certainly" lead to warming "of about 3°C per decade", which made it a direct threat to business-as-usual of the fossil fuel industry.

[16] Excerpt from ExxonMobil (2001).

This meant that denial groups like the GCC set out to undermine the credibility of the IPCC summary by using well-known climate deniers such as Patrick Michaels, Robert Balling and Fred Singer (all of whom have been partly funded either by the giant-oil company ExxonMobil or by other energy companies) as "experts" to legitimise their denier positions[17]. In 1993 ExxonMobil started funding The Advancement of Sound Science Coalition (TASSC), which was set up by the tobacco industry to promote "sound science". "Sound science" is a phrase used by deniers to attack and oppose the orthodox field of climate "junk science" of the consensus that actually proceeds by peer-review.

Climate change deniers also adopted the term "sound science" as an alternative framework to the precautionary principle of environmental law for guiding climate change policy making (Carlarne, 2010). The precautionary principle holds that "where there are threats of serious or irreversible damage, lack of full scientific certainty shall not be used as a reason for postponing cost-effective measures to prevent environmental degradation (Rio Declaration 1992). In this sense, "sound science" became a popular catchphrase during transatlantic trade debates over the use of genetically modified organisms (GMOs)[18].

In 1995 the IPCC issued its Second Assessment Report, which met a similarly aggressive response[19]. The denier attack was mainly directed at Dr. Benjamin Santer, author of "Detection of Climate Change and Attribution Causes", chapter 8 of the Report (Oreskes and Conway, 2010). Santer presented his findings in November 1995, and was immediately opposed by Saudi Arabian and Kuwaiti delegates since these "rich oil states made common cause with American industry lobbyists to try to weaken the conclusions emerging from Chapter 8" (Oreskes and Conway, 2010).

In 1998 the American Petroleum Institute, a group including representatives from Chevron, Exxon, the Southern Company (a large US coal company), George C. Marshall Institute and TASSC, all campaigning for climate change denial, spread their "communications plan" with the aim to "inform media about uncertainties in climate science" and "educate and inform the public, stimulating them to raise questions with policymakers"[20].

[17] Naomi Oreskes and Erik M.Conway, Merchants of Doubt, Chapter 6: The Denial of Global Warming, 2010.
[18] Communication from the Commission on the Precautionary Principle (n51).
[19] Greenpeace, "Dealing in Doubt: The Climate Change Denial Industry and Climate Science", 2010.
[20] Greenpeace, "Dealing in Doubt: The Climate Change Denial Industry and Climate Science", 2010.

In 2001 the Third Assessment Report of the IPCC was released, followed in 2007 by its final document, the Fourth Assessment Report (or the Synthesis Report). The Report confirmed all previous scientific consensus for the existence of AGW stating that the warming of the Earth's climate systems was "unequivocal". Think tanks like the Cato Institute, the Competitive Enterprise Institute and the Marshall Institute campaigned to discredit the IPCC's report validity.

In 2003, Sallie Balunias and Willie Soon published a study in *Climate Research* that challenged the "Hockey stick" study by Mann, a compelling piece of scientific evidence[21]. The famous "Hockey stick" graph (Figure 3) illustrates a temperature spike in the 20th century following 900 years of stable climate. The paper was partly funded by the American Petroleum Institute (API) and it was published by the editor despite peer reviews expressing their concern on the validity of the study.

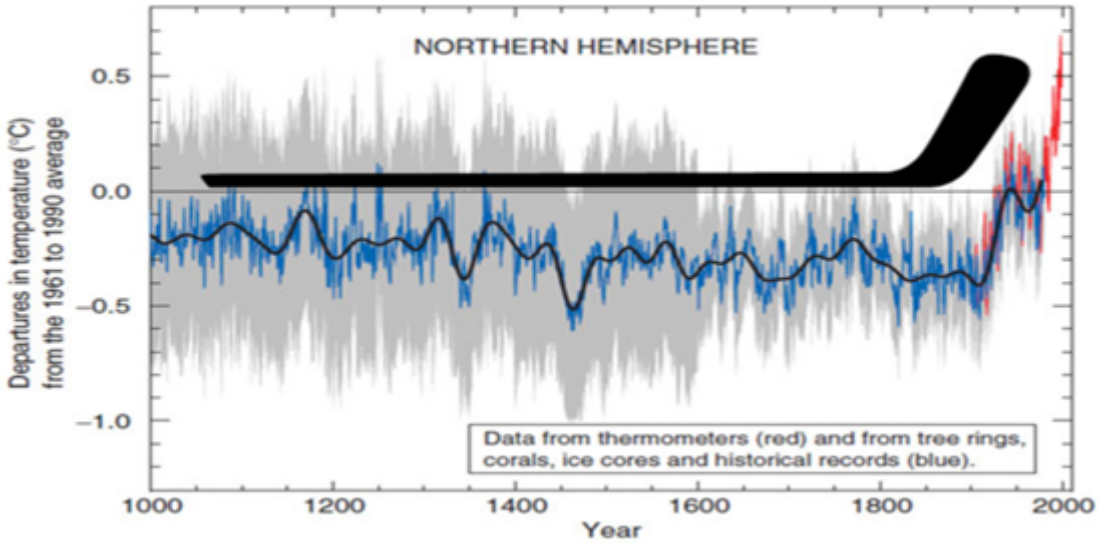

Figure 3 - Hockey Stick Graph: variations of the Earth's temperature over the past 1000 years. The error bars in grey show the 95% confidence range **(Source: Mann 1999)**

Balunias had also worked for the "Greening Earth Society", a front group for the Western Fuels Association (a coal industry) that fostered the idea that the increased CO2 caused by fossil fuel consumption is actually greening the earth [22].

[21] Greenpeace, "Dealing in Doubt: The Climate Change Denial Industry and Climate Science", 2010.
[22] Ibid.

From 2001 to 2008 the denier industry enjoyed easy access to the Bush White House, mainly via former employees of the API[23].

In 2003, a memo by political consultant Frank Luntz was leaked to the press: "the scientific debate is closing [against us] but not yet closed. There is still a window of opportunity to challenge science…Therefore you need to continue to make the lack of scientific certainty a primary issue in the debate"(Jamieson, 2014). In 2005, Philip Cooney, Chief of Staff of the President's CEQ and previously lobbyist for the API manipulated scientific reports from government agencies to cast doubt on climate change science and to minimize government regulation on reduction of carbon emissions. After being forced to resign, he went to work for ExxonMobil (Jamieson, 2011).

Another memo obtained by the National Resource Defence Council under the Freedom of Association Act showed Exxon lobbyist Randy Randol suggesting replacements in the Bush Administration "to assure no one of the Clinton/Gore proponents are involved in any decisional activities."[24]

In November 2009, some hacked e-mails were released from the Climate Research Unit at the University of East Anglia in the UK and were posted on a climate change denial website (Jamieson, 2014). Climate change scientists were charged with manipulating data, fabricating research results and conspiracy in trying to destroy scientists who disagreed with them. Finally, after nine separate investigations the scientists were deemed innocent[25]. The controversy was named "Climategate": "the climate "skeptics" community immediately labeled it 'climategate' as if the climatologists - whose private thoughts, doubts and frustrations were now widely disseminated without context and sent to media and political venues - were the perpetrators, rather than the victims" (Schneider, 2009). The impact of the emails was amplified by the fact that "Climategate" occurred just weeks before the UN climate change Summit in Copenhagen. The controversy provided the perfect platform for the denial industry, which set out an aggressive campaign including major denial scientists such as Fred Singer, conservative think tanks, Fox News (which has always sent out denial messages), and even climate denier and Republican Senator James Inhofe[26]. R. Dunlap (2013) studies the role the "Climategate" controversy played in

[23] Greenpeace, "Dealing in Doubt: The Climate Change Denial Industry and Climate Science", 2010.
[24] Ibid.
[25] The Guardian: Q&A:What is Climategate? Damian Carrington, November 2001. Looked up in March.
[26] Greenpeace, "Dealing in Doubt: The Climate Change Denial Industry and Climate Science", 2010.

contributing to reducing public belief in global warming and trust in scientists, at least in the short term.

From a strictly political point of view, there are three stages of environmentalism in America (Jamieson, 2011). In the second half on the 19th century Republicans like Abraham Lincoln and Theodore Roosevelt engaged in environmental policies that resulted in the foundation of the Yosemite National Park to-be, and the US Forest Service. A bipartisan period followed which included many presidents (Wilson, F.D. Roosevelt, Eisenhower, Nixon) and their environmental-conscious policies: the Clean Air Act, National Environmental Policy Act, Environmental Pesticide Act, Endangered Species Act and the establishment of the EPA. The window of opportunity for the Clinton-Gore administration and the Democratic Congress to deal with climate change closed abruptly with the 1994 national election, when the Republicans gained control of Congress in what became known as the "Republican Revolution" (Dunlap and McCright, 2011). In fact, with the last Republican wave of the US government held by Reagan and followed by Bush, the environmental issues become increasingly partisan and climate change denial became the core of the Republican and conservative identity. During the 2000 presidential campaign, G.W. Bush stated that "global warming is an issue that we need to take very seriously" and promised to sign up to the Kyoto Protocol, only to back off on his promise soon after coming into power (Greenpeace, 2010). In fact, G. W. Bush's attitude was widely denounced in the international community when he stated that "agreeing to implement the US Kyoto emission reduction targets did not suit the economic interests of the US" (Carlarne, 2010). Bush administration insiders continuously engaged in a wide range of practices to delegitimize global environmental issues, particularly AGW, in order to undermine the need for regulatory action.

The US conservative movement sees global environmentalism, as a threat to US national sovereignty and economic power and this is why it became aggressively anti-environmental. Van Putten (2005) comments on the matter: "the prospect for US government leadership on…environmental issues are grim. Gridlock appears to be the likely scenario." P. Jacques, R.Dunlap and Mark Freeman (2008) identify some of the causes for the decline of the US environmental leadership, which led to the "political gridlock" and a subsequent policy paralysis.

First of all, the partisan environmental differences in the American general public are exceeded by a growing gap between Republicans and Democrats in Congress. Secondly, after the terrorist attack of 9/11 the public salience of environmental issues declined and allowed the Bush Administration to "roll back on environmental protection" without generating the backlash encountered by the previous Reagan Administration. In fact, the backlash caused by the Reagan Administration taught conservatives that it was more efficacious to question the need for environmental regulations by challenging evidence of climate change or other environmental degradation, rather than the goal of environmental protection (Dunlap and McCright, 2011). Thirdly, there is a strong opposition between the conservative interest in the globalization of free markets and the commitment to environmental protection (Dunlap and McCright, 2011).

And lastly, since the 1970s the conservative movement has grown in strength and it has been increasing its opposition to environmentalism, environmental science and environmental policy-making with support from the fossil fuels' industry heavy lobbying (Dunlap and McCright, 2011).

The political polarization over climate change in the US is thus reflected in the large divide between Democratic and left-party organizations and Republican and right-party elites. Dunlap and McCright (2011) study the politicization of climate change and global warming views among the American public. The study analyses data from 10 nationally representative Gallup Polls between 2001 and 2010 and finds that liberals and Democrats are more likely to be pro-environmental than their Republican and conservative counterparts.

In fact, on one hand, environmental protection challenges conservative values because it involves governmental intervention on the free market (and is thus seen as a threat to sustained economic growth) and restrictions on property rights, on the other, it is consistent with liberal values of governmental protection of collective welfare and interests. In their 2011 paper "Cool Dudes" Dunlap and McCright identified conservative white males as the leading climate-denying group in the USA. Social scientists describe it as the "white male effect", where conservative white men have the tendency to be the group more concerned with disrupting their status quo[27].

[27] The Guardian: the similarities between Trump support and climate denial- Dana Nuccitelli (4 April 2016)

This category of the American public has been found to be the primary supporter of 2016 presidential candidate Donald Trump, in fact, 65% of Trump supporters deny AGW, as does the candidate himself. Republican candidate Trump and his supporters argue that climate policies will do more harm than good, because they would hurt the economy, or maybe, it is safe to say, that they fear any tampering with the free-market economy, which has benefited their group the most [28].

[28] The Guardian: the similarities between Trump support and climate denial- Dana Nuccitelli (4 April 2016)

Chapter 3: The Actors and Funding of Climate Change Denial

The first part of this chapter will illustrate the numerous actors that contribute to the climate change denial machine, and it will explain in more detail how the machine works and who is mainly responsible for climate change denial. The climate change denial machine involves many different actors that interact with each other both officially and "unofficially". Figure 4 illustrates the key components of the climate change denial machine.

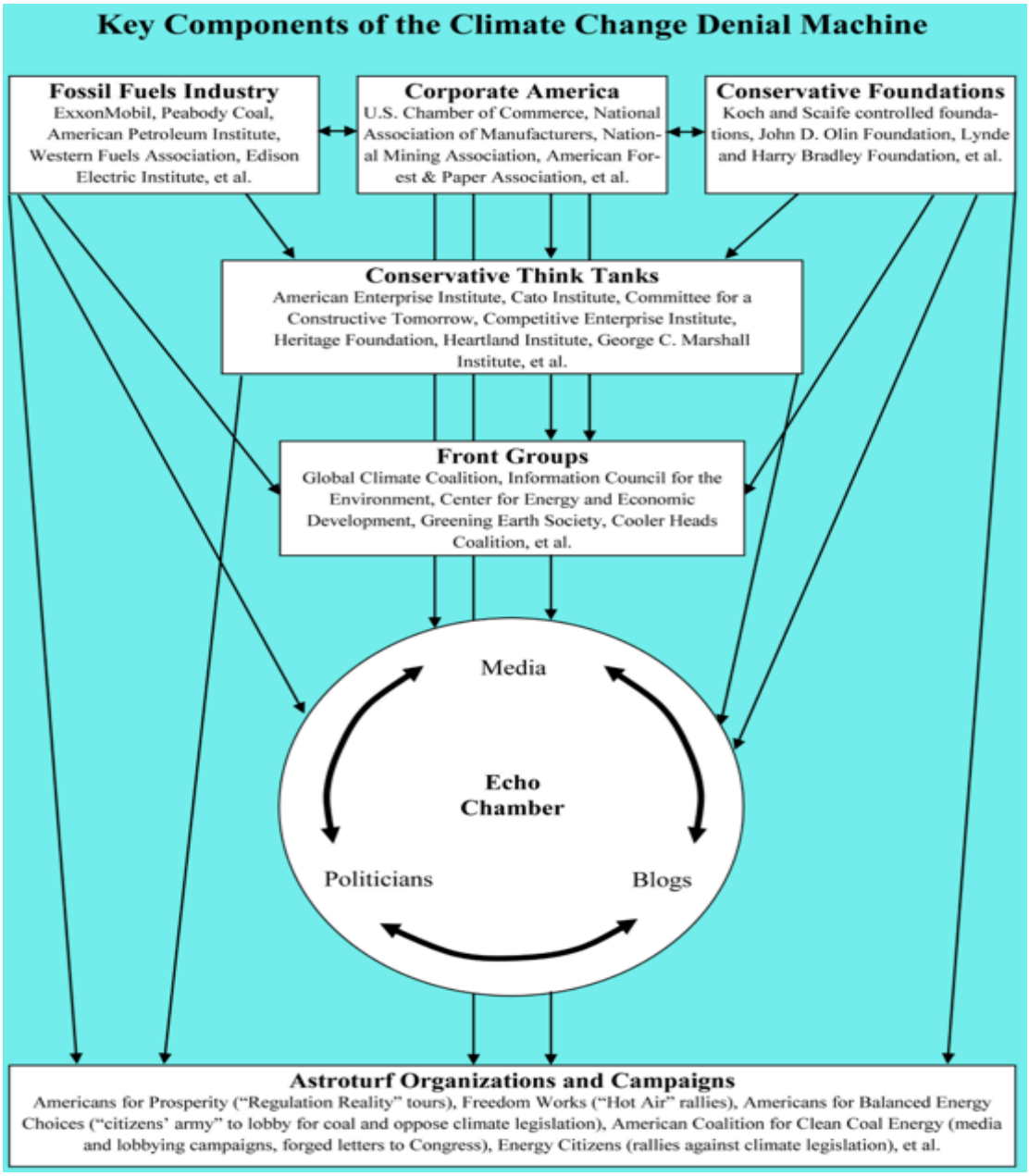

Figure 4 - The key components of the climate change denial machine (Source: The Oxford Handbook of Climate Change and Society, Dunlap and McCright (2011).

Fossil Fuel Industries

Riley E. Dunlap and Aaron McCright (2011) categorize the different actors involved in the climate denial industry, from fossil fuel corporations to conservative politicians. Since fossil fuels are identified as the major source of GHGs, fossil fuel industries led aggressive campaigns against climate change science and policy-making. Fossil fuel industries include both private corporations (ExxonMobil, Peabody Coal) and industry associations such as the American Petroleum Institute (API), the Western Fuel Association and the Edison Electric Institute. These industries recruit contrarian scientists as "experts" to legitimise and justify the position and the ideas behind corporate America's denial. The industries also provide funding for conservative think tanks and a range of front or Astroturf groups.

As well as many energy companies being active in climate change denial (the Southern Company is one example) also numerous mining, steel, automobile and forestry corporations are consistently denigrating climate change. In the US even large national associations, such as the US Chamber of Commerce and the National Association of Manufacturers, go against climate science and policy-making, especially against the IPCC.

At the governmental level, the Republican Bush Administration has allowed to institutionalize climate change denial. On the contrary, Obama and the Democratic government have prioritized the issue of climate change in policy-making, producing an aggressive reaction of corporate lobbying groups to combat both national and international efforts to curb GHG emissions and prevent environmental degradation.

Conservative Think Tanks

Conservative think tanks (CTTs) are another key component of the denial machine. CTTs were established through family foundations, in the 1960s by the conservative Joseph Coors, to oppose the progressive claims of the time. By the 1990s, the major funders of the American "conservative labyrinth" were Richard M.Scaife and the Koch brothers, wealthy because of their families involved in oil interests. The Koch brothers established the Cato Institute, an extremely effective component of the denial machine, and they may have well exceeded ExxonMobil in funding climate change deniers (Dunlap and McCright, 2011).

CTTs are very important to the smooth functioning of the climate change denial organization since they provide an institutional basis for leading contrarians (e.g. Patrick Michaels), they have assisted the Bush Administration's efforts to oppose climate policy, and they host a range of anti-IPCC conferences (usually at the Heartland Institute). CTTs closely interact with media by producing and circulating a wide range of anti-climate change material through all forms of media, from television to Internet.

Compared to fossil fuel industries and corporations, CTTs have managed to maintain a more objective appearance, since the link with economic interests isn't as direct, and they therefore have more credibility with the public, the media and many politicians, sometimes reaching a status of "alternate academia". Like corporations, CTTs try to gain credibility by sponsoring contrarian scientists to legitimise their status of deniers, regardless of the actual quality and relevance of their research.
Most corporations and CTTs like to screen-off their anti-environmental efforts from the public eye and thus create front groups to act on their behalf.
The Global Climate Coalition (GCC) was one of the major front groups and it was formed in 1989 as a reaction to the creation of the IPCC. For more than a decade the GCC led an aggressive campaign against the fact that GHG emissions cause global warming. The GCC was backed up and funded by oil and coal interests, such as ExxonMobil, Texaco, BP and Shell and by automobile manufacturers like Chrysler, Ford and GM and even by national industrial associations as API, US Chamber of Commerce and the National Association of Manufacturers. According to some tax records obtained by environmental groups at the time, in 1997, the year of the Kyoto Protocol, the GCC's budget totalled 1.68 million dollars[29]. The GCC played a key role in undermining the credibility of the 1995 IPCC report by launching the unfounded attack on climate scientist Benjamin Santer, for apparently having altered one of the chapters. Some environmentalists have compared the GCC strategy to the tobacco industry tactics by sowing doubt and focusing mainly on the uncertainties of climate science[30].

[29] The NewYork Times: Industry Ignored Its Scientists on Climate - Andrew C. Revkin (April 23, 2009).
[30] Ibid.

The GCC disbanded in 2002 because many of the companies and industries (e.g. BP, Shell) that sponsored it left the coalition in the face of growing climate change scientific evidence.

The Information Council on the Environment (ICE) is another known CTT and was created in 1991 by the coal and utility interests of the Western Fuels Association and the Edison Electric Institute. The group aggressively campaigned against governmental efforts to curb GHGs and against the regulations of the 1992 Rio Earth Summit. In 1991, according to journalist Ross Gelbspan, ICE "launched a blatantly misleading campaign on climate change that had been designed by a public relations firm...[that] clearly stated that the aim of the campaign was to 'reposition global warming as theory rather than fact'. Its plan specified that three of the so-called greenhouse skeptics – Robert Balling, Patrick Michaels and S. Fred Singer – should be placed in broadcast appearances, op-ed pages and newspaper interviews." However, when the group's intentions and strategic plans were leaked to the press, the ICE folded up. In 1998 the Western Fuels Association founded the Greening Earth Society, already mentioned in the previous chapter, to promote the idea that global warming was actually beneficial for the planet.

Lastly, another group that is worth mentioning is the Cooler Heads Coalition that had a crucial role in launching a vicious attack on individual scientists and on promoting the Climategate scandal. As we have seen, one of the reasons the climate change denial machine is often associated with tobacco company strategies, is the employment of scientists to "manufacture uncertainty" on behalf of corporations and think tanks to exploit to their advantage. As a proof of this, tobacco company Philip Morris funded many CTTs such as the Cato Institute and the Heritage Foundation among others (Washington and Cook, 2011). CTTs sponsor many contrarian scientists who lack any scientific training or expertise, and only a minority have some expertise relevant to climate science (e.g. Patrick Michaels and Fred Singer). The affiliation to CTTs enables these "merchants of doubt" to benefit from the significant amount of funds donated by the corporations, without being accused of "conspiracy" in sponsoring fossil fuel interests.

In 2013, R. Dunlap and P. Jacques conducted a study examining the links between CTTs and 108 climate change denial books published throughout 2010. The study found that among these books, a whopping 92% are linked to CTTs either via publication or a verifiable connection between the author or editor and a CTT (e.g. Patrick Michaels and the Cato Institute). The study revealed some trend over time, by which there was a slow growth of books before Kyoto in December 1997, followed by a stable period, and then a rapid increase beginning in 2007. The reasons behind this increase may be found in the publication of Al Gore's "Inconvenient Truth", Gore's and the IPCC Nobel Peace Prize in 2007, and the IPCC's Fourth Assessment Report. Dunlap and Jacques observed a strong link between conservatism and climate change denial efforts since all the authors or editors of the 108 books endorse a conservative ideology. The most influential books that Dunlap and Jacques came upon during their study are probably "Shattered Consensus" by Patrick Michaels, affiliated with the Cato Institute, and "Unstoppable Global Warming" by Fred Singer of the Science and Environmental Policy Project, funded by ExxonMobil in 1998 and 2000[31]. The study went on by analysing the academic credentials of the authors of the 108 denial books and found that only 39% of these are authored or edited by individuals with scientific credentials and expertise, while 19% are produced by individuals with other doctorates (mainly economics, law and politics), and finally 42% by individuals with no doctorate at all (Dunlap and Jacques, 2013). The books that were posed under scrutiny lack peer review, which means that they include inaccurate assertions that misrepresent the current scientific evidence. Peer review is important because it reflects a certain standard of quality and it represents the collective expertise of authoritative literature (Jamieson, 2014). In this case, denial claims are re-used again and again, even though they are refuted in the first place by the consensus, and then conservative media amplifies them. These are what have been labeled "zombie arguments" because they "repeatedly rise from the grave" (Powell 2011, Washington and Cook 2011, Weart 2011).

[31] Exxonsecrets: http://www.exxonsecrets.org/html/orgfactsheet.php?id=65 (Greenpeace).

The Media

Dunlap and McCright (2011) then emphasize the crucial role of the media or the so-called "conservative echo chamber" that takes part in climate change denial. The media has poorly reported facts about climate change, but it loves controversy and provocation because this is what sells papers and raises TV ratings (Washington and Cook, 2011). Thus, in doing so, it has failed to educate the public on the causes and the consequences of climate change. This behaviour is often justified as "balanced reporting", where the media must include minority views as well as majority views. However, the exception has become a rule, and thus the "balance" has become a form of bias in favour of minority views (Oreskes and Conway, 2010). Oreskes and Conway (2010) state that in the US "the divergence between the state of the science and how it is presented in the major media helped make it easy for our government to do nothing about global warming". Maxwell Boykoff (2004) explains how and why mass media enabled outlier voices to control the climate change debates by weakening and avoiding proper action of climate change abatement. M.T. Boykoff and J.M. Boykoff (2004) state that "the continuous juggling act [American] journalists engage in, often mitigates against meaningful, accurate, and urgent coverage of the issue of global warming" and that climate change has been characterized by "informationally deficient mass media coverage".

The most popular deniers in the media "echo chamber" are the Fox News channel, which often includes climate change denial into its scripts (Jamieson, 2014), and amongst print media, the Wall Street Journal and the New York Post. More recently the "blogosphere" has become a vital element of the denial machine, together with Internet websites such as Marc Morano's climatedepot.com.

Given the diverging flow of information on global warming, the general public often receive a very different message that goes to reinforce the pre-existing political differences among the public (Dunlap and McCright, 2011). This is because they take cues from their favoured ideological and partisan elites, or mass media (Dunlap and McCright, 2011). For instance, Democrats, who usually get their news from the New York Times or MSNBC are more likely to hear messages about the reality and seriousness of climate change than their Republican counterparts, who instead get their news from conservative media.

Contrarian Politicians

The denial machine includes the political sphere as well, which is incredibly important because it is through governmental policy-making that effective action on climate change is undertaken. Climate change denial was one of the trademarks of the Bush Administration, since it allowed representatives of CTTs and fossil fuel industries to act from within the administration. One of the most popular deniers on the political level is Oklahoma Senator James Inhofe who leads a powerful denial campaign through climatedepot.com run by Morano and through his numerous speeches. During a Senate speech Inhofe claimed that global warming "is the greatest hoax ever perpetrated on the American people". In Figure 5 Senator Inhofe shows a snowball during his speech in Senate to prove his claim that global warming really is "a hoax" and doesn't exist; it is safe to say the proof remains rather circumstantial.

Figure 5 - Senator Inhofe shows a snowball during his speech in Senate as proof that global warming in a hoax (Source: www.youtube.com)

Over the years climate change denial has become an increasingly partisan issue, with Republicans universally recognizing it as a characteristic of their ideology and their political commitment. During the Obama era many Astroturf groups flourished, initially against the healthcare reform and later against climate change action. The Koch brothers had a key role in funding Americans for Prosperity and Freedom Work front groups and pushing the Tea Party and other Republican groups to focus on climate change denial. Astroturf groups are usually generated by industries or CTTs but are masked to appear as "grassroots" and popular efforts.
Hansen (2009) believes that the role of money in politics and the sway of special interests are the biggest obstacle in combating global warming. This is why the political game usually benefits some groups to the expense of others, creating a "mobilization of bias" where some issues are excluded from the political decision-making process (Dunlap and McCright, 2010).

A 2016 study published on the Global Environmental Change Journal analysed more than 16,000 documents published online between 1998 and 2013 by US groups such as the Heartland Institute, the Cato Institute and the American Enterprise Institute[32]. As shown in Figure 6 the study found that CTTs in the US have increased their attacks on science on the grounds of climate change denial[33]. A. McCright holds that the rising attacks on science have increased as a reaction to the 2008 election of Democrat candidate Obama.

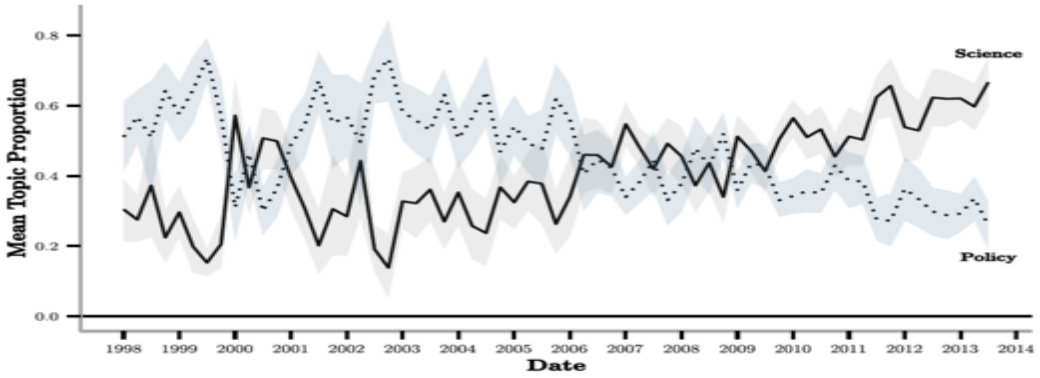

Figure 6 - Chart showing the output of CTTs on climate change between 1998 and 2013 (Source: Global Environmental Change).

[32] The Guardian: Era of climate science denial is not over - Graham Readfearn (January 2016)
[33] Ibid.

Climate Change Denial Funding

The climate change denial machine is supported by a complex network of funding, as shown in Figure 7, in fact, the majority of CTTs and the conservative front groups who denigrate climate science receive funding from a raft of big oil and energy companies and foundations whose profits result from products that cause global warming (Greenpeace, 2010).

Figure 7 - The network of climate change denial funding (Source: Greenpeace Exxon Secrets)

This network was set up mainly by fossil fuel companies, which invested capital in denial campaigns and activities. Most notably, ExxonMobil, who spent $23 million US dollars promoting the climate denial industry since 1998. The fossil fuel industry's contribution to funding groups that spread disinformation about climate science, is a massive problem.

A research has found that just 90 entities (investor-owned fossil fuel companies such as ExxonMobil, BP, Shell, Chevron, etc.) are responsible for the extraction of coal, oil and gas that have caused about two thirds of carbon emissions and pollution[34]. Today, many fossil fuel companies publicly and officially accept mainstream climate science and consensus on global warming, however, they still continue to act under the surface by supporting denial campaigns through lobbying groups and trade associations[35]. In 2008, after years of negative publicity for its funding policies, ExxonMobil dropped its funding of nine groups, stating that "their position on climate change diverted attention from the important discussion on how the world will secure the energy required for economic growth in an environmentally responsible manner" (Greenpeace, 2010). Also oil giant BP, has announced in 2015 that they will no longer fund the American Legislative Exchange Council (Alec), a lobbying group that skews climate science to the advantage of deniers, distorting it for US state legislators[36]. In February 2015, BP and Shell revealed their intentions to commit to reduce heat-trapping emissions and invest in renewable energy[37].

However, appearances may be deceiving and companies continue to sow climate doubt and influence climate policy in ways that are now increasingly concealed and non-transparent. Not only did BP still channel funds to support climate denier US policy-makers such as Senator James Inhofe, chairman of the Senate's Environment and Public Works Committee, but also ExxonMobil secretly gave more than $75,000 between 2008 and 2010 to fund the work of contrarian scientist Willie Soon, well after the company had announced to layoff such financing[38]. Furthermore, one of the largest utilities in the US, the Southern Company, spent $400,000 between 2006 and 2015 to back Willie Soon's research[39].

[34] The Guardian: fossil fuel firms are still bankrolling climate denial lobby groups (March 2015), Peter C Frumhoff and Naomi Oreskes.
[35] Ibid.
[36] Ibid.
[37] Ibid.
[38] Ibid.
[39] Ibid.

It is important to note in fact, that since 2008, Exxon hasn't made a publicly traceable contribution[40]. Exxon's own scientists have actually been publishing research on the dangers of anthropogenic global warming for 35 years, but from 1998 to 2015, Exxon has given over $31 million to spread disinformation on climate science[41]. The two-faced Exxon seems to have taken after the tobacco industry strategy, by misinforming the public about the expert scientific consensus and the dangers associated with tobacco consumption or global warming[42]. Monbiot (2006) details how the Greenpeace website "Exxon secrets" listed 124 bodies as recipients of Exxon's denial funding. "When Exxon gives money to think tanks in support of programs that sow confusion about global warming, that isn't public relations. It's not an effort to build or maintain the quality of Exxon's reputation. It is, rather, a direct interference in the public conversation in a way that serves Exxon's interest at the expense of the public interest" (Hoggan, 2009). Hoggan's "Climate Cover-Up" (2009) retraces the capital flow from corporations like Exxon to CTTs and front groups that control environmental policies and manipulate the public. However, apparently two things have changed since the publication of "Climate Cover-Up", the first is that the money involved has greatly increased, and the second is that the funding is done through concealed donations and third-party groups so that the original contributor is obscured and untraceable. "All these corporations that were getting bad publicity realized they could still fund conservative think tanks, [so] Exxon and BP can still fund these while doing great things on climate change to reduce emissions etc." (Dunlap, 2015) and avoid getting bad press.

US Drexel University environmental sociologist Robert Brulle conducted a study on the funding of climate change denial efforts. Brulle was the first to uncover the intricate network of untraceable funding towards denigrating climate science: "if you want to understand what's driving this movement, you have to look at what's going on behind the scenes"[43]. The study found concealed cash flows coming from many fossil fuel companies and denial groups, donations of the so-called "dark money".

[40] Scientific American: "Dark money" funds climate change denial effort (December 2013), Douglas Fischer.
[41] The Guardian: Two-faced Exxon: the misinformation campaign against its own scientists – Dana Nuccitelli (November 2015).
[42] Ibid.
[43] Scientific American: "Dark money" funds climate change denial effort (December 2013), Douglas Fischer.

In all, 140 foundations channelled $558 million to almost 100 climate denial organizations from 2003 to 2010[44].

Figure 8 illustrates the total distribution of funds among the numerous foundations from 2003 to 2010, while Figure 9 shows the total recipient income over the same period.

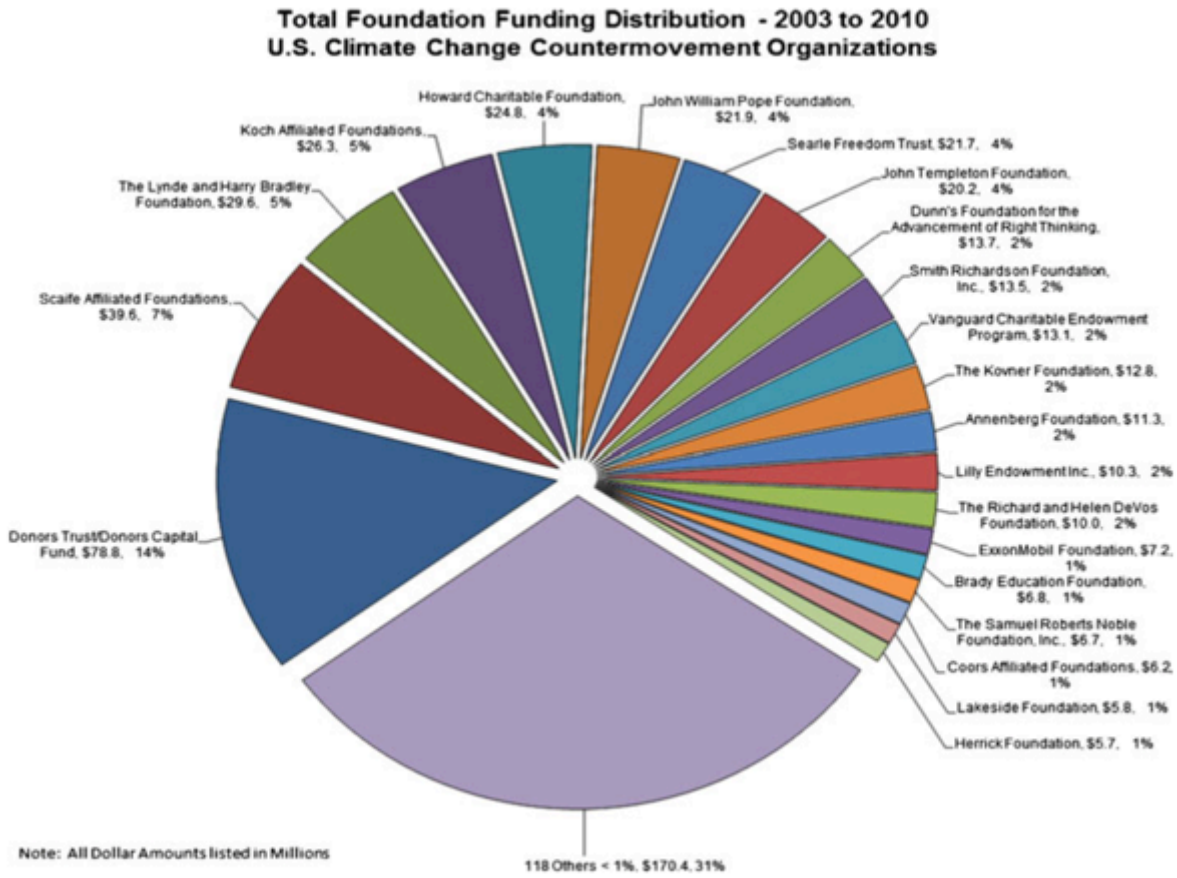

Figure 8 - Foundation Funding Distribution from 2003 to 3010 (Source: Brulle 2013)

[44] Scientific American: "Dark money" funds climate change denial effort (December 2013), Douglas Fischer.

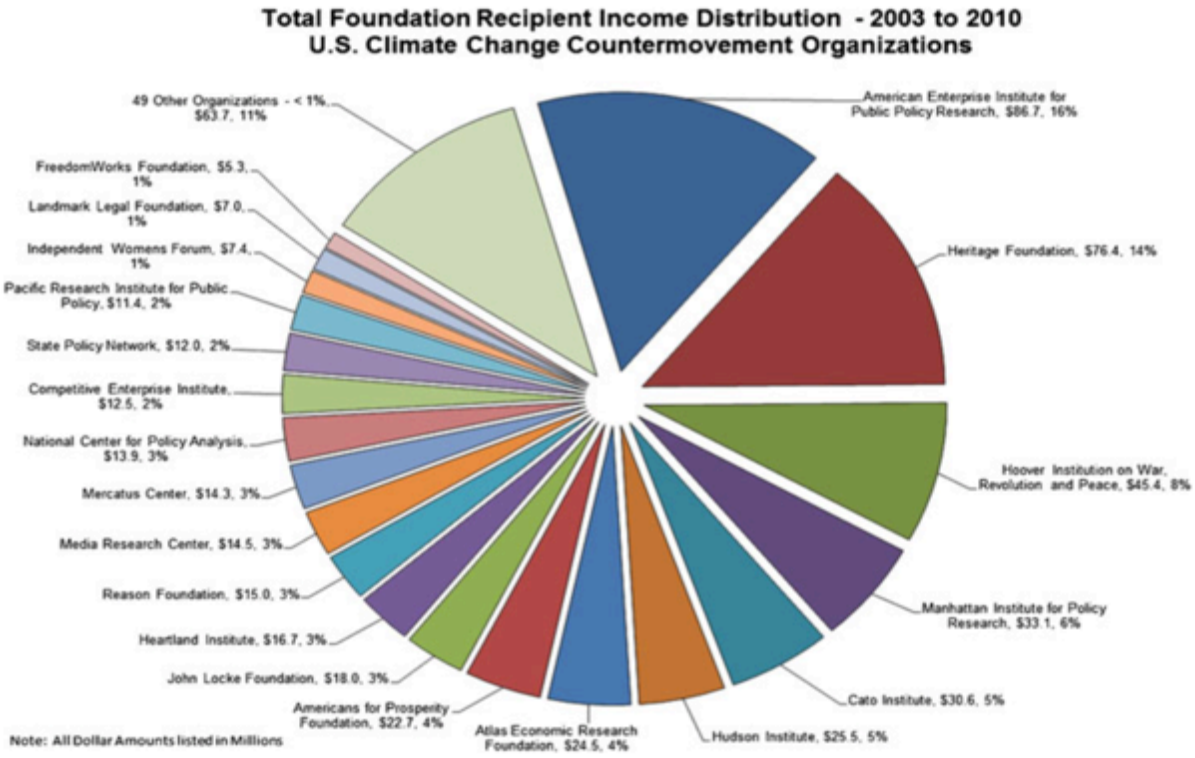

Figure 9 - Foundation Recipient Income Distribution (Source: Brulle 2013)

The largest cash flow came from two covert organizations, Donors Trust and its affiliated group Donors Capital Fund, that have been renamed the "Dark Money ATM" of the conservative movement[45]. Donors Trust and its affiliate were founded in 1999 and are an appendage of the infinite "Kochtupus" funded by billionaire oil tycoons Charles and David Koch[46]. The main recipients of Donors Trust capital are important CTTs and front groups involved in the climate change denial machine, such as the Heritage Foundation, the Cato Institute, the American Enterprise Institute and the Americans for Prosperity Foundation, chaired by none other than David Koch[47]. In the last presidential elections in 2012, when Democrat Obama won over Republican opponent Mitt Romney, 51% (just over $49 million) of funding by Donors Trust and Donors Capital Fund were directed to promoting climate change denial and opposing environmental protection policies[48].

[45] The Guardian: secretive donors gave US climate denial groups $125m over three years (June 2015) – Suzanne Goldenberg and Helena Bengtsson.
[46] Ibid.
[47] Ibid.
[48] Ibid.

In 2013, the last year for which tax records are available, 46% of anonymous funding to denial groups through the Donors channels, was spent that way[49].

The Koch Brothers finance campaigns to sow doubt about climate science and the dangers of global warming; increasingly hiding cash flows through the Donors channels, and this is why they constitute the leading example of the "corporate takeover" of government in the USA[50]. The Koch Brothers have spent over $79 million to climate change denial groups since 1997[51]. Furthermore, they have co-opted and funded the Tea Party movement, pushing it to take a stand against climate change policies and environmental policies[52].

Figure 10 - (Source: Greenpeace 2010)

Since 1990, the oil and gas industry has channelled 75% of its funding to Republicans and only 25% to Democrats. Senator Inhofe is one of the US Congress' major recipients of oil and gas capital, receiving $1.7 million from 2000 to 2010.

[49] The Guardian: secretive donors gave US climate denial groups $125m over three years (June 2015) – Suzanne Goldenberg and Helena Bengtsson.
[50] Greenpeace: Koch industries: secretly funding the climate denial machine.
[51] Ibid.
[52] Ibid.

Chapter 4: Climate Change Denial Arguments and Strategies

The climate change denial machine has undertaken a series of strategies and tactics to run its campaign against climate science, to denigrate climate change and to undermine scientists' credibility. The denial machine launched an organized "disinformation" campaign that uses the uncertainties of climate science to its advantage, to generate climate change skepticism or denial about AGW (Dunlap, 2013). Another common strategy used by deniers is to "manufacture uncertainty" over anthropogenic climate change by plunging into vicious attacks of climate scientists. The strategies are orchestrated by fossil fuel industries and CTTs that utilize a range of front groups and Astroturf activities. It is safe to say that the denial machine could never work without the precious aid of conservative media and politicians.

Climate change denial often exploits public ignorance of scientific terminology and language (Jamieson, 2014). The public confusion on scientific facts is exploited on an industrial scale and it serves the denial machine to manufacture ambiguity and doubt in climate science, as well as to manipulate information of leading climate scientists who agree with the "consensus". The denial machine turns the differences between scientific language and ordinary language to its advantage, in fact, by focusing on the uncertainties and probabilities in climate science, misinformation is created and the facts are greatly "reinterpreted" by deniers (Figure 11). In this way the uncertainty in science is taken by public audiences as a fair reason not to take any of these scientific claims seriously.

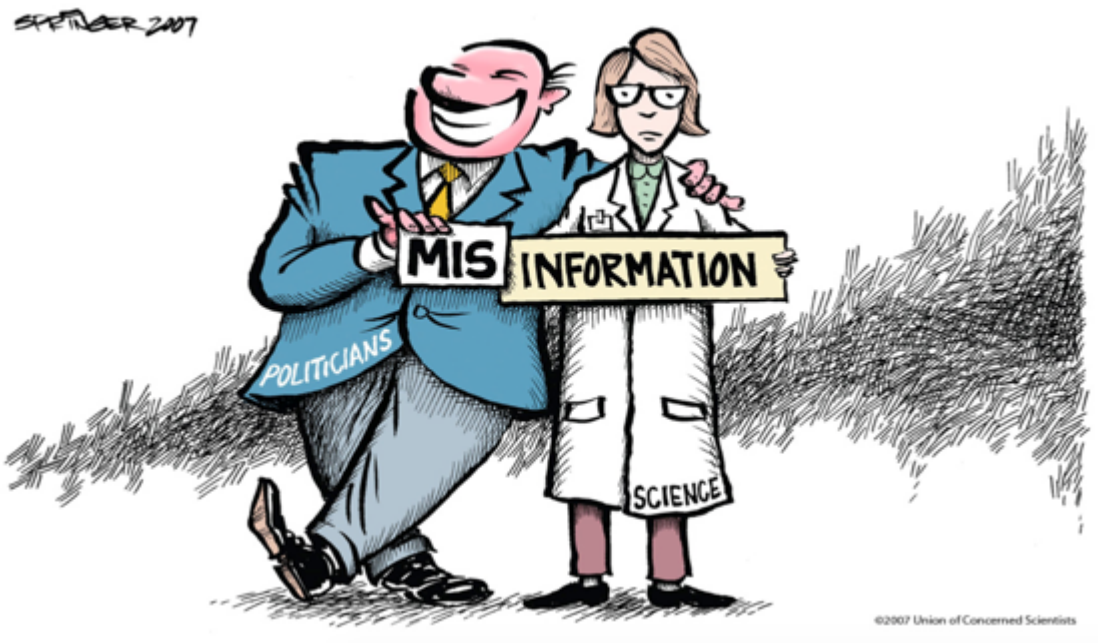

Figure 11- Comic illustration of climate science "mis-information" by deniers (Source: Springer 2007)

A common refrain of the climate change denial industry is to refer to climate scientists as "alarmists" who exaggerate their claims and the degree of global warming to obtain a personal come-back, usually funding, individual prestige or influence with policy-makers (Dunlap, 2013).

W. Freudenberg and V. Muselli hold that the constant criticism and attacks suffered by the climate scientists lead them to "err on the side of caution", which means that UN official reports, such as those issued by the IPCC tend to understate the potential climate dangers. At this point, deniers then state that reports have in fact understated the degree of climate disruption, to the advantage of their own argument.

Themes of Climate Change Denial

Climate change denial is characterized by some main themes, which are analysed in detail by Dunlap, Jacques and Freeman (2008). The main theme, which is common to all environmental skepticism, is the denial of the authenticity of environmental problems, and thus the denial of the existence of climate change. Consequently, from this, another theme is the rejection of all scientific literature on environmental degradation.

Patrick Michaels, leading climate change denier, states: "global warming is an exaggerated issue, predictably blown out of proportion by the political and professional climate in which it evolved… a litany of questionable science..." (2004).

Another common theme of climate change denial is to affirm that climate change is not a priority compared to other fundamental issues. This means a prioritization of social and economic issues that take over governmental policies, since for deniers there is no need for environmental efforts, as there is no environmental degradation in the first place. Bjorn Lomborg is an example of a "dismissive skeptic" who challenges the seriousness of environmental damage and its priority for public action. His approach is based on asserting there are higher priorities than "the litany" of climate change, and these are poverty, HIV or malaria. Lomborg (2011) writes: "poverty and not the environment is the primary limitation for solutions to our problems". The Danish Committee for Scientific Dishonesty deemed Lomborg's book as fabricating data and misrepresenting scientific evidence (Washington and Cook, 2011).

The ultimate goal of climate change deniers is to avoid government regulation and corporate liability in environmental matters. This is often done by undermining the credibility of peer-reviewed climate scientists and labelling it as "junk science", as opposed to "sound science" of climate change denial. The last theme Dunlap, Jacques and Freeman analyse in their article on organized denial (2008) is that environmentalism challenges development and progress intrinsic to Western modernity.

Climate Change Denial Tactics: Manipulation and Rhetorical Arguments

Mathematician Ian Enting (2007) distinguishes among different types of denial tactics, that all include the manipulation of scientific evidence.

These are: (i) outright lies; (ii) twisting phrases; (iii) removing qualifiers (for example "no close correlation" becomes "no correlation"); (iv) bait and switch (a true proposition is used to imply a similar sounding but false proposition); (v) guilt by association (for example the suggestion that climate scientists are Marxists or socialists);

(vi) misrepresenting nature of evidence "for" v "against" (which means that particular evidence of an issue is used to reject the large body of evidence that supports that issue); (vii) raising true but irrelevant "facts"; (viii) assembling petitions.

Pascal Diethelm and Martin McKee (2009) organize climate change denier arguments under five headings: (i) conspiracy theories; (ii) fake experts; (iii) cherry-picking; (iv) impossible expectations of what research can deliver; (v) misrepresentation and logical fallacies. These can be found at skepticalscience.com managed by John Cook, co-author of "Climate change denial: heads in the sand" (2011). All deniers have the same characteristic in common, as their aim is to persuade the public and the media that there are sufficient grounds to challenge the consensus and avoid taking action to combat climate change and curb greenhouse gas emissions (Diethelm and McKee, 2009). Deniers often achieve this by using rhetorical arguments that give legitimacy to their statements, where in fact there is none.

The best example of a "conspiracy theory" is the Climategate controversy, when, as mentioned above, in November 2009, the email servers at the University of East Anglia in the UK were illegally hacked and manipulated to mislead the media and public opinion in to thinking that those who warned from the dangers of global warming were all just part of a secretive conspiracy (Washington and Cook, 2011).
The main strategy here was isolating some claims and taking them out of context. For example, Republican Sarah Palin claimed that "experts" manipulated data to "hide the decline" in global temperatures, where the "decline" actually referred to a decline in tree growth in certain high-altitude regions since the 1960s (McCullagh, 2010). The Climategate affair emphasized denier's distrust in the peer review process, in fact, "peer review" turned into "pal review" whereby establishment scientist only published work by their friends and those whose scientific research findings agreed with their own (Hoffman, 2010).

The "fake experts" category generally refers to groups who deny there is any scientific consensus on the existence, and thus the dangers of global warming and climate change. This tactic was initially used by the tobacco industry and was then mimicked by climate change deniers. The most prominent among the groups is the Petition Project created by the Oregon Institute of Science and Medicine (OISM) in 2008, which includes over 31,000 people who claim to be scientists and refute the

science behind anthropogenic climate change (Washington and Cook, 2011). It is clear that OISM went for quantity rather than quality (Washington and Cook, 2011).

However, a survey conducted by a team of volunteers at Skeptical Science in 2013 has confirmed that there is a scientific consensus which goes beyond 90% (as shown in Figure 12), specifically 97% of peer-reviewed papers agree that global warming is happening and is caused by human activities. The work originated from an earlier survey conducted by Naomi Oreskes in 2004 as well as an interview by James Powell, published on DeSmogBlog in November 2012.

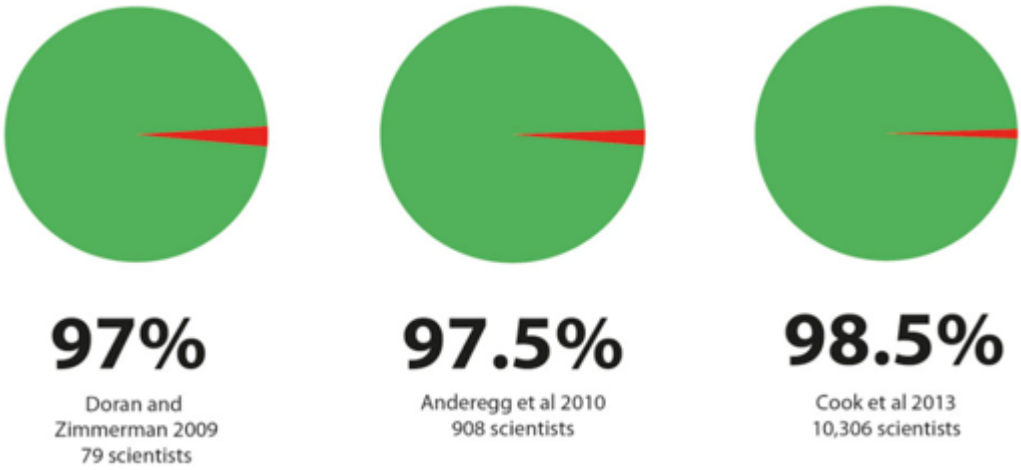

Figure 12 - The Scientific Consensus on Climate Change (Source: www.desmogblog.com/2013)

The uncertainties in climate models are often used as an excuse to reject all scientific evidence linked to anthropogenic global warming. For example, a common denier argument is "scientists can't even predict the weather next week, so how can they predict the climate years from now?" However, this betrays a simple understanding in the distinction between weather and climate. In fact, climate is the long-term averaging of weather, because weather is chaotic and sometimes unpredictable, but over time this can be averaged to show the so-called climate trends (Washington and Cook, 2011).

In other cases, climate models are passed as being biased towards "exaggerating" the effects of CO2, even though "uncertainty works either way", so that a climate system with positive feedback uncertainty (an effect of global warming which increases temperature even further) means climate change is likely to be greater than expected (Roe and Baker, 2007). This is why many IPCC reports have subsequently been shown to underestimate the climate response (Washington and Cook, 2011). These strategies all fall under the "impossible expectations" heading introduced by Washington and Cook (2011). Further more, they state that albeit the many misconceptions around climate science, we now know enough to act: if you knew there was a 90% chance you'd be in a car crash, would you get in the car? As noted before, even the IPCC conclude there is a scientific consensus around anthropogenic climate change that goes beyond 90%.

"Misrepresentations and logical fallacies" alludes to "straw people" who misrepresent or manipulate the opposing argument (in this case the scientific consensus) with the goal of making it easier to refute (Washington and Cook, 2011). One of the most common arguments for this category is "climate has already naturally changed in the past therefore current climate change must be natural", but this claim betrays a misunderstanding of climate sensitivity by which generating heat in the climate causes the temperatures to rise, while climate losing heat produces a fall in temperatures. For example, some rebut by asserting that it is like saying "forest fires have occurred naturally in the past so all current forest fires must be natural"(Washington and Cook, 2011).

Last but not least, a very common denial strategy is "cherry-picking" which involves the selection of isolated papers or arguments that challenge the consensus and ignore the broader body of research. In the same way, deniers often focus their attention on isolated pieces of data (Figure 13 is a funny example of this), which are often irrelevant in the bigger picture, to emphasize their argument and weaken evidence that does not support their point of view (Oreskes and Conway, 2010). Sometimes they even publish only part of the data or graph.

Figure 13 - A humoristic example of "cherry-picking" (Source: www.pinterest.com)

Public Opinion

What is surprising here is that there is very little outrage about the use of these denial tactics by mainstream media or "responsible" press (Jamieson, 2014). In fact, public opinion is sometimes even abused, since it may be incredibly sensitive to the wording of particular questions or the use of particular survey instruments, or again, local weather conditions (Jamieson, 2014). The "two- cultures problem" in the USA indicates that there is a difference in the educational background of scientists and policy-makers, which often leads to a lack of mutual understanding (Jamieson, 2014). As far as the American public is concerned, only 28% of the American public is science-literate enough to read the science section of the New York Times (Jamieson, 2011). Thus, it must be noted, that scientific ignorance is an invitation to manipulation.

Instrumental Use of Socio-Economic Impacts of Environmental Policies

An effective strategy (Figure 14) that is commonly put in place by corporations that lobby against climate policies is to stress the socio-economic impacts of agreements and policies that set restrictions on carbon emissions (Michaelowa, Axel, 1998).

Figure 14 - The irony of climate change denial strategies
(Source: www.justpo.st/channel/climate+change+threatens+our+economy)

For instance, lobbies often emphasize the dangers of losing jobs because of climate policy measures. In reaction to the Kyoto climate change negotiations of 1997the American Automobile Manufacturers Association stated: "We are concerned that the policy to implement the Kyoto Protocol will put U.S. industry at a disadvantage to compete globally and risk the jobs of millions of American workers"(Michaelowa, Axel, 1998).

In the same manner, the GCC, conservative think tank, campaigned against the Kyoto Protocol arguing that it would jeopardize 1,5 million jobs (Toman, Tebo & Pitcher, 1997). As a last category Hoggan (2009) mentions “non-denier deniers”, or those who claim that it is too late to stop global warming and so we should adapt and balance our action with concern for the economy.

Researchers have rebutted to this argument that the speed of current AGW is much faster than climate change that has occurred in the past because of natural causes. In fact, the latter took more than 10,000 years while current AGW is estimated to happen over 100 years (Washington and Cook, 2011). It is much easier to adapt over a much longer period of time: most species cannot migrate faster than 1km per year (Houghton, 2008), not to mention what human migration from one continent to the other might entail.

Chapter 5: Climate Change Denial Outside the US

Climate change denial has spread on the international level to other nations outside the USA (Dunlap and McCright, 2011). It has been more common to flourish in nations with conservative governments, as the free-market conservatism is a unifying force behind denial, and where a vast network of CTTs has developed, namely Canada and Australia (Dunlap and McCright, 2011). Climate change denial has also developed to a lesser degree in countries like the UK, New Zealand, India, China and Russia (Washington and Cook, 2011).

Australia's vast coal and mining industry has served as a perfect seedbed for the development of climate denial, which was initially fostered under Australian Prime Minister John Howard (Greenpeace, 2010). The Competitive Enterprise Institute (CEI) is a Libertarian anti-regulation "free-market" think tank based in the USA, but it branched out to Australia in November 1996 when the CEI held their first strategy meeting to activate an Australia-based denial campaign (Greenpeace, 2010). The CEI thought that Howard's government could serve as a useful ally in the political battle against the Kyoto protocol, and began to develop close ties with mining interests and the Institute of Public Affairs (Dunlap and McCright, 2011). For years CEI has taken action to debunk climate science and undermine scientific evidence of AGW. The CEI has been supported by funding of fossil fuel corporations, such as ExxonMobil who channelled $2 million since 1998 (Greenpeace, 2010). Furthermore, the CEI coordinates the Cooler Heads Coalition, one of the many conservative think tanks mentioned earlier (Greenpeace, 2010).

In August 1997, the CEI and the Frontiers of Freedom front group held a climate change denial conference in Canberra: the conference was sponsored by the Australian and New Zealand Chambers of Commerce and Australia's Western Mining Corporation (WMC) (Greenpeace, 2010).

Australian Deputy Prime Minister Tim Fischer and Environment Minister Robert Hill attended the conference and in that occasion Fisher claimed that regulations to curb carbon emissions could put 90,000 jobs at risk in Australia and cost more than $150 million (Greenpeace, 2010).

According to RJ Smith from the CEI, the aim of the Canberra conference was to "try and buck [Prime Minister John Howard] up a little more and let him know that there is support of the American people' for his government's obstructionist stance" (Greenpeace, 2010).

In 2004 CEOs of leading fossil fuel corporations met with Howard to discuss paths for restricting the growth of renewable energy sources and industries (Washington and Cook, 2011). Australia also has a web of front groups acting on behalf of think tanks and the fossil fuel industry (Dunlap and McCright, 2011). The Institute of Public Affairs, for example, created the Australian Environment Foundation in 2005 - to parrot the pro-environmental Australia Conservative Foundation -which in turn set up the Australia Climate Science Coalition to foster climate change denial (Dunlap and McCright, 2011). The Lavoisier Group, also active in climate change denial campaigns, was created and funded by mining interests (Dunlap and McCright, 2011).

The Australian denial movement has a tight relationship with US climate skeptics, in fact, American CTTs have sent contrarian scientists (e.g. Patrick Michaels and Fred Singer) as speakers or representatives of their denial interests, to promote the development of an international denial network (Dunlap and McCright, 2011). In particular, the Atlas Economic Research Foundation, which was established by A. Fisher in the UK but is based in the US, serves as the breeding place for conservative think tanks around the globe (Dunlap and McCright, 2011). Fisher also founded the Institute of Economic Affairs (IEA), which received substantial donations by the British American Tobacco company and Philip Morris, and the UK International Policy Network, a British conservative think tank, defined as a "corporate funded campaigning group" (Monbiot, 2006) because it received funding from fossil fuel industries such as ExxonMobil.

In all, Australia has adopted a weak climate policy, only agreeing to sign the Kyoto Protocol after Howard left the government in 2008 (Greenpeace, 2010). In 2010 Prime Minister Tony Abbott was elected, a confirmed climate skeptic; he was then re-elected in 2013 and remained in office until 2015.

The Canadian denial machine, alongside its American and Australian partners, has also made significant efforts to undermine mainstream climate science. The leading denial institution in Canada is the Fraser Institute, which receives funding from both the Scaife (sponsor of the Marshall Institute) and the Koch foundation (Dunlap and McCright, 2011). In 2007, when the IPCC launched its Fourth Assessment Report, the Fraser Institute issued its own "independent" assessment to question the models and the conclusions of the IPCC summary (Greenpeace, 2010). Unlike the IPCC, which receives funding only from the UN system and is based on nearly an absolute voluntary input from its members, a team of "experts" with direct links to fossil fuel corporations and front groups forms the Fraser Institute (Greenpeace, 2010). In 2010, the Canadian government decided to limit the amount of media exposure for scientists, resulting in a great decrease of climate science coverage (Greenpeace, 2010).
It is reasonable to conclude that climate change denial campaigns in the US have played a crucial role not only in blocking domestic legislation, but they also contributed to the US becoming an impediment to international policy-making (Dunlap and McCright, 2011).

It might be worth spending a couple of words to point out that the American media politicization over climate change and climate change denial, has spread also at the international level, and especially to Europe where the presence of politicized press is significant. In particular in Italy, right-wing press like "Il Giornale", "Libero" and "Il Foglio" often include climate change denial messages into their articles.

It may also be interesting to analyze the climate change denial movement from an international diplomacy perspective. Since the early negotiations a conflict has existed between developed and developing countries. On one hand, the Alliance of Small Island States (AOSIS) is the strongest advocate for curbing carbon emissions, among developing countries, otherwise also known as G-77 in the UN system; on the other hand, the oil-producing states, which often work very close to deniers in the US, challenge the scientific evidence (Jamieson, 2014). Large developing countries, such as Brazil, China and India have focused on issues that they perceive as undermining their national sovereignty (Jamieson, 2014). By the time the Rio Earth Summit (1992) took place, most of the oil-producing states aggressively opposed the transition to a

carbon-free economy, allying themselves with influential actors in the USA (Jamieson, 2014). In fact, even if the Summit agreement was to be delayed and not completely prevented, the interest groups involved still played the denying game as this would, in any case, get them significant economic benefits. Five years later, during the Kyoto negotiations, it looked like the USA's main aim was to weaken agreements and evade responsibility (Jamieson, 2014). In fact, the USA put pressure on developing countries to take commitments against climate change, but on their part, the G-77 and China, deemed the continuous attempt of the Americans to shift responsibility to them, as an offence (Jamieson, 2014). According to Sani Daura, a spokesman at The Hague for G-77 and China, the conference was a complete failure because of competing economic interests in wealthy countries. In this scenario, the Europeans saw themselves as the only real advocates for action to address climate change.

It is unclear how to allocate responsibility among countries for emitting GHGs. It could be said that China is responsible for emissions (as a consequence of the USA and the EU outsourcing manufacturing to China), Australia is responsible for extracting coal, and it is the USA and Europe who consume products with carbon (Jamieson, 2014). However, in reality, climate change is a collective-action problem because it entails serious repercussions for everyone, regardless of whose responsibility it is. In fact, usually the costs of climate change are borne by those who live beyond the borders of the major emitters; animals, nature, developing countries and even future generations, making it an inter-generational issue. Although, it seems like everyone wants to benefit from their own GHG emissions, while others reduce theirs. In this sense, developing countries want rich countries to take the first step in cutting-down emissions applying a "you first, then me" attitude (Jamieson, 2014). This issue may be seen as a variant of the "tragedy of the commons", where nobody wants to make cuts to their GHG emissions unless everyone makes them (Washington and Cook, 2011). Environmental scientist Garrett Hardin (1968) coined the phrase "tragedy of the commons" to indicate the way in which humans exploit a resource that is in common and should be shared by all. Hardin describes a situation in which everyone abuses of a common resource for their own short-term interest, to the disadvantage of anyone's long-term interest. The tragedy of the commons is often associated with sustainability, as in the achievement of both human and ecosystem wellbeing together.

Conclusion

This thesis has investigated the climate change denial movement in many of its dimensions and it has (hopefully) shed light on the dynamics of the denial industry and its mechanisms. Environmental denial isn't simply a counter-movement, but a proper orchestrated and organized effort to create highly coordinated denial campaigns and activities. Promoting climate denial is the key strategy of the anti-environmental counter-movement, and it involves not only important actors such as fossil fuel industries, CTTs, contrarian scientists and politicians and the media, but it also depends on significant amounts of capital investments and funding. The denial campaigns and schemes are designed precisely to undermine the credibility and legitimacy of mainstream climate science and to disrupt the environmental movement's efforts to undertake policy-making oriented towards environmental protection. These dynamics explain why it is unconceivable and irrational to believe that the scare strategies and the manipulation tactics of the climate change denial machine are none other than terrorizing maneuvers that distort reality to the denial movement's advantage; the label of "junk science" given to the climate science of the consensus lacks credibility. Dunlap, Jacques and Freeman (2008) write that deniers have depicted themselves as isolated "Davids" striving to combat the dominant "Goliath", represented by the environmentalists. However, this self-portrayal disguises the denial machine's ability to skew the truth in its favor, to twist arguments and reality. This ability has been greatly proven by the numerous misrepresentations of scientific evidence, and by the great number of misinforming and manipulating strategies, backed up by funding of powerful corporations and foundations.

Some scholars have asked themselves whether climate change constitutes a "logic schism"; or to use another expression, "abortion politics," which means that the two opposing sides take ideologically polarized positions and "no amount of scientific information...can reconcile the different values" (Pielke 2007). However, nothing changes the bitter reality that climate change is happening, and that it is caused by humans. And that in this scenario, as Washington and Cook (2011) hold, the denial industry has been nothing but "immoral and destructive". They believe denial is an inherent part of human nature, and that it is true that all the actors involved in the denial machine are responsible for misleading the public and spreading confusion.

This includes the “denial spin-doctors in government” that deceive the public into thinking they are taking valid and purposeful action, when really they aren’t. However, they also feel that there is denial of “we the people”, that we let ourselves be fooled and brain-washed to escape the harsh reality and keep that head of ours hidden deeply in the sand. Nonetheless, Washington and Cook (2011) consider that if a large section of the public abandons denial, and pulls their head out of the sand, it may straighten things out and turn corporate denial around, especially if it costs corporations their business interests and profits.

Hoggan (2009) expresses the issue in a nutshell and unveils the challenge we must confront ourselves with: “Climate Change Denial reveals the crossroads we face as a society: do we let denial and confusion continue to derail solutions, leaving us vulnerable to runaway climate change, or do we accept reality and forge a truly sustainable path for future generations?”

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Riassunto

A volte, la chiave di un problema non è nelle risposte ma nelle domande. Ragionare intorno alle domande è stato, infatti, il filo conduttore di questa tesi sul negazionismo del cambiamento climatico, elaborata attraverso una prospettiva non convenzionale che affronta la problematica del cambiamento climatico in modo alternativo, nell'idea che il negazionismo del cambiamento climatico sia l'altra faccia della medaglia della protezione ambientale.

Che cos'è il "negazionismo" del cambiamento climatico? Che cosa significa negare il riscaldamento globale? Cosa implica la presenza e l'evoluzione di questo fenomeno? Chi ne fa parte? E come influisce un fenomeno di tale portata a livello politico ed economico? Questa tesi cercherà di rispondere a queste ed altre domande in relazione al tema del negazionismo climatico. Inoltre, la tesi analizza il fenomeno nelle sue varie dimensioni e sfaccettature, districando i nodi di una complessa ed efficiente rete negazionista, e riportando una realtà che forse in pochi conoscono, e che dagli inizi degli anni '90 al giorno d'oggi ha influito radicalmente non solo sull'efficacia delle politiche ambientali, ma addirittura sulla loro presenza nei programmi politici. E' importante specificare che la "macchina negazionista", ben oliata e coordinata, si è sviluppata in particolare negli Stati Uniti, ed è qui che i suoi effetti sono stati più significativi. Nonostante questo, bisogna considerare che gli USA sono stati, e forse sono tuttora, "l'ago della bilancia" politica ed economica del mondo e che quindi ostacolare una politica ambientalista in America, vuol dire influenzare in negativo anche quella internazionale.

Negare significa rifiutare di ammettere la verità o di respingerne l'esistenza. In questo contesto un "negazionista" è colui che si rifiuta di accettare le solide e schiaccianti prove scientifiche che dimostrano l'esistenza del cambiamento climatico. Vi è un dibattito, a livello scientifico, sull'uso del termine "negazionismo" che spesso viene rimpiazzato da un più moderato "scetticismo". L'opposizione tra i due termini, più chiara in lingua inglese (denial vs. skepticism), è risolta per alcuni studiosi se si considera che lo scetticismo è in realtà un elemento intrinseco alla scienza. Come sostiene J. Cook, autore di "Climate Change Denial: Heads in the Sand" e del sito web skepticalscience.com: "Scetticismo significa analizzare tutte le informazioni che uno ha prima di giungere ad una conclusione. Lo scetticismo è una cosa positiva. Lo

scetticismo del riscaldamento globale invece non lo è. Non è scetticismo affatto. E' l'opposto, perché comporta arrivare ad una conclusione dei fatti prevenuta ed errata, selezionando a priori le informazioni a proprio piacimento e rendendole circostanziali pur di giustificare la conclusione, in realtà scorretta" (citazione tradotta dall'inglese). Benché molti studiosi appoggino questo pensiero, l'uso del termine "scettico" viene spesso connotato con il significato di negazionista.

L'obiettivo principale delle campagne negazioniste è di prevenire la formazione di un consenso che appoggi un'azione di politica ambientale. Le motivazioni che spingono a partecipare alle attività negazioniste possono variare ed includere sia fattori economici (per esempio le industrie di carboni fossili) che motivi di tipo personale (lo status di "celebrità" che possono assumere alcuni scienziati); tutte le ragioni, in ogni caso, hanno in comune un'opposizione ad assumere impegni governativi e politici per prevenire gli effetti del cambiamento climatico e creare un sistema di protezione ambientale che sia non solo efficace, ma anche ecosostenibile. Lo studioso Jamieson (2011) attribuisce il successo delle campagne negazioniste alla vasta rete di finanziamenti che vi si nasconde dietro. Infatti, l'efficiente meccanismo di finanziamenti è ciò che permette ai sostenitori del negazionismo, non solo di confutare l'evidenza scientifica del cambiamento climatico, ma anche di diffondere l'idea che non ci sia effettivamente un consenso a riguardo. Il negazionismo, infatti, ha preso piede rapidamente perché la dinamica descritta spesso fa leva sulla diffusa presenza di ignoranza a livello scientifico. Da un punto di vista strettamente politico, la "comunità negazionista" si identifica nei valori conservativi, universalmente condivisi da coloro i quali "si scagliano contro la scienza climatica attendibile e veritiera" (Dunlap e McCright, 2011).

Rahmstorf (2005) classifica i negazionisti in tre distinti gruppi: (i) coloro che appartengono alla categoria "trend" e che negano il riscaldamento globale; (ii) coloro che sono negazionisti di "attribuzione", ovvero che accettano il trend principale ma ne attribuiscono le cause a fattori naturali piuttosto che antropologici; (iii) e negazionisti di "impatto" che accettano di attribuire le cause del riscaldamento globale all'attività umana, ma che comunque credono che i suoi effetti possano essere benefici. Non è facile descrivere la "macchina negazionista" poiché, da una parte, è messa in moto da un complesso meccanismo di forze agenti e attori distinti, e dall'altra, perché in molti casi, coloro i quali sono impegnati in campagne negazioniste e in attività di finanziamento, fanno in modo sia di mascherare la propria partecipazione che di

nascondere le loro fonti di sostegno. Così come la parabola di Plinio il Vecchio, che racconta di uno struzzo che infila la testa sotto la sabbia per scappare dai problemi senza mai affrontarli, anche il negazionismo del cambiamento climatico, rappresenta la fuga da una realtà percepita come pericolosa e, proprio come nascondere la testa sotto la sabbia, non aiuta e non funziona. Negare il cambiamento climatico è come "the elephant in the room", "l'elefante nella stanza" che nessuno vuole vedere ma che tuttavia esiste, ed appena se ne riconosce l'esistenza, comincia a rimpicciolirsi (Washington e Cook, 2011). In relazione a questo concetto, i sociologi hanno studiato il fenomeno del "negare il negazionismo", o meglio, non solo non voler ascoltare, ma non volerne neanche parlare. I negazionisti si sono concentrati per lungo tempo sulle incertezze della scienza climatica, ma solo perché ne esistono, ciò non significa che non ci sia una vasta quantità di dati e prove che invece sono certi ed affidabili. Abbiamo bisogno di una certezza assoluta per agire contro quei rischi ambientali che già costituiscono una minaccia certa per il pianeta e per l'umanità? Quando finalmente potremo accedere a tale certezza assoluta, forse sarà troppo tardi per frenare ed eventualmente impedire il cambiamento climatico.

Storicamente, il negazionismo del cambiamento climatico nasce negli anni '40, '50 e '60 negli Stati Uniti, quando molti difensori di questa tesi sostenevano una "wait and see policy", una politica orientata ad aspettare per vedere cosa succede con il passare del tempo. Secondo una prospettiva puramente economica, ciò significava agire quando la probabilità di incertezza era più bassa, e, di conseguenza, una minore possibilità di rischio. Tuttavia, come ribadisce il Rapporto di Charney: "una 'wait and see policy' significherebbe aspettare fino a che diventa troppo tardi." La campagna negazionista si intensificò di pari passo all'azione ambientale del governo americano, che aveva riconosciuto il cambiamento climatico come una delle sue priorità. Il fenomeno esplose dopo la guerra fredda, e con il Summit della Terra, tenutosi a Rio de Janeiro nel 1992, che aveva reso evidente e impellente la necessità di far fronte agli effetti devastanti del riscaldamento globale. In particolare, il crollo dell'Unione Sovietica negli anni '90 diede il via alla tendenza dei più conservativi a sostituire la "minaccia rossa" dei comunisti, con la "minaccia verde" degli ambientalisti. La minaccia divenne reale, e il timore si concretizzò attorno alle negoziazioni per il Protocollo di Kyoto nel 1997. Il Protocollo venne accolto con grande ostilità da coloro che detenevano gli interessi economici e anche dal congresso americano dell'epoca, quasi interamente repubblicano, che proibì all'EPA (l'agenzia per la

protezione ambientale) di investire nell'attuazione del progetto di Kyoto. Numerose società ed imprese, per proteggere i propri interessi economici, pubblicarono analisi faziose che mostravano gli altissimi costi che l'America avrebbe dovuto sostenere se il governo avesse imposto delle restrizioni all'emissioni di carbonio. Le negoziazioni di Kyoto furono caratterizzate da un atteggiamento di rifiuto degli americani per le politiche ambientali, soprattutto a causa delle amministrazioni di Reagan e Bush, che fecero "poco e niente" per affrontare il problema climatico (Jamieson, 2014). Nel 2009 ci fu un altro evento che segnò la storia del negazionismo climatico, etichettato come 'Climategate'. L'evento si sviluppo in circostanze controverse: alcune e-mail dell'unità di ricerca della University of East Anglia nel Regno Unito furono ottenute illegalmente e vennero pubblicate su un sito web negazionista. L'episodio venne manipolato dai negazionisti che accusarono i climatologi dell'unità di ricerca di cospirazione per aver diffuso falsi dati nell'intento di screditare e distruggere la reputazione degli scienziati che non erano d'accordo. Dopo alcune indagini, i climatologi vennero giudicati innocenti, ma la controversia fu la rampa di lancio perfetta per l'industria negazionista che colse l'occasione per dare inizio ad una campagna spietata e denigratoria che comprendeva la partecipazione dei principali scienziati negazionisti (tra i quali Fred Singer), "think tank" conservative, televisioni, anche queste di stampo conservativo (come Fox News), e anche uno dei politici negazionisti per eccellenza, il senatore repubblicano James Inhofe. Il movimento conservativo americano vedeva l'ambientalismo globale come una minaccia che minava al potere economico e politico degli Stati Uniti, e per questo divenne aggressivamente anti-ambientalista. La questione del cambiamento climatico riflette una divisione ideologica che con il tempo diede luogo ad una polarizzazione politica tra i democratici di sinistra, e i repubblicani di destra. Un sondaggio della Gallup, eseguito tra il 2001 e il 2010, indicava che i liberali e i democratici erano più propensi ad essere ambientalisti rispetto ai loro oppositori conservativi e repubblicani. La protezione ambientale, infatti, allora come oggi, mette alla prova i valori conservativi, perché pone dei limiti al mercato libero e alla proprietà privata, e in questo modo costituisce una minaccia alla crescita economica di interessi privati.

L'industria del negazionismo climatico coinvolge numerosi attori che interagiscono tra di loro; ognuno un componente essenziale nell'ingranaggio della "macchina negazionista".

Le industrie di carboni fossili sono identificate come i principali responsabili per le emissioni di carbonio e negli Stati Uniti questa categoria comprende sia industrie private come ExxonMobil e Peabody Coal, che aziende pubbliche come l'American Petroleum Institute e la Western Fuel Association. Le industrie ingaggiano scienziati negazionisti in qualità di esperti, sia per dare credibilità alle campagne denigratorie, che per legittimare e giustificare la propria posizione conservativa. Le industrie sono soprattutto un'importante fonte di finanziamento per le "think tank" conservative e gruppi "Astroturf". Il termine Astroturf proviene da un marchio americano con l'omonimo nome, produttore di erba sintetica che veniva utilizzata per ricoprire i campi da gioco negli stadi americani. Il termine "astroturfing", che ne deriva, venne coniato come antonimo di "grassroots" (letteralmente radici dell'erba) che indica un movimento o una politica che viene dal basso, dalla gente. Questo concetto, applicato alla realtà del negazionismo climatico, fa sì che i gruppi "Astroturf" figurino come gruppi ambientalisti ma, di fatto, essi vengono costituiti con il preciso obiettivo di salvaguardare quegli interessi economici che combattono la protezione ambientale. Un altro componente chiave della "macchina del negazionismo" è costituito dalle "think tank" di orientamento conservativo (CTT). Le CTT dipendono in gran parte dai canali media che fungono da diffusori di informazione, e comprendono sia la televisione che Internet. I fratelli Koch, che sembra abbiano addirittura superato la ExxonMobil in quanto a finanziamenti delle campagne e dei gruppi negazionisti, stabilirono il Cato Institute, che appartiene alla categoria delle CTT. Tra le "think tank" vi è anche la Global Climate Coalition (GCC), appoggiata dagli interessi petrolieri di ExxonMobil, Texaco, BP e Shell e dai loro finanziamenti. La GCC fu creata in reazione alla creazione dell'IPCC, il principale organismo internazionale per lo studio scientifico del cambiamento climatico, ed ebbe il suo periodo "d'oro" durante le negoziazioni di Kyoto, quando il budget ammontava a 1,68 milioni di dollari. Numerose CTT, tra cui il Cato Institute e la Heritage Foundation, furono anche finanziate dall'industria di tabacco, in particolare dalla Philip Morris e dalla British American Tobacco. L'industria negazionista è infatti spesso associata alle strategie utilizzate dalle compagnie di tabacco per "fabbricare incertezza" da utilizzare a proprio vantaggio. Nel 2013 gli studiosi Dunlap e Jacques effettuarono uno studio che esaminava i collegamenti tra le CTT e 108 libri negazionisti pubblicati nel 2010.

I risultati dello studio dimostrarono che tra questi libri, il 92% sono collegati con le CTT, o per pubblicazione o per la presenza di un rapporto tra l'autore o editore del libro e una (o più) CTT.

Altri componenti della "macchina negazionista" comprendono, i media, in parte già menzionati, che fungono da "eco" alle campagne e alle attività negazioniste, e i politici contrari all'azione ambientale. Il negazionismo fu una delle tendenze principali dell'amministrazione Bush, attraverso la quale i negazionisti potevano agire "dall'interno", tuttavia, si scatenarono anche in reazione all'elezione del democratico Obama nel 2008 che favoriva politiche ambientaliste.

La complessa rete di attori negazionisti è supportata da un altrettanto complesso sistema di finanziamento che ruota intorno ad importanti compagnie petrolifere ed a fondazioni private i cui profitti derivano da prodotti che causano il riscaldamento globale (le industrie Koch). Il caso più esemplare è quello della ExxonMobil, sotto indagine dalla fine del 2015, che ha speso più di 31 milioni di dollari per promuovere l'industria negazionista dal 1998. Nel 2008, dopo anni di pubblicità negativa per le sue politiche di finanziamento, la ExxonMobil annunciò di interrompere il finanziamento di nove gruppi negazionisti, e così fece la BP nel 2015. Tuttavia, le apparenze possono ingannare e le compagnie hanno continuato ad investire sotto traccia per promuovere campagne di prevenzione all'attuazione di politiche ambientali. Le sovvenzioni avvengono, infatti, attraverso procedure non trasparenti, spesso anonime e non riconducibili. Greenpeace ha rintracciato e pubblicato sul suo sito "Exxon secrets" una lista di 124 enti che hanno ricevuto, nel tempo, i finanziamenti della Exxon. Il sociologo R. Brulle fu il primo a condurre uno studio per svelare la vasta rete di finanziamenti occulti. Brulle sostiene che per capire qual'è la vera forza motrice dell'industria negazionista bisogna "guardare dietro le quinte". In totale, dal 2003 al 2010, 140 fondazioni hanno incanalato 558 milioni di dollari verso quasi 100 organizzazioni negazioniste. Il flusso di denaro più consistente proviene da due organizzazioni sotto copertura, la Donors Trust e il suo gruppo affiliato Donors Capital Fund, che sono state rinominate come il "Bancomat del denaro nero" ("Dark Money ATM") del movimento conservativo.

Donors Trust e il suo affiliato vennero fondati nel 1999 come appendice delle industrie Koch, di proprietà dei magnati miliardari del petrolio Charles e David Koch. Secondo Greenpeace, l'ammontare del finanziamento da parte dei fratelli Koch dal 1997 raggiunge i 79 milioni di dollari.

Inoltre, può risultare interessante osservare che dal 1990 l'industria di petrolio e di gas ha incanalato il 75% dei finanziamenti verso gruppi repubblicani, e solo il 25% verso i democratici.

Il successo delle campagne negazioniste non dipende solo dai generosi finanziamenti, ma anche dalle efficaci strategie attuate per supportare le tesi negazioniste, denigrare la scienza climatica e minare la credibilità degli scienziati. Tra le strategie vi sono campagne di "disinformazione" che strumentalizzano e manipolano le incertezze dei climatologi a proprio favore, ma anche la "fabbricazione" delle stesse incertezze, che spesso risultano false ma vengono create con l'obiettivo di indebolire la scienza del consenso. Più nello specifico una strategia negazionista molto comune è il "cherry-picking", ovvero la selezione di dati, fatti, eventi o argomentazioni, che, presi isolati, risultano sfidare il consenso scientifico sull'esistenza del cambiamento climatico. Inoltre, spesso, le aziende che combattono per evitare le politiche ambientali, evidenziano e pubblicizzano gli impatti socio-economici che queste potrebbero implicare: impatti a cascata come la disoccupazione, aspetto, che più di altri, cattura l'attenzione dell'opinione pubblica e degli elettori. Le argomentazioni sostenute a supporto delle posizioni negazioniste comprendono soprattutto negare la veridicità dei rischi ambientali e quindi negare l'esistenza del cambiamento climatico "tout-court", ma anche, evitare che il cambiamento climatico venga percepito come priorità rispetto ad altre problematiche (ad esempio la povertà o l'HIV).

Il negazionismo del cambiamento climatico, pur nascendo ed essendo più forte negli Stati Uniti, si è diffuso anche a livello internazionale , soprattutto nei paesi con i governi più conservativi che si relazionano con network di CTT sviluppati. Tra questi paesi vi sono l'Australia, terreno fertile per lo sviluppo di campagne negazioniste grazie alla forte presenza di industrie impegnate nell'estrazione del carbone, e il Canada, dove è presente il Fraser Institute, finanziato dai fratelli Koch e collegato ad altre industrie di carboni fossili americane. Da ciò si può dunque concludere che le campagne negazioniste negli Stati Uniti non sono stati determinanti solo a livello nazionale per bloccare la legislazione interna, ma sono state anche un impedimento per il "policy-making" internazionale. Non è ancora chiaro come attribuire le responsabilità del cambiamento climatico tra i vari paesi che producono emissioni di carbonio, ma alla fine poco importa. Il cambiamento climatico infatti è un problema collettivo, le cui ripercussioni non danneggiano solo chi emette carbonio, ma anche e soprattutto chi non ne è responsabile: gli animali, la natura e le generazioni future.

La questione assume, quindi, una dimensione inter-generazionale. Inoltre, purtroppo, sembra che tutti vogliano beneficiare delle proprie emissioni, ma allo stesso tempo desiderano che gli "altri" riducano le proprie. In questo modo è difficile fare il primo passo, e molti paesi sono bloccati da un atteggiamento del tipo "prima tu, poi io".

Hoggan scrive "il negazionismo del cambiamento climatico rivela l'incrocio che dobbiamo affrontare come società: lasciare che il negazionismo e la confusione prendano il sopravvento e rimanere vulnerabili al cambiamento climatico, oppure accettare la realtà dei fatti, prenderne coscienza e intraprendere un cammino realmente sostenibile per le generazioni future?"
La risposta a questa scelta sarà la sfida con la quale dovremo confrontarci.