Kirk, Julie Yung May 2017

FRAMING CLIMATE CHANGE

The climate scepticist framing of climate change by the National Museum of Natural History, Washington, DC

LUND UNIVERSITY

M.Sc. in Social Science, Media and Communications Studies

Supervisor: Tina Askanius

"*Museums must not only inform citizens, but also equip them with the right knowledges and epistemologies to participate in actions and debates around climate change" (Salazar, 2011)*

ABSTRACT

This research touches upon the influence of the museum as a media and the scepticist political framing of climate change in a U.S. context. By use of a two-step methodological approach, the thesis attempts to create a framework by which to understand the inner workings of the scepticist framing from a qualitative perspective. The thesis approaches the case from the onset that the case is the result as well as an expression of the environment for discussing climate change in a U.S. context. The research therefore aims to analyse the retrieved frames on climate change in order to reveal the imprint of power of one such actors in the U.S. debates on climate change as well as the power struggles between opposing social settings with each their perceived material reality in which the climate exists.

The retrieved material on which the analysis at the heart of the case study is based consists of: an excerpt taken from an interview, an article from a Koch Industries newsletter, and printed school material in the shape of an *Educator Guide* found on the official website of the Smithsonian National Museum of Natural History. The selection of the material is based on mode of publication in public media as well as their relationship with each other. The selection further allows for a brief look into how scepticist framing on climate change is realised and promoted through alternative means and media.

Having established both the mechanisms at play in the scepticist framing on climate change, and the relation between the retrieved material including this framing to the Koch Brothers, the thesis will aim to position these findings in a more theoretical discussion by virtue of relevant theory on power structure, power struggles, possibilities for political engagement, the risk society, media power, alternative media. Hopefully, the thesis will be able to make clear the relevance of this link between discussing political framing in terms of the mere results in the analysis and the broader discussion on how media as well as framing are tools both for facilitating and hindering political engagement in the public.

Lastly, the thesis will conclude by attempting to make clear the importance and relevance of media and communications studies in the field of climate change, especially seeing how the link between the social sciences and the natural sciences is necessary to get closer to combating climate change.

Keywords: political framing, climate change, media power, media, climate denial, climate scepticism, outlier voices, U.S. politics, climate wars, climate policy, Koch Brothers, Hall of Human Origins, the National Museum of Natural History, Washington, DC.

Table of Contents

1.0 Introduction

The debate on climate change has divided politicians across the globe and especially in the U.S. Climate change was top priority during the Obama-administration and now seemingly prompted the former President of the United Nations General Assembly to return to Denmark and continue his work as a climate activist (Madsen, 2016). On the other side of the table, sceptics among the political elites in the U.S. have downplayed the effects of human activity to delay action on climate change (Nisbet 2010, in D'angelo et al. p. 53). Some of the sceptics have used Congress to block political decisions on climate action and spent millions of dollars on billboard campaigns equating "belief" in climate change with terrorists and mass murderers. In spite of scientific consensus that "climate change is occurring" and that "human activity [is] the primary driver," (Nasa.com 2016), climate change scepticism continues to exist, and it is as real as the occurrence of climate change itself.

On March 17, 2010, a new exhibition hall offering among other a view into "the drama of climate change, survival and extinction that have characterized humans' ancient past" opened at the Smithsonian National Museum of Natural History in Washington, DC, in the United States. According to their homepage, the Natural History Museum has approximately 7 million visitors every year, making it one of the most visited Smithsonian museums along with the National Air and Space Museum in Washington, DC. Admission is free at the museum, and at the Hall of Human Origins, visitors are offered "an exciting educational experience" (Smithsonian Online Newsdesk, 2016) exploring "environmental conditions" that "may have stimulated important developments in human origins." (Climate Effects on Human Evolution, Smithsonian National Museum of Natural History, 2016) The position taken on the issue of climate change at the National Museum of Natural History in Washington, DC portrays climate change as a natural occurrence in the environment and depicts how humans have developed traits in response to "extreme weather conditions" and that species, which did not survive, did not so because they were unable to accommodate and evolve in ways that would ensure their survival. The example shows how climate scepticist framing is realised and what it looks like.

To this should be added that the building of the hall was founded by a $15 million donation from one of the museum's board members of 23 years, David H. Koch. His role will also be briefly examined to line up a broader context to better understand this particular example of political framing as part of the broader political environment for debating climate change in the US.

1.2 Research questions

In this thesis, I will examine the framing and the mediation of climate scepticism as this is exemplified in the exhibition at the Natural History Museum in Washington, DC, because this is a textbook example of one of many efforts undertaken to undermine climate science consensus. In this regard, the political framing of climate change as posed and exhibited in the Hall of Human Origins should be viewed also as an example of the politicised environment for talking and dealing with climate change in the U.S. This empirical case further allows me to examine how interests opposing action on climate change have used the museum as a tool in the attempt to mitigate people's responses to climate change to change their opinion. Lastly, it exemplifies the use of the museum as one type of media to deliver a particular political message. In turn, it raises a question of the level of integrity the museum holds and which is now put at stake through its partaking and role as this political tool. The aim of this thesis is first and foremost to examine the political framing of climate change at the exhibition in the context of the National Museum of Natural History. In the course of this thesis, I will answer the following questions:

1. How is climate change framed in the printed school material from the exhibition *Human Origins* by the *National Museum of Natural History* located in Washington, DC?
2. What does the scepticist framing of climate change tell us about the political environment for discursive practises on climate change in the U.S. as a political issue, and how may we understand this framing of climate change as an expression of the political environment surrounding climate change in the U.S.?
3. What implications for political engagement around issues of climate change does climate scepticist framing entail?

To answer these questions, I will analyse the case of the Koch Brothers as an actor in the U.S. political debate on climate change in the so-called 'climate wars' and the underlying reasons for investing in this exhibition at the NMNH. This account will further show a broader context, in which the exhibition at the NMNH is a solidification of and is interlinked with other initiatives to promote a certain type of discourse on climate change and the urgency to mitigate political efforts in its wake.

To delve deeper into how the Koch Brothers' climate scepticism is realised through discursive constructions, I will examine political framing in different media sources and promotional material (e.g. a newspaper, a newsletter, and school material). I will examine these framings on climate change both in terms of what understanding of climate change this depiction offers and what implications and understood solutions climate change poses through this frame. This analysis will further serve to demonstrate how frames work in practice. This will take the political framing out of a purely theoretical aspect and link it up with people's practices and ability to navigate in available or promoted notions how the world works. I will further examine the NMNH framing of climate change as an example of the climate scepticism in the polarised debates on the subject within politics. Additionally, the museum will further be subject to an examination as a form of media and seen also as a demonstration of soft power following Henning's (2006) perspective on the performative act of the museum.

1.3 Reader's guide to the thesis

Following the introduction, the thesis will thus fall in three major parts with the overall aim of answering the research questions.

In the first part, I wish to locate the basis of climate change in the natural sciences by also acknowledging the needs for its existence in the social world. This is quickly followed up by a two-part chapter consisting of the *Literature Review* and the *Theoretical Outline*. In the *Literature Review*, the aim is first and foremost to paint a broad overview of different relevant positions of the scientific world and give an account of the baseline in taking on the case study on political framing of climate change. Furthermore, the aim of the *Literature Review* is to locate the relevance as well as the subject matter of the thesis in the existing material on climate change in the U.S. media and political debates more broadly as well as the scepticist political framing of climate change. Where possible, however, the positions and literature made known in the *Literature Review* will be revisited and discussed throughout the thesis for constant revision and synthesization. Where the *Literature Review* leaves off by outlining the broader trends of climate change in media and communication, the *Theoretical Outline* picks up by crafting a foundation to analyse in depth the circumstances as well as the inner workings of the case study on climate change framing. Focus also returns to the actual case of the political framing of climate change at the National Museum of Natural History in

Washington, DC. As earlier, additional background information on relevant actors has been included to give a brief account of the motives for wanting to produce a particular understanding of climate change realised through political framing. Besides aiming to convey underlying motives, I wish to forebear an aspect of power structure found in political framing for the later analysis. Following this, the *Theoretical Outline* will outline the relevant theory on the existence of climate change in the social world, the nature of the human understanding of climate change, where the notion of mediatisation as well as the notion of so-called media effects play important roles, and not least how the museum fits in as a medium of climate change in this perspective. Lastly, the *Theoretical Outline* encompasses framing theory from an operative approach also pre-empting the scepticist framing of climate change in the later analysis. Overall, besides aiming to create a framework by which to analyse scepticist framing of climate change, the intention is furthermore to identify different theoretical positions within constructivist tradition, political theory and media and communication studies complimenting each other to foreground the current state of affairs on the environment for discussing and politically engage in climate change in a U.S.-context.

Following the *Theoretical Outline*, the second part begins the analysis of the political framing of climate change from the National Museum of Natural History by presenting the relevant methods and methodology applied in the undertaking of the case study. The aim is to set up a workable and operative toolkit for breaking down the specifics of the frames in question for the later analysis in a manner that is both relevant as well as qualifying of the quality of the findings. Applied methods as well as methodology will be discussed in terms of relevance, strength and weaknesses to the findings. This is to demonstrate awareness of how different approaches may yield different answers and that the approach chosen for this thesis relies on careful consideration to the thesis questions.

In the following section, the analysis of the case will take place. By virtue of the *Method and Methodology* section, the aim is to analyse the case in accordance with the applied methods and discuss the findings accordingly to the *Theoretical Outline*. The findings will prove relevant in discussing climate change scepticism and more specifically, the nature of the political environment for discussing climate change in the U.S. Lastly, the findings will be discussed in terms of research design and summarised with some concluding remarks, before the final part of the thesis will commence.

In the third and final major part of the thesis, the aim is to relate the findings of the case on political framing of climate change to a broader theoretical discussion on the role of media and communication in political engagement. I will discuss the opportunities and

limitations political framing poses. How framing is a communicative means to realise ideas and concepts, however, on the expense of other information. I argue, that linked up to political engagement as a whole, political framing in this sense show both opportunities to accommodate political engagement in how concepts as climate change are located as existing in the world as seen with the placing of the exhibition at a public institution, but on the other hand, how the framing of that concept here can also limit political participation through distinct instruction, exactly because the idea of climate change is realised at the expense of information asking for political action on the subject of climate change.

Thus opening up for a broader discussion on political engagement, I will locate the NMNH exhibition's framing of climate change in the broader climate change debates in the U.S. context. Here, my aim is to conclude what my findings seem to suggest or in which direction they point. Lastly, I will look at the study's contribution to the field of political framing within political communication, here seen as the view on museums used as media leeway to deliver political messages. The discussion aims to show what implications political framing has on democracy - both in terms of hindrances and limitations, but also on what available spaces are created through political framing to promote political participation in public discourse.

Finally, the conclusion will sum up the most prominent findings and results of the thesis. The aim is to critically reflect on the relevance of the findings in relation to the thesis questions, the broader spectre of climate change scepticism in the U.S. made apparent in the *Literature Review*, as well as taking the aspect of relevance of political framing as a media and communication discipline into careful consideration. Lastly, the aim of the *Conclusion* is first and foremost to pull together and discuss the findings, before offering space for future perspectives on scepticist political framing of climate change in media and communication studies.

As mentioned earlier, the thesis will be initiated by briefly drawing up climate change from the context of the natural sciences to foreground the complex nature of what we refer to a climate change. (Recognising also how "portrayal" of climate change in this instance includes value-laden terms to depict the science behind it). By including the natural sciences perspective, the aim is to put the case study into the context which brought it about it the first place, although somewhere further down the line.

1.3.1 Climate change by the numbers: a brief review

Climate change is a complex issue. It is difficult to know what actions are needed because it is difficult to understand the nature of what we are dealing with, how what we call climate has changed and how it will change the way we live. For us to understand climate change, we need to be able to relate to it through its relevance to us by making sense of it as a social issue belonging in the social world. On its own it is but a phenomenon and is acknowledged only as a social issue as long as we treat it as such. However, to understand the basics of what climate change is and where it 'comes' from, we have to look to the world of natural sciences. Thus, the following is a brief account of climate change as it appears to natural scientists.

Throughout history, fluctuations and changes in the climate have taken place and have been linked to variations in the Earth's orbit, which have caused a change in the amount of solar energy received from the sun. (Climate.nasa.gov) As such, changes in the climate and fluctuations themselves are not new and make up for a relative standard over time caused by natural events and circumstances. However, it is the rapidness at present by which the climate is changing that causes concern within climate science spheres. Data collected by scientists show that "increased levels of greenhouse gasses must cause the Earth to warm in response." (Climate.nasa.gov)

This year (2016), CO2 levels rose globally above what is known as the 400 ppm (parts per million) mark and went beyond. (It should be noted that the 400 ppm mark has been measured locally before, however, this is the first time that the CO2 levels have been above 400 ppm globally for a month. (Climate.nasa.gov) Ppm is the measurement by which to quantify the amount of carbon dioxide in the atmosphere. Carbon dioxide is an important "heat-trapping" gas causing the greenhouse effect (along with the atmosphere) and heating the planet in turn (Climate.nasa.gov). By itself, the greenhouse effect is vital to supporting life on Earth as we know it. However, the key word here is *balance*. The Paris Agreement was built around actions taken to keep the global level of temperature increase below 2 degrees Celsius. However, the United Nations International Panel on Climate Change (IPCC) announced in 2014 that the global increase in temperature is more likely to rise between 3.7 and 4.8 degrees Celsius by 2100 (Climate Change 2014 Synthesis Report - Summary for policymakers in Andersen, 2016). In any case, with the increase in temperatures, we move towards what is known as the *tipping points*. *Tipping points* "occur when the climate system is forced to cross some threshold, triggering a translation to a new state at a rate determined

by the climate system itself and faster than the cause" (Alley, R.B., et al., 2003). This is to say that at a given yet still undetermined point, the increase in temperatures may set in motion a series of cumulative greenhouse effects with consequences on life on Earth beyond the greenhouse effects caused by just CO2 emissions. Given the facts and the overall picture of climate change above, it seems that the case for climate change and what should be demanded of people and of politics and policy makers in response to this both are pretty clear.

Yet although we are what responsible for what causes climate change and the only ones who can mitigate and prevent further rise in temperatures, implications arise when "science ... is the politics of climate change" (Lahsen in Pettenger 2007: 190), and when that science seems to demand political action to respond adequately to this, further requiring less of the same politics which caused rise in emissions and thus climate change in the first place. Surpassing the 400 ppm mark and seeing how CO2 emissions have increased by 61 percent from 1990 and up until 2013 (Reuters.com in Gregersen, 2016), show that even with scientific breakthroughs to remind us all of an impending catastrophe, "science evidence is not enough" (Larkin, 2010), as climate scientist Hulme noted at the British Science Festival in Birmingham back in 2010, and further that "science is still a benchmark for environmental policy. But it's not scientific breakthroughs but social science and humanities that will change people's behaviour" (Larkin in Sørensen et al., 2014). As such, climate change advocates, scholars and policymakers have further looked to the realm of communication and media to address the psychological barriers hindering concrete action.

Given the scope of climate change research within the realm of social science, the body of media and communication research on climate change is rich in nature given the vast amount of accessible research papers, compared to the period of time in which the research has been produced up until now. Examining climate change in a social science, media and communication perspective, the research covers a variety of perspectives, all of which hold key analyses relevant to the explanation for why CO2 levels still managed to rise globally this year despite efforts and intentions of cutting back emissions to prevent further global warming. The paradox of the latter also addresses the interplay between the individual, globalisation, the risk society and the level of mediation and communication of the perceived material reality permeating it all. The broad range of themes and media and communication studies covered within the field of climate change underscores this.

Exploring the different aspects of climate change in the media as part of the social world is useful when considering the squaring up in the debates and when exploring the different issues at stake when exploring the body of literature.

Following this, examining the role of media and communication as a space to mobilise power and resistance is further useful to map out the notion of climate change, (as defined and understood from the context of social settings), which further helps to provide the framework by which it is assessed in the public. Lastly, examining of the use of frames as a tool to shape public opinion will help to uncover the dominant power struggles between opposing social settings with each their perceived material reality in which the climate exists.

1.3.2 Climate change scepticism: a brief note on the term

As the *Literature Review* will show, the issue of climate change seems to have created a distinct division in politics as well as in the public, although the truth of the matter is far from as clear-cut when delving deeper into the motivations for aligning with these opposing views on climate change.

As such, so-called outlier views on climate change come in many forms and shapes and may be referred to as "alarmism," "scepticism," "contrarianism," or "denialism" (Boykoff, 2013: 797). For the purpose of this literature review, "scepticism" has been the preferred choice to reflect more broadly on the disposition to derail consensus on the subject of climate change showed in the research. However, references to any similar concepts may be included depending on the research in review. Additional distinctions of "trend sceptics," attribution sceptics," "impact scepticism," and "mitigation scepticism" are identified as present in conservative media (Rahmstorf 2004 referred to in Brüggemann and Engesser, 2014: 404). The notion of *mitigation sceptics* is of particular interest in this thesis as the term covers scepticism rejecting immediate action to reduce CO2 emissions (Brüggemann and Engesser, 2014: 404).

2.0 Literature review and theoretical outline

The following chapter of the thesis is structured to accommodate the literature on the subject of climate change in the media as well as the theory making up the foundation for the later frame analysis. First, the literature review will sketch out the broader trends within earlier research and create an overview. It should be noted here that this part will involve the political aspect of climate change, as this is relevant to understanding the subsequent media outlet on climate change. Furthermore, besides pointing to overall trends of how climate change has been dealt with in previous studies, the relationship between media and the public is further relevant for understanding the later theoretical outline. The final conclusion for this part will analytically sum up the most important spectre and state of affairs in which the research locates itself. This part will further assume all of the references from this draw-up, which is the reason why these have been left out in the conclusion. Second, the theoretical outline will delve deeper into the different theories on which the research builds and according to which the research will be analysed.

2.1 Climate change in politics and in the media

The amount of climate change-related subjects in the media has grown over the years. Overall trends within research point to different approaches of debating and accommodating public understanding of the subject. Not least on the subject of climate scepticism or so-called "climate denial", which has also seen a rise of interest from research dating back to the late eighties. In particular, research on climate change in public media has noted how the emergence of climate scepticism originally entered the stage as a by-product stemming from conflicts over environmentally concerned policy-making at the political level. The reason for this seems to be mostly because of how political controversies over climate change have caused a backlash and scepticism towards climate science as a whole and not least the political interpretation thereof (Painter and Ashe, 2012).

On this note, Pielke, Jr. (2010) argues that one reason for climate policy going off the tracks has been partly because of "a fundamental disagreement about what climate change itself is" (143). The question of defining climate change in this instance extends beyond the "sceptics versus the convinced," it is something starting already with the scientific and policy institutions responsible for climate change, subsequently fostering an environment for

debates on climate change guided by "political motivation to produce or spin science that shows or dispels "dangerous interference" (Pielke, Jr, 2010: 143).

Although originally "founded" within the strictly political sphere, the scope of climate change scepticism in media research has today had its focus expanded to include public perception in terms of the effects of political discourse as mirroring the politicised climate change debate in the U.S. Besides research showing that the U.S. climate change debate are more polarised than in other countries, political adherence to so-called anthropogenic (human-made) climate change versus climate scepticism or denial has been aligned with liberal versus conservative politics. This alignment of climate change stances with liberal and conservative politics has been backed by research showing how conservatives and conservative partisans have used right-wing think tanks and prominent scientists to oppose and discredit scientific evidence on climate change in the matters of politics as well as in the media. By applying the same strategies and methods on climate science as found in the tobacco industry, the aim has been to "keep the controversy alive" (Oreskes and Conway, 2010). In the political world of climate change, the move to oppose and discredit climate science has been expanded to the broader term of the 'conservative countermove' (McCright and Dunlap, 2000 referred to in Painter and Ashe, 2012). From this stance, the critique is aimed at the political environment, since neither U.S. politics nor climate science takes on a debate without including the other, as Lahsen notes, "science ... is the politics of climate change" (Lahsen in Pettenger 2007: 190).

Exactly how much influence the move to oppose climate science has had on politics as well as on mass media has further been explored widely and taking on different approaches in the research retrieved. Both Oreskes and Conway (2010) and Cass (2007) have researched on climate policy-making from its first entrance into the political sphere back in the 1980s. Their research demonstrate government interest in climate change from both the Reagan administration (1981-1989) and the Bush administration (1989-1992), but only up to a point where potential policy responses could be postponed based on the merits that climate change science was uncertain. Although climate science uncertainty was the argument put forward to prevent "premature" action, the dismissal of policy responses rested de facto on an economic one (Cass, 2007: 28-29).

Weighing in on climate change politics in the USA during the second presidency period of George W. Bush from 2001-2008, Fletcher (2009) calls this period for climate change policy in the USA "a case of 'frame divergence'" (ibid: 804), which also saw the emergence of an official statement from the Bush administration and the White House, in

which climate change science was framed with scientific scepticism, (which at any rate will always be the condition for doing science (Hulme 2009: 106)) and became the armour by which to downgrade any immediate political action (ibid: 805).

Adding to existing research, the economic claim in climate policy has further been widely explored by scholars and has usually been narrowed down to questions relating to claims of climate change's negative impact on the national economy or relating to climate change linked up to what Castells (2013: 305) calls "the culture of productivism and consumerism." At any rate, climate change from these perspectives addresses how we live and how the level of policy-making politicians are willing or not willing to take to accommodate this lifestyle has a negative impact on the planet.

Developing on this idea, research into the economic argument versus climate change policy suggests that the economic incentive takes the winning argument. (Roger Pielke, Jr., 2010: 46) In large, this is because we believe in a system of logic where profit-making equals social stability, where GDP growth is a measure for progress "resting on the premise of using nature as a resource rather than as our living environment" (Castells 2013: 3015). Following this logic, researchers find that combating climate change in the political and subsequently, the public opinion, becomes a trade-off with economic growth, and these two issues in the debate are therefore commonly seen as incompatible (Roger Pielke, Jr., 2010: 46). Several studies have therefore had the objective to balance the economic argument and climate change. However, where Castells and Pielke, Jr. point to the level of the consumerist society, other research again has made an effort to show how climate change has been framed in ways to "sell" climate change to politicians, by insisting that economic growth and climate change policy are not mutually exclusive (Fletcher, 2009). In addition to this, researchers have further been occupied with making apparent the opportunity of linking climate change with economy. Despite "the tacit dichotomy that supports it," (Boykoff, 2012: 254) the aim has been to promote debates dealing more directly with climate change based on the premise that economics is seen as the most important concern according to public polls in the U.S. (Boykoff, 2012). So, although climate change for a large part is covered in studies relating it to a broader consumerist society, a broad segment of research deals with the responsibility (or lack of the same) of politicians and the political level of responding to climate change.

Whereas some scholars identify opportunity for climate change framing by linking it to technological progress, other scholars express concern over adherence to climate change seen as yet another business opportunity, exactly because of the implicit relation to the economic incentive therein. As an example, Dahlgren (2009) remains sceptical by

foregrounding the presence of market logic in normative politics (ibid: 22). This concern focuses on how climate change linked to economic models becomes part of the very problem of economic thinking which helped to create the problem in the first place. Addressing this logic even more critically, Lewis and Boyce (2011) consider this as limiting to the development of other solutions than those promising profit-maximizing. Although the above sketches out the more politically oriented development of the current environment for debating climate change, I have deemed it a relevant prerequisite for understanding the state of affairs to which the media take part as an integrated actor connecting politics and the public through processes of complex interaction.

Next to understanding what constitutes the discursive constructions of climate change in the media by looking at what precedes them, the active role of media has further been under scrutiny in the body of research, as shown in the following section.

With the division of U.S. politics on climate change, research shows that "where governments take the issue seriously, the media are inclined to follow suit" (Lewis and Boyce 2009: 10). This is to say that the negative impact on media stems from debates within U.S. governmental politics. An example of this relationship has since been reported in a case by Oreskes and Conway (2010), who found a report from 1989 questioning climate change science to be repeated by mass media after first having been through the White House (ibid: 7). Underlining Dahlgren's (2009) views, the role of media in this sense is twofold: It enhances mutual dependency between political actors and media (ibid: 35, 51) and it opens up for a discussion on "the power *over* the media, for example, how politicians, private interests, and audiences influence how the media operate and the kinds of representations of reality they provide" (Dahlgren, 2009: 50). Media in this sense does not merely constitute a messenger but plays an active role in terms of the reproduction of conflicting views from governmental politics on climate change. At the same time, it can be controlled and used to promote particular interests and purposes. In this context, it is further useful to consider the role of the media as a messenger but also as an active player in the formation of knowledge and everyday realities.

The link between politics on climate related issues and media influence and vice versa have further been explored in a variety of studies and through different approaches. One approach has seen researchers quantitatively map out U.S. media coverage in newspaper articles and television segments of climate change during the Cancún Climate Change Conference in 2010 (Boykoff, 2012), mass media coverage in U.S. print and television media

(Boykoff and Boykoff, 2007), and as an observation study of influential North American newspapers during 1993-2013 (Ford and King, 2015). Developing a content analysis from their collected data, Boykoff and Boykoff (2007) show how so-called 'first-tier' or 'prestige-press' newspapers such as *The New York Times*, the *Washington Post* and the *Wall Street Journal*, have the ability to influence how news are covered in other and smaller 'second-tier' newspapers (Boykoff and Boykoff 2007: 194). In a later studies within the journalistic field, Boykoff's (2013) research points to a greater focus and acknowledgement of climate scepticism and outlier voices influence of media, and Brüggemann and Engesser (2014) find that journalists, although working independently, share "common ideas and discourses" through their mutual relations to the same spheres of information flows. Another study on climate change in U.S. media discourse showed how the 'translation of scientific concerns' oversimplified the complexity of the science resulting in an opposition between scientific and political discourses on climate change (Sonnett 2010).

Among other findings, the most notable ones show how established political actors dominate the coverage and that climate scepticism in the news becomes stimulated as a result of journalistic sensitivity to journalist traditions of telling "both" sides of the story (Boykoff, 2012), how journalism further negatively impacts the coverage of anthropogenic climate change, and how real life events such as the Hurricane Sandy in 2012 and the flooding in Canada in 2013 share impact on the context in which climate change adaptation is discussed. Of particular interest is that both of these studies devote attention to the impact of real-world events as on the one hand, "providing dramatic and observable demonstrations of vulnerability to the kinds of risks which climate change is projected" (Ford and King, 2015: 143). On the other hand, as events around which "journalists place frames, (...) thereby zeroing our attention on particular issues, ideas, and individuals while eliding that which lies outside the frame" (Boykoff, 2012: 252).

In opposition to the so-called 'balance as bias' principle discussed in Boykoff (2012), Schmid-Petri et al. (2015) critically examines and contest the "journalistic balance" by showing that climate sceptics today have found a way to advance their goals in the media that is "so subtle that it is covered by all media" (Schmid-Petri, 2015: 12). To them, the threat of climate scepticism may stem from an initial journalistic norm of covering both sides to the story. However, they remain more critical to strictly placing "blame" on the role of journalists and opt for an approach examining climate scepticism by looking at the structures in which the debates take place (Schmid-Petri, 2015: 12).

Of a more notable finding for this thesis, Brüggemann and Engesser's study revealed how academic titles are used by sceptics to "open doors" to the publishing of climate sceptic articles in "leading news outlets" (ibid: 419). The level of authority or the recognised specialist behind whatever message put forward plays a role in assessing the validity of the contents of that message. So when Boykoff (2013: 797) contends how levels of trust are "fickle" in the public, authority in this example is used to generate scepticism points on the one hand to a legitimacy of exactly that scepticism but also to the politics of climate change and how climate change is never discussed on the basis of climate change itself but on the motives for pushing against or pushing for political agendas backing policymaking to address climate change. However, the emergence of new/social media has changed the landscape of authority and challenge claims-makers (Gieryn 1999, referred to in Boykoff, 2013: 811), which in this instance is seen as a threat exactly because climate sceptics have been able to "amplify their claims on issues from climate science to governance" (Boykoff 2013: 811), and find the necessary "room" in which to cast doubt (Lockwood, 2010: 145).

As civic journalists and regular social media users (therefore distributors) have the potential to share and enhance the *truth*, they paradoxically are very likely to encourage the twofold view of things and amplify the messages conveyed by the traditional media (Reese, et.al. as cited by Dahlgren, 2009, p.179; Dahlgren, 2013) rather than expressing alternative perspectives. It also reminds researchers to "keep in mind that while on the Internet we can find a broad array of democratic efforts to effect social and political change, we also see anti-democratic, racist, and neo fascist politics as well" (Dahlgren, 2009, p.162).

Therefore, it is useful to consider the level of validity of authority and alternative rooms or spaces for amplifying claims on science in the evaluation of interaction between citizens and claims-making on climate science.

Recent studies on climate change in the media focus on the relationship between the media and the audience, and especially the impact on the formation of public opinion and attitudes. Boykoff (2013), Nisbet and Myers (2007 in Castells, 2013) have been occupied with the correlation between the agenda-setting effect of media and public opinion (as also mentioned in the theoretical outline) on environmental issues. In this instance, rather than telling people what to think, the media has the ability to advance specific agendas on climate change through 'select narratives on scientific issues' to make it "understandable by the public" (Boykoff, 2013; Castells, 2013). This also implies what several other scholars have been occupied with in their research. Namely that scientific issues such as 'climate change' are not

easily comprehended by the public, and that it is an area where "public understanding is limited," and based on 'repeated associations' (Lewis and Boyce, 2001: 13). Additionally, it recognises the process of meaning making itself to be more complex than what can be reduced to a media-centric stance (Olausson 2011: 282; Nisbet, 2015: 286; Dahlgren 2009: 3). The level of personal attitudes and the limited common stock of public knowledge on climate change are further useful to keep in mind when evaluating the various means of debating and communicating climate change and further what role the media plays in mediating context and 'select narratives.'

Various scholars have been interested in different psychological and cultural aspects in exploring how people think about and make meaning of the complex issue of climate change. Although my thesis is not located within the field of psychology or cultural studies, most of the research within climate change and people's perception of it relies on the backdrop of human psychology and cultural influence. To accommodate this research and acknowledging its importance to the scope of my thesis, I will briefly sketch out the most notable findings in how they are relevant when evaluating people's understanding of climate change and the formation of public opinion. Taking a stab at climate change in the face of scepticism, disagreement and inaction, Hulme (2009) and Stoknes (2015) find that scepticism as a prerequisite for even doing science has become a double-edged sword in how denial has built upon this prerequisite for inciting climate denial (Hulme 2009: 106; Stoknes, 2015: 9). However, the mode of how scepticism towards climate science appears in the media as opposed to how it appears in the scientific realm are two very different things and can be a cover-up for scepticism based on faith rather than science (Stoknes, 2015: 20).

When it comes to human nature, there are various processes to take into account, when trying to understand the perceived relationship or non-relationship between humans and climate, and why climate change remains intangible and abstract in size to the human understanding. People, knowing of climate change, do not experience the effects of it in their everyday lives, making it even more difficult to comprehend and to do something about. In this sense, climate change is a risk people disregard because they cannot see or feel it (Giddens 2009; Stoknes 2015).

Giddens (2009) presents this gap between knowing of climate change yet still failing to do something "of a concrete nature" about it as 'Gidden's Paradox,' from which it also follows that action driven by visible effect of climate change will "be too late" (Giddens, 2009: 2). Partly because, even when we do recognise climate change, various other factors such as our belief in science, lack of own knowledge, interpretation of conflicting messages

and differences in value systems, just to name a few, hinder concrete action (Hulme, 2009). Additionally, scholars here also point to the fact that the news of a changing climate has been around for awhile, meaning that the value of climate change as news has worn out, and as news, climate change is further "competing" with risks such as terrorism and pandemics (Stoknes, 2015: 44). The changes brought about by climate change, that we have heard of is not happening here but in other parts of the world (Stoknes: 29). We are still for the most part living our lives as we have hitherto, allowing also for the aspect of 'future discounting,' according to which future gains or risks have less appeal than present ones (Giddens 2009: 2-3). Old habits prevents change to 'long-term climate considerations' (ibid: 34) As addressed earlier, science in numbers and graphs alone cannot tell us what we need to know in order to do something about climate change. We need to first look at how we do something about how we understand it, and secondly, how we understand what is needed of us to respond properly to climate change. Although the scope of the thesis is within framing of climate change, it is equally important to acknowledge the level of how people react to news and the knowledge of climate change from the onset of their personal circumstances.

The context of the human understanding and the spaces available in which to promote an understanding climate change is further useful to consider when evaluating efforts on climate change communication and adopted narratives and frames in the media.

2.1.2 Summing up

Some overall points can be drawn from this mapping out of the climate for debating climate change in the U.S., and in which this thesis is inscribed as well as the theoretical outline.

The many different 'names' referring to climate change scepticism, including the additional categorisation of different types of being sceptic towards climate change, show the magnitude and complexity of what climate scepticism looks like in a U.S. perspective. The relation between politics and economic concern enhances the underlying implications for why there has been an interest in taking advantage of 'loopholes' of uncertainty made possible by the complexity of understanding climate science. Not least the differences in definition of climate change by the very institutions responsible for advancing climate policy-making has led to a politicisation of climate science (Pielke, Jr., 2010) Journalistic practices as well as media's inclination to adopt government discourse have helped to consolidate climate scepticism as a valid point in official political climate change debates. Shifting focus to climate science uncertainty over policy-making has left climate advocates to deal with

countering scepticism rather than the means necessary to combat climate change. Instead of finding their core interests to be implementing climate policies, climate scientists have seen themselves forced to go back to defending the basis of their argument, namely the evidence of climate change itself. This is also a testimony of how politicians and others wanting to act on climate change have taken for granted for too long that showing the right numbers and statistics would be enough to convince the public as well as politicians of climate change. (D'Angelo & Kuypers, 2010; Pielke, Jr., 2010) That science itself would provide the right amount of knowledge necessary for taking action to combat climate change. That science itself is self-explanatory. As such, there exists no scientific "one size fits all" when it comes to delivering the message in the necessary mode to provide the right understanding. In this context, revising the framing on climate change becomes a necessary means or tool to this end with its seeming promise of delivering political impact if done correctly.

Framing on climate change in this sense so far has seen a wake in potential for changing attitudes and aligning consensus from both U.S. conservatives and liberals. By using political framing, attempts have been made to shift focus, and therein attitudes, to seeing climate change as an economic opportunity. However, this again has sparked concern based on another type of scepticism towards economy as the bearing incentive to any solution regarding climate change. Climate change in this regard is no longer just a battle for the climate but for systemic change and democratic participation. Systemic change as the proposed economic incentive points to the deep laden value system of the U.S. and American politics on the one hand. On this level, political and economic interests hinder participation of the many by leaving out other logics than those resting mainly on the benefit of the elites and those already governing U.S. politics.

Following this, media's impact on society, insofar as it holds both opportunities as well as limitations to democratic processes and especially exercising political power, is relevant in this respect. Equally relevant is the inferred logic of media exposure to the circulation and interpretation of science as well as to the garnering of public attention and democratic approval of scientific issues in a broader perspective in which climate change is seen as a risk to society.

Considering the amount and depth of the body of research, in which climate change and in particularly climate scepticism have been undertaken attest to the interest and the complexity of doing research on climate change scepticism. Most of the research retrieved has been focused within social and online media, print media, television and news media, political debates, official political discourse, public discussion, and political polls in the U.S.

context. Less research has been occupied with climate change sceptical discourse in the context of the less official channels for debating climate change such as the museum and printed school material from museums. At the same time, research has mainly focused on the need for bridging the gap between climate science and climate change scepticism, where scepticism in this instance is seen as a result of seeming disagreements within climate science. Less research has focused on the concrete measurements taken to deliberately derail, maintain and opt for more scepticism on human-caused climate change. As research also shows, adherence to human-made climate change is more so divided and 'gapped' in the U.S. than anywhere else in the world. With the recent developments in U.S. politics after the presidential election of 2016, climate change scepticism has taken the all-important political victory. This calls for even far greater attention to the means undertaken with the intention to "keep the controversy alive" in reference to how climate change scepticism is realised and developed in the public sphere. Where research into the notion of climate change in the social science world took hold of risks to society, research into climate scepticism have shown how the aim has been to greatly reduce or even to remove the level of risk climate change, be that human-caused or due to natural fluctuations.

This thesis addresses climate change scepticism by examining concrete examples of the efforts taken to undermine climate science consensus. The flagship example is the printed school material taken from the Human Origins exhibition at the National Museum of Natural History (NMNH) in Washington, DC. Along with this example, the thesis will focus on mapping out the link to the 'founding fathers' of this political framing to oppose climate change consensus at large. The thesis will further locate the argument put forward at the NMNH in a broader strategic large-scale effort to undermine climate change policy-making by blunting the message of the anthropogenic climate change and the level of risk it poses to society. The climate sceptic argument put forward in this instance is addressed in terms of what it offers of available spaces for democratic processes of talking about climate in the public sphere.

2.2 Theoretical outline

In undertaking this research, the study is thus examined from a range of theoretical perspectives from media and communications studies and social sciences to gain a broader understanding of the focal points adopted in the process of "identifying order in the complexity of social life" (Ragin, 1994: 31). As such, the aim is to create a 'network' of

theories from different disciplines in order to provide a more in-depth understanding of different aspects and vantage points relevant to clarifying the complexity of dealing with climate change in reference to the thesis objectives. The inclusion of several disciplines at once in research is not uncommon and has previously been done for similar aims (ex. Henning, 2006).

On a practical note, theory on framing furthermore entails theory from the field of psychology. Although my thesis is not located within psychology, it is necessary to include some aspects of cognitive science from the field of psychology to achieve a better understanding of how framing operates, and to qualify the level of affect and influence of framing in the process of making meaning, and as means to shape debates on a more general note following this. The inclusion of the psychological aspect to explain the cognitive effects of framing will be brief and only play an implicit role in the later analysis.

2.2.0.1 Placing climate change in the social world

First, there is the issue of naming and identifying climate change, and not least anthropogenic climate change. The first refers to observed changes in the climate, which have implications for life on Earth as we know it. Anthropogenic climate change puts emphasis on the level of responsibility of humankind for causing these changes on the one hand (Andersen, 2016). On the other hand, it places climate change in the realm of social reality. People can talk about it as more than as observed facts and statistics about things happening outside and in other places in the world. Through these facts, people can relate climate change to fears as a result of the proposed risks it poses. Or they can dismiss these facts as well as the proposed risks. People can also acknowledge these facts, but dismiss the level of human involvement in their existence. As such, these facts have come to mean something to the social world and have been given meaning as social facts belonging to social reality through social construction (Pettenger et al., 2007). From this perspective, climate change is "real", because people "treat them as real," and our ability to act and "do" something about climate change "depends on the stories we tell," as these stories reflect how people think the world is connected. Therefore, the differences in these stories determine people's understanding of what climate change is, the level of human responsibility in those stories, and what people think they should "do" in response to climate change. As such, the social construction of climate change is political (Pettenger et al., 2007: xiii-xv).

Second, the social construction of climate change further emphasises processes of meaning-making and the construction of knowledge as central to understand climate change (Haas, 2004 in Pettenger et al., 2007: 3) and therefore also to this thesis. Stressed also in the literature review, there are multiple reasons and levels of implications for addressing the nature of why climate change is difficult to comprehend (Stoknes, 2015) and the disagreements this causes (Hulme, 2009) on several levels. These levels include: the expressed knowledge on climate change in terms of the common stock of knowledge (Lewis and Boyce (2001), the public need for intermediaries in the shape of journalists (Boykoff, 2013: 809) and the media Olausson (2011) to shape the a better understanding, and because "the perceived material reality of climate change is defined in social settings by scientists and policymakers (who may or may not be experts) (Lahsen, 2005 in Pettenger, 2007: 4).

Because climate change takes on existence in the social world due to the social construction of it, and because multiple layers in the process of making meaning entail understanding, the science behind climate change itself would seem the obvious place to direct attention for more settled knowledge based on its positivist frame as a natural science. In referring to science, I adopt Mercer's (2014) take on the term science "that is in a sense external and beyond the authority of individuals, expert credentials and authoritative institutions" (ibid: 3). In exploring why "Popper can't resolve the debate over global warming" Mercer (2014) examines the strategies used by critics of climate change to manufacture doubt and points to the nature of falsification and testing as offering a device "suited to creating confusion" (ibid: 10). In public and scientific disagreements, Popper has been used to refute and rule out an opponent's claims based on how "elements of an opponent's arguments" have not been seen as "actually testable or falsifiable" and as such, they must therefore be "unscientific." In further cases where claims have been tested and proved false, "all related claims" then "should also be rejected" (ibid: 3).

Although it enjoys a relative status as "the ideal of the scientific method," (ibid: 2) Popper's philosophy of science is also said to be "not well suited to the challenges posed by an Earth System that is characterised by high degrees of complexity, non-linearity and a lack of definable cause-consequence relationships" (Oldfield and Steffen in Mercer 2014). Science claims and scientists find their strengths in how they and their achieved results are self-reflexive in terms of the scientist's aim to aspire to validation and honesty of the field, and based on systematic method and approach. This calls for scrutiny and inclusion of relevant factors to any research, and a very critical eye of the scientists involved to make any scientific claims. As such, criticism is an integrated part of conducting science. As

scientific claims are always bound up in a level of uncertainty, Popper's falsification offers validation of scientific claims through testing, deconstruction and reconstruction (Mercer 2014). However, the sheer scale of the science of the surrounding climate of the whole of the Earth poses challenges in the level and amount of different variables relevant to covering climate science, giving only more room to uncertainties in the science relating to these challenges. The mismatch of this approach of scientific testing and climate science as the object under scrutiny has given critics as well as sceptics the opportunity to adopt strategies of casting doubt founded by the philosophy of science itself, and by using rhetorical skills to back up their own claims and dismiss claims of climate science (Mulkay and Gilbert, 1981 in Mercer, 2014). For the purpose of this thesis' aim, the use of science's own device of falsification to develop strategies to cast doubt has been employed as it links struggles of climate science in the natural science world to rhetorical skills to back climate sceptic claims in the social sciences.

2.2.1 Media and mediatisation

The need to socially construct climate change in the realm of the social world and the conflicts this involves underscore how climate change is a subject where the lack of "real precedents" or previous experience of the same makes it difficult for the public as well as politicians to properly assess (Giddens, 1999). Media is a many-sided abstraction, and for the purpose of this thesis, some points have been drawn below to exemplify relevant aspects to the role of media in this regard. These points serve mainly to sketch out a brief frame of media and its role in democracy and political engagement in a broader context.

Attention to media, however, should also be based on the nature of its presence in society and what this means to the power it has seemingly come to hold. Hjarvard (2008) and (Dahlgren, 2009) contend that media today is "ubiquitous" (Dahlgren, 2009: 3) and permeates all levels of society to an extent that the media "can no longer be treated as separate from other institutions in culture and society," meaning that media has "reached an independence forcing other institutions to conform the logic of the media" (Translated from Danish, Hjarvard, 2008: 13-14). As such, the power of media should also be regarded in how media has been integrated into society and therefore influences structures of interaction and communication, making culture and society "mediatised" (Translated from Danish, Hjarvard, 2008: 14). Following this, the notion of mediatisation refers to the process where media plays an active role in how society and politics are shaped and reshaped (Schulz, 2004).

The above illustrates the nature and one perspective of the many abstractions relevant to gain the broader understanding from a macro-level of how media influences not just interaction but also the very structures in which interaction happens. Within this perspective, Hjarvard (2008) locates the "mediatisation" of politics to which the media is seen as having a contributing role in negotiating consent and connectivity to political issues in public (ibid: 74). Although, Hjarvard's point here relates mainly to the role of journalism, the nature of media operating as a mediating space in which political debates are structures and subjects negotiated to consent is an interesting point to this thesis. Media in this sense not only plays the role as an intermediary, but as an integrated part of society, it is an open plenary for political discussions whereby "political exercises of power" are "democratically legitimised" (Hjarvard 2008: 53). Hjarvard further refers to Weingart (1998 in Hjarvard, 2008: 20) in linking science to public consent through media, noting also a move of a media-oriented scientific world, and not least the impact of media attention on circulation of scientific knowledge and interpretation of scientific issues in return. Additionally to the "political exercises of power," so too must science pass through the "obligatory passage point" (Latour, 1988 referred to in Hjarvard, 2008:20*)* to enjoy public "legitimisation." On the one hand, Hjarvard points to media's role to deliver and prioritise the scope of the political issues in debates, and on the other, he points to the formation of public opinion through media as a public playground or battlefield for being able to politically participate in society.

To this end, as Gripsrud (2010) holds, it is exactly the context the media provides, which is important for being able to participate in democracy, because political engagement:

"...depends on people's ability to see themselves as members of society and political citizens, and as such, people rely on the media to provide important and relevant knowledge of the world to constitute the necessary foundation for taking part in decisions regarding the future development of society. This puts effort on the media to prioritise relevant knowledge and material, by which people understand the world and themselves" (Translated from Danish, Gripsrud, 2010: 35-36).

To study media, it is necessary to work from an outset of acknowledging the ubiquitous nature of media in society on several levels all at once: as an institution mediatising society and culture (Hjarvard, 2008) and thus affecting not just interaction but also the structures of society in which people interact. As such, media takes part in what constitutes society and herein what constitutes democracy, as well as political engagement in society and shows certain implications in the process (Gripsrud, 2010).

Drawing on the three traditions of political communication, public sphere theory, and culturalist theory, Dahlgren (2009) assesses media in today's democracy by its constant evolving but at the same time, by "providing stability" in the coverage of politics and adherence to collective frames representations (3). At the same time, Dahlgren places the political interests of the elites at the barriers of what hinders political participation, whereby the mode of political framing on public opinion becomes a political device for planning policy issues, in which media plays a vital role in its realisation (Dahlgren 2013: 22, 35, 51).

As such, mediatisation presents a double-edged sword, whereby media can be perceived as both antidote and a disease at the same time. On the one hand, media creates the structures for a democratic space and political engagement; however, on the other, it is also the space for legitimising political ideas presented in frames, which conditions the level of understanding of these political ideas and the shape of reality. Meaning-making in this regard, relates to how the media takes part in defining the reality in which we live, and it demonstrates representations of context to events happening within this reality "in pictures, with sound and in writing," people are also presented with ideas of "what is important and unimportant, bad and good, funny and boring," through media (translated from Danish, Gripsrud, 2010: 15). Media matters in how it mediates issues on climate change to people, and the reality of climate change depends on how it is understood and mediated. Here, it should not be forgotten that any intent to mediate concepts or tap into processes of meaning-making relies on the receiver and not least the "more or less active participation" of the receiver at the other end (McQuail, 1983: 338).

The point made clear by Gripsrud holds that "effects at an individual level, at group-level, and on society as a whole, are crucially conditioned by social and cultural circumstances, which to a large extent are found outside the realm of media and outside the direct acquisition of media texts" (Translated from Danish, Gripsrud, 2010: 51). The point is here that the power of media is related in a broader context, in which media takes part along with a "range of social, cultural and psychological conditions," further placing media in a broader context of the social sciences (Translated from Danish, Gripsrud, 2010: 51).

Although, the power of media has been reduced to that of the "agenda-setting"-effect (*see also Literature Review*), Gripsrud (2010) also contends that in situations where the public and opinion-makers do not have other sources than the media in assessing a concept, the media does have some say in what people think (ibid: 66). In recognising the media power beyond that of "minimal effects", Entman (in Callaghan and Schnell, 2005) becomes a spokesperson for amending the agenda-setting effect to a power of media that "lies in telling

the public what issues to think about, as well as how to think about those issues; in turn this "directive" ultimately suggests what their policy positions should be" (ibid: 15). And with this, the promise or the premise of the effects or influence of media follows in the study of media (McQuail, 1983).

In McQuail's (1983) undertaking of the media's influence on the public, the 'media campaign', refers to a "situation in which a number of media are used in an organised way to achieve a persuasive or informational purpose with a chosen population" (McQuail, 1983: 336). Although McQuail's theory relies on characteristics such as "specific and overt aims" as well as "a limited time span," traits of less relevance in characterising the case in question to this thesis, of importance is the notion of "authoritative (legitimate) sponsorship," and with purposes "in line with consensual values and with the aims of established institutions," to which "the population targeted for influence is usually large and dispersed" (ibid: 336). Legitimacy of sorts plays a role both in terms of how the weight of authority sponsorship adds to a message put forward but as well in terms of how "influence is accepted" based on relations between the authority of a source and the receiver (ibid: 341). In defining basic features of the campaign itself, it follows that campaigns aim to direct, reinforce and activate "existing tendencies towards socially approved objectives" (ibid: 1983: 347). Yet, campaigners have to rely on their campaigns to be able to form messages to which individuals respond according to intent, for the campaign to achieve and fulfil its end (ibid: 1983). However, since the scope of this research is to look at framing more specifically, the level of effects either by means of media or framing effects are acknowledged more implicitly in terms of its seeming ability to either "facilitate change" or "preventing change," McQuail, 1983: 334-335) however, it will not be applied explicitly to the research. Instead, McQuail's theory is brought into use based on the overarching perspectives of influence it provides for interpretation.

2.2.1.1 The Museum as a form of media

As the case study of this thesis also examines the framing of climate change in the setting of the National Museum of Natural History, I adopt Henning's (2006) work on museums, since it draws on media theory thus revealing important points for consideration for this research. However, since Henning is occupied mostly with a historical development of the performance of the museum in society and the many traditions by which museums organise the past, her theory will be applied in terms of how museums take part in the mediatisation of

society and politics by influencing and shaping the public understanding of objects found at museums.

Henning's aim is first and foremost to foreground the nature of museums as that which can be studied as media and from a modernist perspective by which the role of the museum has to be viewed as a part of a changing world. Within this perspective, Henning challenges the traditional role of the museum from having been previously or traditionally thought of as taking on a stable position in society as a "benevolent institution," to now providing a site in which "exhibitions, subject and object are reinvented" (Henning, 2006: 2). By aligning the ideas of Friedrich Kittler (1999, in Henning, 2006) and a Foucauldian discourse theory, it is suggested that the production of knowledge happens under much the same conditions as how "discourse constructs its objects;" that the production of knowledge is shaped and under influence by the media undertaken in its communication (Henning, 2006: 73). However, the role of the museum as a type of media in this context is two-fold. While the museum functions as a media influencing the knowledge produced at the museum, by aiding "interpretation by the arrangement and labelling of artefacts, by its rule of access and the ways in which it frames objects" (ibid: 7), the museum is at the same time a site of "display" (ibid: 3) to the public and the society in which it takes part, and taking on a transformative role in the modernist perspective.

Through its transformative role, the museum turns things into objects, and the museum environment provides the "frame which endows its things with significance." As things become objects, they are treated much in the same way as issues are when they become social, because people treat them as that. Things become objects because they are endowed with a value through interpretation, because they are treated as having a value (ibid: 7). As objects, things exist in relation to society. Because the existence of objects is relative, their meaning, function and role changes depending on the relation or context in which they are understood. The function of objects is neither fixed, nor is the meaning. By examining their relation or their relative function or what Henning refers to as things' "social lives," rather than the things themselves, the focus is to "reveal the mechanisms and processes" behind what produces them as objects. In this sense, objects at museums represent practices and the more intangible processes found in human activities (ibid: 9-11).

Looking at the museum as a media provides a frame of analysis in which the notion of climate change can be examined. Although, climate change is not an "object" in the sense of having a physical representative at the museum, the production of knowledge on climate change and the frame by which it is labelled at the museum still endows value to be

considered in relation to the thesis questions. Inferring a "social life" or a performative role will further help to reveal the mechanisms underpinning the NMNH exhibition's message of climate change constructed also in the developed school material of the *Educator guide* available. Additionally to its framing of climate change, the role of the museum will further be examined in the later discussion taking on the modernist perspective in critically engaging with the museum's historical narrative of equipping the public with the proper means, be that "knowledge" or "epistemologies" to be able to participate in debates on climate change (Salazar, 2011: 9(2) 123-135).

2.2.2 Framing theory

Goffman (1974) depicted frames as "the structure of experience individuals have at any moment of their social lives" (ibid: 13). This approach makes frames the interpretive vehicle to how experience is understood at a personal level, but also eliminates framing from the view of social sciences, as Goffman also states (ibid: 13). However, modelling on Goffman, the notion of framing and frames have led researchers and research to some confusion depending on what is meant by framing, since it seems to yield possible readings as both a use of the concept as a 'metaphor' and a more extensive concept than what appears from the mere qualitative interpretation thereof (Deacon et al., 2007).

Taking on Gitlin's (1980) later definition of frames as "... principles of selection, emphasis and presentation composed of little tacit theories about what exists, what happens, and what matters," and further "that the role of frames is to certify the limits within which all competing definitions of reality will contend" (Gitlin in Deacon et al., 2007: 161), again confusion exists in the different formulations of what refers to the same word of 'frames'. The first formulation refers to the practical construction of the text of frames, whereas the second definition refers to "how an ideological horizon governs the general orientation within which text is framed (Deacon et al., 2007: 161). Depending on which approach is adopted in the process of researching framing "as structures embedded in elite discourse" or as "cognitive structures that citizens use to make sense of politics" (Callaghan & Schnell, 2005: 5), framing has both communicative and mental implications. As such, research within framing can be undertaken from either a perspective looking at discourse or meaning.

Building on this, Entman (2004) defines framing as: "selecting and highlighting some facets of events or issues, and making connections among them so as to promote a particular

interpretation, evaluation, and/or solution." (ibid: 5) From this follows: How we say something affects how we think (Entman 1993; Thibodeau and Boroditsky, 2011; Fausey et al. 2010) and may ultimately influence how we respond and act accordingly as a result of that response. (Kahneman & Tversky, 1984: 343 in Entman 1993) As such, so-called "framing effects" occur when "(often small) changes in the presentation of an issue or an event produce (sometimes large) change of opinion" (Chong and Druckman 2007: 104).

Framing in the process of sense-making and generating meaning in the social sciences field refers to the effects of political framing, and how the personal response is linked up to this. To understand the inner workings of framing effects, cognitive science can help to understand how framing affects how we think. Lakoff and Wehling (2012) contend the function of language to set in motion the network of neurons or *cascades* in the brain to grasp meaning and define logic of people's understanding (ibid: 29). Because "language triggers" these cascades, framing activates the brain in a particular way that evolves around the idea that has been presented by that particular frame. By activating this particular way of thinking about the presented idea also means that attempts to not think about the issue in the presented language or attempts to negate the frame actually means the reinforcing of it. "When we negate a frame, we evoke the frame" (Lakoff, 2004: 3). In Lakoff's example, trying not to think of an elephant, once the word *elephant* has been presented, testifies to how difficult it is to not think about something, once language has lodged the something in the human brain.

Framing is the next step. Because framing "is not just language," but ideas of a worldview carried by language, attempts to negate these ideas by using the same language or frame, rather evokes or reinforce the frame instead of the wished negation of said frame (ibid: 3-4). As such, Lakoff takes a more direct stab at framing within the field of cognitive science in calling frames: "mental structures that shape the way we see the world. As a result, they shape the goals we seek, the plans we make, the way we act, and what counts as good or bad outcome of our actions" (Lakoff, 2004). Similarly to the premise of media effects, the study of framing rests on a premise of effects stemming from organising or conceptualising information of an issue to direct or invoke a particular thinking about the issue in question (Chong & Druckman, 2007).

Instead, Tversky and Kahneman's (1986) research showed how altering the frame of thinking about a public policy for instance could also alter people's response to that policy. As another example showed, describing crime as either a beast or a virus can lead people "to generate different solutions to a city's crime problem" (Thibodeau and Boroditsky L. 2013),

and “framing the consequences of a public policy in positive or in negative terms can greatly alter its appeal” (Kahneman and Tversky 1986: 258).

On the other hand, this view that the interpretation of frames happens at a level to fit with pre-existing interpretations and instances of personal dispositions and is organised accordingly to make sense (Nisbet 2009 in Boykoff, 2012) is important, yet relies on additional research. To this, Chong and Druckman (2006) contend that people’s values are important nonetheless, but that these values can be “linked to either side of a controversial issue through framing” (ibid: 29). Additionally, that the context in which a frame is put forward also has importance in reference to the effect of that particular frame (ibid: 30).

Although frames can be a tool to link understanding of a subject to values, considerations for context must also be in focus when exploring the effects of framing on the public. Framing has thus the ability to develop and produce useful understanding of abstract issues such as climate change through the organising of information, however, it is at the expense of other information. This means that the same mean to promote understanding also means setting limits for debating the issue with regards to its “causes, consequences and responsibility for solutions” (Olausson, 2011: 295). As the literature review showed, literature and theory on framing are unconsolidated in size and consensus, which has prompted some framing researchers to see the many approaches of researching framing as a disadvantage (Entman, 2004) and others as an advantage (D’angelo & Kuypers, 2007). In sharing the latter view, the body of theory on framing and effects adopts various theoretical perspectives based on their relevance of application to the scope of the thesis in the process of applying theory to methodology on framing.

The nature of framing as a scholarly discipline covering various fields and yielding operational implications is important to take into consideration in the process of frame analysis. The difficulty of carrying out specific measurements due to the level of subjectivity as noted above places the researcher within an analysis that is aware of this level of subjectivity in terms of analysing the results. Because of this awareness, the researcher would like to acknowledge the level of subjectivity by remaining critical to the researcher’s own perspective on the interpretation of both the research results as well as the approach of applying methodology and methods.

2.3 Conclusion

For the purpose of this thesis, the overall aim with this literature review and outline of a theoretical framework has been to locate climate change in the context of social construction to show how the nature of climate change exists in people's interpretation of it, and therefore the nature of it is subject to change depending on a given interpretation. This puts effort on behalf of human processes of meaning-making and the ability to understand the science behind it mixed in political interference and personal beliefs and values at any rate. In the process of making meaning of climate change, we find the means of media and framing. Both are seen as vehicles or tools for processing social facts such as climate change, and both are seen as powerful tools to generate intended meaning, although the more specific details are still sought at large. Media seem to hold power in its promise of inducing so-called media effects meant to have influence on personal action through its use. However, the matter of media effects should be viewed conditionally, and more from the point of how media affects interaction through its own logic; framing is seen as a more direct way of shaping experience into the structure and context by which abstract events such as climate change can then be understood. In both cases, the aspects of influence and affect yield interest in their seeming relation to exerting power and control to inhibit change. Although this view on media and framing reveals a more sinister usage, media and framing should also be viewed in reference to exactly the potential of advancing meaning-making and generating understanding of abstract structures and events. Both views are important to include for the reference of the thesis questions. However, it is also to make a further note that both media and framing hold the power to advance or hinder understanding, and that in any case, advancing information or understanding of an event will always happen at the expense of other information. The scales of information potentially tipping to either side further shows implications and opportunities for political engagement in exactly how our experience of events and discussions will always be shaped and interpreted accordingly to the principles as mentioned above.

3.0 Methods and Methodology

Because the aim of the thesis is to focus on scepticism and political framing of climate change, the case study has been employed as the main research method because it allows for an investigation of the nature of framing climate change seen as a "contemporary phenomenon in its real-world context" (Yin, 2014: 16). Knowing that it is also the case that the complex set of many variables in any case study offers a variety of ways to explore the phenomenon, (depending on the levels of factors and relevant circumstances involved in the analysis of the phenomenon), the empirical inquiry of the case study is seen as the most applicable method in this regard. (Yin, 2014) However, despite the broad appeal of the case study method to cover more variables of interest at the same time, the aim is to further academic discussion on the subject of climate scepticism by contributing the existing body of knowledge rather than to expect an exhaustive examination of the phenomenon under scrutiny. At any rate, the case study as a research method involves both strengths and limitations (Yin, 2014) to which the researcher will remain aware throughout the process of undertaking the research and with regards to the evaluation of the later results.

To briefly line up the evaluatory instruments within philosophy of science this research holds, critical realism offers a middle ground between positivism and social constructivism by which truth remains out of the human grasp, but where transfactualism offers a way to infer probable explanations about that which is being observed. (Bhaskar in Sayer, 2010; Jackson, 2011) Following this view, researchers can make claims by explaining the different functions of how something works, and therein, that something exists.

3.1 Employing a mixed-methodology approach on frame analysis

In exploring the scepticist framing of climate change, the research employs a mixed-methodology approach to frame analysis. This research will include a qualitative approach in an effort to examine the thematic units in the data.

Framing theory can help to understand why and how frames work at a general level. However, the unsettled mix of macro-micro-levels or qualitative and quantitative approaches within framing theory can distort the more practical groundwork for actually doing frame analysis. From this perspective frame analysis can be undertaken from different but equally valid positions, depending on what results researchers want their study to reveal. Since the

attempt is to give an account of both the message and the underlying reasons for producing certain messages, Shoemaker and Reese (2014: 7), building on Gans (1979, in Shoemaker and Reese, 2014) and Gitlin (1980, in Shoemaker and Reese, 2014) provide a hierarchical model, by which the research takes into account the nature of influence through framing on media content by virtue of supporting special interests (Shoemaker and Reese, 2014: 8). I have found this approach of locating agency to be useful for the interpretive background of the frame analysis as well as the results of the frame analysis, since framework and framing theory tend to concentrate merely on content and less on the agents providing these frames as structures for thinking and talking about views of the world. Following this, a two-step methodological approach of locating themes of frames as well as their context has been employed.

In line with Yin (2014), Deacon et al. (2007) has labelled this approach the two-step methodological movement within framing analysis. The two-step methodological movement applies specific attention to both the organisation of the text and the subsequent move to how a frame "develops a definite angle or preferred line of interpretation"; a move they consider to be a "shift up from micro-levels of meaning in certain textual instances to the ways these draw on and connect with macro-levels of ideology and power" (Deacon et al., 2007: 162). Furthermore, the aim is also to "reveal 'the imprint of power' by registering 'the identity of actors or interests that compete to dominate the text" (Entman 1993, in Deacon et al., 2007: 162). As such, the case study plans to be descriptive in its approach to better understand the realisation of the scepticist framing of climate change as a social phenomenon; as well as to be exploratory in examining the relationship between the scepticist discursive practices and the political environment for climate change in the U.S. (Yin, 2014). By examining separate instances of publications or data units involving and offering points on climate change, the aim is to explore the nature of their focus as encompassing the same political agenda, based on the mode of framing and frame of origin. The aim is further to uncover and set the stage for the following discussion on implications for political engagement in society today.

Following the unsettled methodological aspects of doing frame analysis (Deacon et al. 2007), the research attempts to build on existing strategies and overall guidelines in developing its own methodological apparatus for the exploring the case study. With the risk of undertaking "ad hoc"-practices in frame analysis (Reese, 2010: 20), however, from the onset that most of the existing research has been done with regards to news framing where considerations to time-frame plays an important part (Lindström and Marais, 2012), and partly because the role of the journalist as intermediary (Boykoff, 2013) is of little relevance

to the nature of the study. Instead the framing of climate change in this instance should be examined as evidence of a pattern rooted outside the news media, and where the message of the framing is the key to uncover this pattern, rather than the product of journalistic practices.

In reference to the case study, the aim is to use the theory on framing to examine the scepticist framing of climate change located in the earlier mentioned Koch interview, the Koch Industries newsletter and the Educator Guide from the NMNH's Human Origins exhibition. By applying framing theory, the aim is first to identify the interpretive "message" behind the framing, and further to reveal traits of a broader political motivation in these frames by linking the objects of study in a pattern all relating back to the Koch Brothers. Second, the aim is to align it with the structure of the broader pattern, (as that most similar to traits of the campaign in media as proposed by McQuail (1983), but here seen as a much more discreet way of doing political campaigning), the analysis and subsequent results should prove to hold valuable insights.

In the context of the museum, I intend to apply Henning's theory to examine how the museum works as a medium mediatising the contents of the museum by providing a context of historical development as well as a scholarly frame for recognising the ideas presented at the museum as educational material. By combining these different approaches in the examination, the aim is to reveal a deeper political ideology pushing the scepticist climate change agenda.

Next, having established the methodological framework for approaching frames on climate change, I will present the case as well as the units of data for analysis in the next section. As well as examining the different parts of the located frames, the findings will be subject to analysis in reference to the theory and in terms of the political power structures, of which these are considered to be representative.

3.2 Conducting frame analysis

Frame analysis within a qualitative perspective deals with discourse theory in how it involves identification of the materiality of the text, what constitutes the frame in words by also leaving out others. Nisbet (in D'Angelo and Kuypers, 2010) distinguishes the qualitative aspect from the quantitative in frame analysis by identifying frame devices and frames as two separate concepts. Frame devices in this sense rely on the discourse or rhetoric constituting

the frame adding an "underlying interpretative meaning" (Nisbet in D'Angelo and Kuypers, 2010: 49).

To accommodate the need for examining the broader structure revealed through the examination of framing, the research has employed Nisbet's (2010) schematics for carrying out frame analysis. Since this approach takes on frames in a more thematic-oriented categorisation where frames are located and identified according to their broader appeal by virtue of political importance (Nisbet in D'Angelo and Kuypers, 2010: 52), the approach has been employed as the aim of this research is also to reveal the political imprint apparent in the located frames.

However, while Nisbet's typology is helpful in mapping out different latent meanings within framing, it lacks the ability to address the functions of each framing. Especially seeing how framing for this research already examines climate scepticism from within the position of advocating the uncertainty of climate science. More importantly, although categories such as *Social progress* by how it "defines science-related issue as improving quality of life, or solution to problems", and *Economic development/competitiveness* by how it defines science-related issue as economic investment, market benefits or risks; local, national, or global competitiveness, are of relevance, these categories do not relate to climate scepticism. Instead they examine framing of science-related issues (such as climate change) from a position of necessary means to combating climate change - be that policy-making or the development of new technology as causing this social progress or economic development (exemplified in Fletcher's study 2009). This makes it difficult to apply these categories to this research examination of climate scepticism, as the identified frames on climate change related to economic development and social progress in this instance do not rest on the means to combat climate change but on the premise of climate change itself. I will further discuss this in reference to its application in the analysis. Therefore, Nisbet's typology will only be applied by its original use for identification of frames relating to *scientific/technical uncertainty*.

For the purpose of the scope of the research, Entman's (2004) approach of building a so-called cascade model, as it involves basic functions of what he terms the "substantive frame" as opposed to the aforementioned "procedural frame", has been adopted. This is because, the substantive frame performs "basic functions in covering" issues: "defining effects or conditions as problematic; identifying causes; conveying a moral judgement; endorsing remedies or improvements" (ibid: 5). (Although for the analysis, it is only the use of the "basic functions" in the first step of this model, which will prove useful. The full

cascade model is designed to understand a cascading flow of influence on several levels, the administration, other elites, news organisations and on several sites of different media, which is far too extensive for the scope of this thesis). However, this model enables the research the ability to analyse frames based on the different elements and according to their intended effects, although these effects will only be discussed theoretically.

However, as has been evidences in previous theory and attempts to narrow down the issue of framing to a tangible research model, this has proved a complex case, as the theory on framing is yet fully unconsolidated and forcing what (Reese, 2010: 20) called the 'ad-hoc' analysis. Aware of this, the attempt has been to build a workable theoretical framework based on and located in existing framing theory and guidelines for undertaking research and analysis on the subject. Where possible, motives and reasons for choices will be recognised and indicated for clarification and transparency of process. Additional considerations regarding the implications this involves will be further taken up in the section evaluating the methodology and methods undertaken in the process of the case study.

4.0 Analysis of data

4.0.1 State of things

Although the sample of retrieved material for analysis has been very small in this research, as is not often the case for framing analysis, the selected data units have provided for a more in-depth analysis of the more specific functions and objects of the identified frames of climate change as a symptom of one realisation of climate scepticism in the U.S., albeit a prevalent one. Before moving on to looking at the so-called" conservative countermove" in attempting to understand these frames in the broader reference of climate change in U.S. politics, I would like to tie these frames to a more concrete background case of the Koch Brothers. This is important because the Koch Brothers take part in the conservative countermove on the one hand, and on the other, they are also the sponsors and the promoters of one such scepticist framing that is located and retrieved from the *Educator Guide* used for this research. In this way, I am able to reveal 'the imprint of power' by linking this particular scepticist climate change framing first to the "identity of actors competing to dominate the text" (Entman 1993,

in Deacon et al., 2007: 162), and second, through them reveal the stakes raised in the broader overarching climate change debates in the media and more generally in U.S. politics.

4.1.0 The case of the Koch Brothers – analysing the sponsors of the scepticst framing of climate change from the Human Origins exhibition

To understand the motivation for the scepticist framing of climate change at the National Museum of Natural History, it is useful to briefly map out the background of the large-scale influence and instigators behind it.

David E. Koch is the brother of Charles Koch. Together, they are known as the Koch Brothers, and they are the owners of the family owned business and America's second largest private company (Forbes.com, 2016), Koch Industries. Today their business is employing "over 100,000 people across more than 60 countries" (Kochind.com). From previously dealing within the oil refinery business, Koch Industries, Charles and David have been involved in politics over the years (as covered by Mayer *in* The New Yorker, 2010). They are also known to be sceptical towards climate change science and in opposition of policy initiatives to combat climate change.

Some of the more notable headlines in the news of recent times have been surrounding the Koch Brothers' involvement in countering political action on climate change by funding research going against existing research on climate to derail the public debates (Goldenberg *in* The Guardian 2015); and by persuading policy makers all over the U.S. and members of Congress to sign the No Cl!mate Tax-pledge, a project initiated by the Koch Brothers' primary political advocacy group Americans for Prosperity (Mayer *in* The New Yorker 2013; Goldenberg 2010; americansforprosperity.com).

The No Cl!mate Tax-pledge is a pledge that will have its signature holders "oppose any legislation relating to climate change that includes a net increase in government revenue" (noclimatetax.com). Or as stated elsewhere on the No Cl!mate Tax-website: "These bills should be revenue neutral, holding taxpayers harmless by offsetting every dollar of revenue raised through environmental taxes and regulations with tax cuts," meaning that signature holders of the pledge will vote against any proposals on climate change unless this also involves tax cuts. So far (13 Oct. 2016), close to 400 U.S. and state representatives, governors, court justices, delegates and senators have signed the pledge including U.S. Senators and former presidential candidates Rand Paul, Marco Rubio and Ted Cruz,

Governor Rick Perry, and Republican Vice President Mike Pence (noclimatetax.com/pledge-takers/).

To further delve into what measurements are taken as well the mindset that controls the Koch agenda to counter climate action, the meeting of their network "(...) to review strategies for combating the multitude of public policies that threaten to destroy America (...)" (Koch Industries Invite 2010, Appendix 4) held in Palm Springs in January 2011 and the subsequent invitation sent out by Charles Koch prove good examples in this case.

In the invitation, the programme from the previous meeting has been attached (Appendix 4), and in which it reads under the agenda on Energy and Climate: "What drives the regulatory assault on energy? What are the economic and political consequences of this? How discredited is the climate change argument? What effect does it have on the electorate, especially in key states?" And further below, under the headline of *Understanding the Persistent Threats We Face,* it reads: "(...) push for major new climate and energy regulations," before concluding that "there is no lack of significant threats for us to understand and address" (Koch Industries Invite 2010).

Mapping out the initiatives as well as political efforts of the Koch Brothers gives way to a deeply thought-out agenda on their own part to counter all political initiative and climate science to combat climate action. Through influencing a variety of political systems and available channels, the aim has been to target people within the political spheres and people with a relative connection to the Koch Industries.

The above echoes a framing of climate change and the necessary action that needs to be taken in its wake from that of the National Museum of Natural History in Washington, DC (NMNH). With a stab at existing climate change debates using the NMNH, it seems that the aim has moved from targeting policy makers and employees to a reach for the broader public in a place, where the broader public will attend exhibitions, also remembering how "public museums has always been an institution devoted to the representation of universal truths, (...)" (Henning, 2006: 94).

By adding NMNH to the list of places where action should be viewed at something that we should "figure out how to get along with (...)," NMNH has become an additional space where corporate interest is played out. In the following, the frames in the Koch interview, the Koch Industries newsletter, and the printed museum material targeting students will be located and subject to analysis.

4.1.0 Analysis of data units

The units of data in this research have been gathered based on their mode of publication in public media and their relationship with each other through the relation to the Koch Brothers. In this section, the three examples of political framing on climate change as found in media sources related to the Koch Brothers are as such: an excerpt taken from an interview with one of the brothers, an article from a Koch Industries newsletter, and printed school material in the shape of an Educator Guide found on the official website of the Smithsonian National Museum of Natural History.

First, the David Koch statement in *New York Magazine* (Appendix 1) along with the framing of climate change found in the Koch Industries January 2010 newsletter (Appendix 2) as well as the school material from the Human Origins exhibition at the NMNH in Washington, DC make for relevant examples in exploring representative material on their views on climate change. However, because of the location of the exhibition is in the United States, and the location of the researcher in Denmark, as mentioned, print material from the Hall of Human Origins has been retrieved instead. The print material from the exhibition consists of a so-called "Educator Guide" for "Grade 5-12". As such, the *Educator Guide* is meant to target 10-17 year olds. (Appendix 3)

In order to gather all frames relevant to climate change in the collected print material, only references pertaining to that of climate have been included. The research is aware of the limitations this brings about by leaving out other material and will be discussed further at a later point. However, as the scope of the thesis is to look at frames directly targeting modes by which to frame the climate, a full investigation of the printed material from the exhibition has been deemed too extensive for this study and in that also redundant. It should here be noted that the full *Educator Guide* totals 40 pages.

Based on Nisbet's generalisable typology of frames defining "latent meanings of each interpretation" (D'Angelo and Kuypers, 2010: 52), the following framing of climate change taken from the Koch Industries January 2010 newsletter to their employees has been identified for examination of the frame of science uncertainty below in Table 1: (All relevant complete publications have been attached as appendices to the thesis to maintain transparency of the research).

Under the title *Blowing Smoke,* the newsletter argues among other things that climate change policies are based on a "shaky understanding of the science", and that "fluctuations in the

earth's climate predate humanity," before concluding "Since we can't control Mother Nature, let's figure out how to get along with her changes." (Koch Discovery Newsletter, January 2010)

Table 1.

Koch Industries January 2010 newsletter:	*Frame*
"Interestingly enough, all of these claims have been disproven or grudgingly retracted." "So why would a reasonable society rush to implement far-reaching (and costly) climate change policies based on such shaky understanding of the science?" "It's clear from the data that the science on greenhouse gases is not really settled" "All of this should be a warning flag for anyone proposing actions to respond to climate change on the mistaken assumption that "the science is settled." "The earth's climate is prone to sharp changes over fairly short periods of time. Plans that focus simply on stopping climate change are unlikely to succeed; fluctuations in the earth's climate predate humanity." "In other words, since we can't control Mother Nature, let's figure out how to get along with her changes."	Scientific/technical uncertainty: Defines science-related (climate change) issue as a matter of expert understanding; what is known versus unknown; either invokes or undermines expert consensus, calls on the authority of "sound science," falsifiability, or peer-review.

The identification of frames in Table 1 shows how the frame of scientific uncertainty occurs on several occasions in the Koch Brothers' newsletter. Several times throughout the newsletter, climate science is referred to as uncertain and therefore that the measurements in terms of policymaking to combat climate change will be "unlikely to succeed" (ibid: 10). This frame indicates and attests to a continued scepticism and effort to undermine expert consensus behind climate change by applying strategies to discredit climate science through uncertainty and alternative narratives as the means to combat policymaking (Oreskes and Conway, 2010; McCright and Dunlap, 2000 referred to in Painter and Ashe, *2012*; Cass, 2007: 28-29). The example further shows how climate science is naturally vulnerable based on the complexities behind the science and the natural scepticism when doing science in

terms of falsifiability, since this provides a valid base for adopting critique to accommodate the sceptic argument (Mercer 2014).

Climate change in this instance is not perceived to be a risk, rather it perfectly ties in with the Koch perception of the many benefits that global warming will bring about, which was expressed in newsmagazine *New York* (2010): "The Earth will be able to support enormously more people because a far greater land area will be available to produce food." (New York 2010)

Mapping out the initiatives as well as political efforts of the Koch Brothers gives way to a sincerely thought-out agenda on their own part to counter all political initiative and climate science to combat climate action. Through influencing a variety of political systems and available channels, the aim has been to target people within the political spheres and people with a relative connection to the Koch Industries.

With regards to the framework, Nisbet's typology proves useful in providing a framework for categorising and distinguishing the underlying meaning for frames on climate change indicating scepticism based on invoking scientific uncertainty. However, the typology in practice also revealed points of considerations in terms of how frames on for example *social progress* and *economic development/competitiveness* are only identifiable in terms of looking at the remedies for taking action on climate change causing implications for a full investigation of the frames for this research, as will be explored in more detail in the next section.

For quotes retrieved in both New York Magazine and in the *Educator Guide,* a slightly different approach than Nisbet's typology applies, as these relate more to a framing of the effects of climate change itself (also discussed in the *Theoretical framework*), and the effects on climate change on human evolution or development. However, altering Nisbet's premise for discussing the *social progress* frame and the *economic development/ competitiveness* frame to relate directly to climate change itself, the coding of these frames would appear as in Table 2 and Table 3 below: (Keeping in mind, though, that the premise for discussing these frames would not be comparable to other frames identified within this framework, unless this same alteration for categorising frames is further developed and made a note of.)

Table 2.

New York Magazine: (Interview with David Koch on climate change)	*Frame*
"The Earth will be able to support enormously more people because a far greater land area will be available to produce food"	Social progress: Defines science-related (climate change) issue as improving quality of life, or solution to problems. Alternative interpretation as harmony with nature instead of mastery, "sustainability" Economic development/competitiveness: Defines science-related (climate change) issue as economic investment, market benefits or risks; local, national, or global competitiveness.

Table 3.

National History Museum of Natural History; Hall of Human Origins, Educator Guide	*Frame*
"Humans evolved during a time of dramatic environmental change. Earth's climate has always fluctuated between warm and cool, moist and dry. But during the last 6 million years (the period in which humans evolved), these fluctuations became more extreme. The traits that early humans evolved helped them survive. Throughout the exhibit students will encounter examples of how early humans responded to the challenges presented by changing climates—and how this led to the evolution of unique human traits." "Fossils show how early humans made a gradual transition from walking on four legs to walking on two legs. Walking upright enabled early humans to move around in a variety of environments and to cope with changing climates." "...a series of brain endocasts (replicas of the insides of braincases) illustrates that brains increased in size as early humans faced new environmental challenges and as their bodies got bigger." "Students should also think about how the trait helped early humans adapt to different environments and how it expanded their capabilities." "This exhibit invites you and your students to explore milestones in the evolution of several human traits over the past 6 million years. You can then incorporate this	Social progress: (Here seen as human development) Defines science-related (climate change) issue as improving quality of life, or solution to problems. Alternative interpretation as harmony with nature instead of mastery, "sustainability"

knowledge into your personal understanding of what it means to be human." "Discuss how Dr. Potts used research and scientific evidence to test the hypothesis that climate change was an important factor in human evolution."	

As the research is interested in how frames work or the functions of these frames or the framing process, Entman's approach of examining the functions and objects of framing has been adopted. (2004: 24) In this next step of analysis, the mapping out of the Koch Brothers' apparent climate scepticism have been coded according to Entman's framework in Table 4.

Table 4.

Function of Frame	*Issues*	*Events*	*Political Actors (Individuals, Groups, Nations)*
Defining problematic effects/conditions	Need to understand the benefits of climate change rather than the negative effects	Changes in the environment/warming of the Earth	N/A ("*Mother Earth*")
Identifying cause/agent	The causes behind climate change are natural fluctuations	Climate change	Fluctuations predating humankind
Endorsing remedy	Use the changed climate as a resource (ex. Produce more food, become more robust people)	Concede that these changes are naturally occurring	Find a way to adapt: "Since we can't control Mother Nature, let's figure out how to get along with her changes."
Conveying moral judgment	Climate change can prove positive to humankind if we understand how to make it beneficial	Natural causes, humans are innocent	Humans before us have developed traits to make themselves stronger and to overcome the challenges brought about by climate change

The framing of climate change in Table 4 further reveals how the function and objects aim to disarm attempts to resist or combat climate change. In this perspective, for the framing of climate change, the following information is provided: no direct "actor" (other than "Mother Earth" herself) has been involved in terms of *defining problematic effects/conditions* at this level of specifying the event cause. From this follows that climate change as such is caused

by naturally occurring fluctuations predating humanity over which we have no control. As climate change has happened throughout the history of mankind, these frames opt for an understanding and an endorsed remedy of how climate change can be seen as beneficial both in terms of how a warmer Earth will be able to provide for more people, but also that it is exactly this change of environments and extreme weather conditions, which has caused humans to evolve and develop traits for survival.

Additionally, the research reveals another prominent frame of scientific uncertainty as identified in Table 1, which more directly taps into the policymaking level of the "conservative countermove."

Table 5.

Function of Frame	*Issues* **"War" on policymakers through war on climate science**	*Event* **Policymaking**	*Political Actors (Individuals, Groups, Nations))* **Policymakers**
Defining problematic effects/conditions	Need to change the views on the effects of climate change, because it causes economic losses in the end.	Policymaking on climate change causing economic loss: "Cap-and-trade is essentially a stealth tax on energy. As such, it inevitably leads to higher energy costs and job losses."	Policymakers
Identifying cause/agent	Policymaking and regulations introduced as a means to combat climate change.	Shaky understanding of science: "So why would a reasonable society rush to implement far-reaching (and costly) climate change policies based on such shaky understanding of the science?"	Policymakers punish "bad industries": "Policymakers have a history of using new revenue streams to promote pet projects and punish what they consider to be "bad" industries.
Endorsing remedy	Warn against the unsettled science on climate change: "(...)A warning flag for anyone proposing actions to respond to climate change on the mistaken assumption that "the science is settled." "It's clear from the data that the science on	Resistance against science and policymaking.	Fight to stop attempts battling climate change: "Plans that focus simply on stopping climate change are unlikely to succeed(...)"

	greenhouse gases is not really settled"		
Conveying moral judgment	Find a way to adapt, since we cannot control the inevitable anyway, which by the way is a naturally occurring thing.	Climate changes are natural fluctuations of the Earth.	Stop trying to fight climate change by introducing regulations as these are futile.

Besides framing climate science as unscientific, by conveying the same moral judgement of the naturality of climate change, this frame is targeting policymakers. Although climate change is not dismissed as unproblematic, this frame holds the science and the policymakers wanting to act on science as more problematic than climate change itself. To reframe the rhetoric of the conveyed moral judgment in both frames, the proper response to climate change is to "make lemonade out of the lemons" handed down by the life of an ever-changing climate.

4.3.0 Analysis in reference to the conservative countermove in the U.S. climate change debates

The above analysis of the framing of climate change shows how climate scepticism is discursively constructed in the retrieved data from sources with strong ties to the Koch Brothers, and befitting that of the proposed "conservative countermove" McCright and Dunlap (2000). Comparing the identified frame in the *Educator Guide* to the frame in the Koch newsletter 2010 indicates two sides of one strategy, in which climate change is revealed to be caused by natural circumstances beyond the human control.

Whereas the first frame of *scientific uncertainty* levels with previous attempts to locate frames of scepticism, the second identified frame revealed a different and more complex frame of *social progress* and *economic development* compared to previous findings in Nisbet's typology. Although bearing similar traits of earlier frames in these categories, this framing puts emphasis on the positive influence of climate change itself. Climate change scepticism here is not scepticism of science or climate change, yet this speaks from within climate change scepticism. Rather, this represents conservative scepticism of the hitherto proposed policymaking on climate change by suggesting the embrace of climate change as the proper response. Following this, this substantive frame performs not the basic function of defining effects or conditions of climate change as problematic, but that policymakers are the

ones causing or representing the problematic conditions in debates on climate change. In line with the Koch Industries Invite from 2010 mentioned earlier, which opted "for strategies for combating the multitude of public policies that threaten to destroy America," the framing of climate change targeted at policymakers in Table 5 indicates a direct link to one such strategy. (Here, also noting how climate change policies are framed as threats to "destroy America"). As such, it indicates a strategy that aims not to "facilitate change" through policy making responding to climate change, but rather to prevent such change by replacing an understanding of climate change as a risk with climate change and the effects of climate change as an opportunity. Instead of telling a story of the threat climate change, the strategy seems to adopt a positive narrative of climate change that is ideologically shaped "to inhibit change," (McQuail, 1983: 334) or in this case, to inhibit change that will lead to unwanted policymaking on climate change.

By adding NMNH to the list of places where action should be viewed at something that we should "figure out how to get along with(...)," NMNH has become an additional space where corporate interest is played out. The case study therefore poses questions beside the framing aspect seeing as how the museum becomes a political device for exerting power.

With a stab at existing climate change debates from the point of departure of that of the NMNH as a medium following Henning, the museum plays no objective part in referencing climate change through its *Human Origins* exhibition. Rather, by drawing on existing history of the interpretation of the museum as an organiser of the past, and now including climate change as a present event, climate change becomes a sequenced occurrence befitting the broader Koch narrative of natural fluctuations in the climate as has always been throughout history. Thus removing the anthropogenic aspect of climate change, the museum transforms and guides the understanding of objects in that very exhibition as well as in the *Educator Guide* as part of past events to which current events are solely related. As such, mediated at the museum is a narrative of climate change attempting to instil in its audience a view whereby, because climate change although considered a social issue, it is not of a result of human activity, so therefore we should not treat it as such. Implicitly meaning also, that there is no need for undertaking future policies to combat climate change.

Including the museum in the climate debates, the aim has moved from targeting policy makers and employees to a reach for the broader public in a place, where the broader public will attend exhibitions, also remembering how "public museums has always been an institution devoted to the representation of universal truths, (...)" (Henning, 2006: 94), and one of knowledge and learning. (Pruulmann-Vengerfeldt and Runnel, 2012)

4.3.1 Conclusion to analysis

Our ability to do something about climate change "depends on the stories we tell" (Pettenger et al., 2007: xiii-xv), and how we believe the world is connected – especially when it comes to the abstract nature of climate change, to which our ability to construct it as relative to the social world becomes all-important. For people to do something about climate change means to treat it as a real issue and as a real risk. Framing climate change is important to understanding the risks as well as structure the experience of human responsibility and involvement. The above tells a story in which climate change does not pose a risk in the sense of danger to humanity; rather, it tells a story of a positive development in which climate change is a driving force of human evolvement and social progress. Especially seeing how the "precedents" to climate change in this story rests on the natural flow of nature's will. The lack of "real precedents" in Giddens' view has been replaced with a competing alternative interpretation of what these "real precedents" might look like. Reiterating Mercer's findings, climate science rests on non-linearity and complexity by which climate change science can easily be refuted going by classical adherence to the scientific method, to which the framing of climate science as unscientific in the Koch newsletter attests a viable way of employing framing to cast doubt.

Continuing in this vein of framing for the purpose of applying 'select narratives' (Boykoff, 2013) to climate change by 'organising information' (Chong & Druckman, 2007), the aim to shape "what counts as good or bad outcome of our actions," (Lakoff, 2004) both the newsletter and the NMNH with its *Educator Guide* serve as the relevant media providing the arena to negotiate public consent (Hjarvard, 2008). As such, the setup of the exhibition at the NMNH along with the *Educator Guide* should be viewed as a symptom of the nature of one side of the unfolding and politicised debate on climate in the US. Providing a frame by which to "read" and understand the *Educator Guide*, although only suggesting a hypothesis by which to understand climate change and its relevance to humans, this select narrative again offers one interpretation endowed with significance of the museum and existing as such in relation to society (Henning, 2006). Besides negotiating consent on the one hand, the museum has come to take part in the political climate debates by indirectly endorsing the climate sceptic framing of climate change through its endowing of value to its placing of the Human Origins exhibition and the *Educator Guide* on its premises on the other.

In a much broader perspective, the inclusion of the exhibition and the *Educator Guide*, along with the setting up of climate sceptic think tanks and "grass root"-movements and the mobilisation of politicians to counter political action on climate change are testimonies of the realisation of climate scepticism in the U.S. debates, by actively employing these as tools to counteract policymaking on climate change. In this context, these serve as mechanisms to build up and solidify the broader argument of how climate should be viewed in a way that does not need any fixing or action taken. On the part of the museum, and following Henning's (2006) take of the museum undergoing modernist transformation, the transformation has taken on a life beyond that of the museum context. The traditionally "benevolent institution" of the museum as well as things in it are transformed, not just into objects, but into arguments and a political narrative taking part in a political arena outside the its premises, adding gravity to the scepticist argument and narrative in the meantime. In turn, what Henning calls the "social lives" of things, is in this instance revealed as a new politicised context endowed in the museum and its objects. (ibid, 2006) As well as exposing elements of the politicised on-going debate on climate change in the U.S., the narratives available for engaging and understanding climate change are also revealed to be those of partisan-based politics.

4.4.0 Discussion of findings based on research design

The research design enables a two-step methodological approach to characterise climate scepticism by its narrative framing of climate change as well as the inner functions and objects of said framing based on a select social and real-life phenomenon. Because of the nature of the revealed framing of climate change, one might expect this persisting framing of climate change to inhibit change; a reinforcement of the existing climate scepticism in the public brought about by the conservative countermove; resistance towards policy-making on climate change, as well as additional division in the political debates on climate change in the U.S. The findings indicate that climate scepticism is a very prevailing issue within the political debates in the U.S. This is further backed by previous research, showing grounds for discussing a so-called "conservative countermove." Within this conservative countermove, the use of framing appears to have been used as a tool to advance this countermove from the point of conservative climate scepticism. Besides revealing instances of climate change scepticism by its trail of "products in the real world," the research also indicates how these

examples take part in a much broader strategy to combat policymaking on climate change, and also the level of climate change is debated in the U.S. at present. These are not necessarily debates taking stock of dialogue, as the framing of climate change indicated partisan and one-sided ideological treatment of how to view climate change even as it is argued that the "other" side of climate debates is the one-sided participant in the on-going debates. The results further show that the scientific method itself has helped to back the advent of climate change scepticism into the broader spectre. Of the more notable findings is the revelation of the imprint of ideological backing of climate scepticism found in the framing of climate change as both being scientific uncertain as well as beneficial to human evolution. With the advent of climate debates in the museum media, the results indicate both a "loss of innocence" of the museum, the role of the museum as a benevolent medium for the reproduction of partisan climate scepticism at the expense of opposing arguments. Further, that employing different media into the strategy of combating "threats to America," the strategy with an aim to "inhibit change" resembles that of a political media campaign.

However, the units of data for this research only report from within one side of the story revealing the dominant frames on climate change from one perspective of the debate, whereas Nisbet's typology shows also concern for other frames of science-related issues, which could reveal similar or different patterns by which to realise climate scepticism. Additionally, the research has been limited to a very small sample revealing instances of framing from the onset of one particular perspective of scepticism, whereas studies including perhaps content analysis or focus groups could reveal climate scepticism as broader trends in the public or indicate traits of cognitive reception of frames.

Despite the small sample, these reveal a strategy to target policymaking on climate change using frames as their mode of realisation in the public. Framing took on different approaches: the *Educator Guide* aiming at a younger segment is targeted within the educational setting of a museum and as educational material, whereas the Discovery newsletter targets the Koch Industries' own employees. Revelation of these networks to spread frames persisting within climate scepticism reveals how following the statement that climate science is political, so is the discursive practices on climate change in the U.S.

The results from the sample based within the background as described earlier in the *Literature Review* support the view that climate scepticism represents a strong conservative line of politics. Furthermore, not only has this move employed the guidelines of the scientific method to maintain scepticism around the science that guides climate policymaking, but also the medium of the museum to produce backing for this argument. In this light, although the

economic claim has not directly been scrutinised in this research on frames, the No Cl!mate Tax-petition as well as the advocacy group *Americans for Prosperity* and their ties to the Koch Brothers indicate this economic concern at the very core of the argument. At the same time, the results bear testimony of a continued conservative adherence to an economic discourse as was also discussed in the *Literature Review*.

In line with Dahlgren (2009), the case of the museum strongly indicates that media represented by the museum as well as the newsletter to employees do more than play the role of a messenger; rather, media here has been used as an active intermediary to promote interests hidden in frames on climate change science in the formation of knowledge on the subject-matter.

Giddens' point of discussion within media/framing effects research is still to which degree media and framing can manipulate, although more consensus within framing research more so than within media studies on the effects of media. This has to do with studies encompassing individual level (this reading of it) as the social phenomenon where it is the collective sum of the many that becomes the context for that phenomenon. To the extent that public understanding is affected by these select narratives on climate change, the research is in no way able to answer. Additional research including focus groups and perhaps a cognitive science approach for the examination of framing effects would provide a better understanding of the complex process of meaning-making. For the purpose of this study, the aim has been to observe the frames at hand and evaluate indications of realisation of climate scepticism as a social phenomenon based on this.

Although unsettled in approach, framing and frame analysis remain important tools to understand and examine the workings and realisation of politics in the media and in the public. By examining different layers of framing, be that the rhetorical skill, the theme or the functions or objects, the imprints of power and inner motivations behind the politics can be revealed. However, because of the nature of the unsettled approach and various ways of doing framing analysis, robust framing analysis relies on the skill and ability of the researcher to take on the structure of experience from outside the frame in question but within the social world, to which both frames and researcher belong.

Having undertaken research on the framing of climate change in this thesis, this researcher can only confirm the treachery of attempting to standardise tools and frameworks for carrying out valid and transparent research. Partly because, as noted earlier, analysing framing rests on the researcher to produce results based on interpretation of each frame, which in any case can prove many-fold, and partly because each frame relies on the context

in which it exists. As such, the research undertaken has neither managed to refine previous framing theory or approaches to carry out analyses. Rather, the study shows indications of how adopting a flexible approach as proposed by D'angelo & Kuypers (2007) to do framing analysis has proven the most beneficial for producing relevant results. As difficulties with applying Nisbet's (2009) definition and categorisation of science-related issues gave grounds for conflicts on how to categorise the frames in question, however, this is exactly where the advantage of employing a flexible approach based on a mix of the many approaches for researching framing would prove the most useful. In that, the findings on how to carry out framing analysis indicate cause for an extension of previous framing analysis findings. As such, this research can only claim to have attempted to carry out valid and transparent research to the best of the researcher's ability, however, also allowing for additional research on framing to apply different methods and thus produce different and equally valid results.

On the other hand, this could also be interpreted as the study's limitations, since it is difficult to produce results that would link or recognise political engagement from both sides of the argument, which in turn could prove difficult for a later discussion on how to accommodate both sides in the political debates on climate change in the U.S. More interestingly, and also from a philosophy of science point of view or standpoint theoretical view, the study revealed the role of the researcher to take on a point of departure in which it has been an examination of climate scepticism from the other side of the argument than the scepticist one, although this has been attempted to be kept unrecognisable in the research. What is further interesting is how this again adds to the notion of how not only climate science is political, but also the way we treat climate science as a social issue belonging in the social world.

Although the data indicates a strong mobilisation of climate scepticism, the debates on climate politics has only been undertaken from one side in this research, and therefore it does not give a full picture of how different climate change debates are shaped and realised in U.S. politics. As such, it is only one interpretation of the results at hand. Different approaches to theory and frame analysis would be required to provide a broader understanding of the climate scepticism as well as climate debates within U.S. politics today.

5.0 Facilitating and hindering political engagement - a theoretical discussion

This section discusses democracy and political engagement from both a micro-level and a macro-level perspective. The aim is first to continue a discussion on the implications of framing in the political debates, and second, to locate this discussion in a broader context of modern democracy and media's role in modern democracy. The research has been based primarily on framing from the point of influence on media content, and only in reference to the context of framing effects. As such, the further discussion for this research will aim to contextualise and deepen the analysis and be theoretically based.

The complementary frames analysed in the previous section reveal a pattern of climate change scepticism that follows a critical stance that is naturally found within the scientific method to position its argument in a befitting context. Building on framing theory presented in the *Theoretical outline*, and from the point of departure within the frames analysed, climate change in this instance has been limited to only discussing it in terms of either natural developments or harmful policies. By leaving out references to competing definitions of climate change as a result of human activity, subsequent climate change discussion is captured in a frame allowing for this one reading of the reality of the existence of climate change as a social issue: As an issue caused by natural events in the course of time. Following this logic, (and since how we say something affects how we think and influence our subsequent response), framing theory further implies that attempts to mould an oppositional reality out of this scepticist framing of climate change will be equally limited to a response that pertains to the existing narrative of the scepticist framing, rather than alternative readings on climate change and human involvement. Because, when we attempt to not think of something in a particular way that has already been presented to us, then we do exactly that. When we attempt to not think of it as that, we reinforce it. We do not negate frames by attempting not to think of them, instead we evoke them. The same way we think of an elephant when we attempt not to do so (Lakoff, 2004). This is not to say that it removes existing knowledge on climate change and the reality of it in those who have studied it. However, remember also how exactly climate change is an issue where "public knowledge is limited" (Lewis and Boyce, 2001: 13). Much how Boykoff (2012, in the *Literature review*) has argued for a 'balance of bias' in journalistic tradition, framing in this regard is an attempt to create a balance between opposing information. In this regard, scepticist framing here seems to have balanced out alternative readings of climate change through the means of

framing. Notice also how the *Educator Guide* carefully selects statements that recognises a version of reality as opposed to statements negating the opposing views. As an example, "naturally occurring fluctuations" rather than "not human-made". Following framing theory, had the *Educator Guide* or the museum framed climate change as "not human-made", we would still have considered climate change in terms of being "human-made", (much the same way as people remember Nixon as a "crook" despite his claims not to be so. (Lakoff, 2017) Furthermore, if framing has the ability to alter people's perception of climate change or at least influence it, then it would follow that framing of climate change in this instance has the ability to alter how people think a potential public policy should look like in terms of responding to climate change also.

Although framing in this instance is seen from a very limiting perspective in terms of discussing climate change, it should again be reiterated how framing is perhaps a necessary tool to create analogies on something as complex as understanding climate change to make it more tangible.

On its own, the latter further presents an additional point for discussion regarding potential responses to any framed subject of complex matter such as climate change. Because, if framing can link our responses to complex issues, it does so by way of bridging understanding based on simpler terms through framing. However, it follows that the responses produced relate to the simplicity of the matter rather than the complexity of it. Subsequent decisions based on these responses may ultimately prove sufficient to the level of problem or issue in the framing; however, they are insufficient when it comes to the more complex matters of a problem. Indeed, when scepticist framing then intentionally removes the level of human activity, it further limits any available spaces for even attempting to understand the complexities of climate change – as though these were not difficult enough to grasp in the first place. Scepticist framing in this view becomes the means setting the limits for discussing "causes, consequences and responsibilities for solution," as Olausson (2011) has it.

Additionally, the role of the museum as a form of media in this context presents some point for discussion, yet without leaving its audience with no will of their own. In this regard, framing theory acknowledges the process of meaning-making to be much more complex than what can be inferred from studies concentrating on the agenda-setting of media. Entman (1989) recognises a more interdependence of audiences approach, in which media influence is more sensitive to people's "selectivity and inattention" in the processing of new

information (ibid: 78). In this view, the effect on people's perception from media stems from the salience of the information. This view puts effort on people's ability to "read" media and information from the media. Yet, although selectivity and inattention are important aspects, Entman further recognises how these cannot stand on their own to explain this process (ibid: 84-85). Additionally, positions contending "equal footing" with regard to "communicative competences", which this view also seems to hold, is "problematic" (Dahlgren, 2009: 8). Several additional internal and external factors and levels of consideration, as this research indicates, require attention. For instance, how the combination of framing on climate change in this instance to some extent bypasses salience of information through oversimplifying reality (Callaghan and Schnell: 186), which infers the omission of other salient information and through its mode of targeting audiences through the media of the museum (Entman, 1989: 84-85; Kellstedt in Callaghan and Schnell, 177-178). Echoing Dahlgren's fear for the influence of market forces on shaping the character of the media as well as the information proposed through those media and thus on the informed public sphere (ibid: 34), the character of democracy has taken on the position of help to "various power holders and special interest groups to pursue their goals. (...)" (ibid: 49).

When it comes to the existence of climate change more broadly, the notion of risk in modernity and how we perceive it in our daily lives is interesting. Beck (1992) sees human activity itself as the main cause for the risks now posed to human life. These risks and the level of their effect on human life can be assessed in advance, which makes it possible for the risk society to plan ahead concerning whatever human activity might cause these risks. (Giddens 1999) However, the lack of "real precedents" makes the consequences of climate change difficult to assess, and the lack of trust inhabitants in the risk society feels towards the authority of science as a traditional institution makes up an equally hard case solve. (Giddens 1994: 4) Framing climate change as natural takes advantage of this "lack of real precedents," indicating the possible advancement of climate scepticism, as well as does removing human activity. As such, where scepticist framing of climate change can be seen as a mediating certain understandings of society, these views should also be recognised as evidence of more structurally anchored positions not just by those in power, but in a society that allows for it or does not have the necessary means to do otherwise.

Returning to the mode of scepticism analysed in Table 3. and Table 4, these frames do not fully disclose the conflict at the policymaking level to which climate scepticism, as the *Literature review* revealed, owes some of its biggest disputes. This is more to say, that where framing reveals intentions and the deeper-lying ideologies of a conservative countermove,

they are the result of the conflict at the policy-making level. In reference to this, they can be seen as a measurable result of the course these policy-making conflicts have taken. That the opposing front to climate change policy in this conflict does not shy away from involving a public institution and therein the public more generally to reach their goal of combating climate change policy rather than climate change itself. Following some of the trends brought up in the *Literature review* as its backdrop, the case study indicates that not only does the public perception of climate change mirror the politicised environment for debate on the issue, the public is heavily drawn in more or less knowingly as playing a part in forming the subsequent environment for debating climate change. As such, these debates are not just primarily discussed at the political level before making its way to the public, the public is drawn in in the process of debating to influence the on-going debates at the political level.

This influence of partisan fronts is taken up more broadly in *Media and Political Engagement (2009)*, where Peter Dahlgren holds how democratic principles have come under pressure from the increasing power of the private corporate sector, where even the organised politics have come to feel the consequences of an altered landscape for doing democracy. (On a point of reference, Dahlgren locates his views for the most part in the context of Western democracy, with particular interest also to the United States, which has also been adopted for this discussion and research more broadly.)

Central to Dahlgren's point is how democracy is changing in the late modern world. It is in transition. There are both positive and negative aspects of this, as well as complex structures to be discussed in the wake of a changing democracy. One important aspect is the increasing invasion of global capitalist market now holding stalemate the governments of nation-states. This is seen for instance in how economic rationality behind decision-making has come to "permeate many sectors of society," constricting other arguments not based on an economic incentive, discouraging participation by the people. (ibid: 7) Also central to Dahlgren's point is the advent of media in the middle of all of this. In line with Hjarvard and Grisprud, media's role is ubiquitous in and to all sectors of society and holds new opportunities for democratic participation but the conglomerate structures within media, as well as media's development based on market logics and as part of and driving global capitalisation, call for critical assessment at all times. As time passes by, and the traditional ways of political engagement are in evolution and under pressure from forces "beyond democratic accountability" (ibid: 6), Dahlgren proposes a democratisation of democracy, or more practically speaking, taking a step away from for instance the traditional mode of casting one's ballot to alternative ways of politically engage in democracy, in which less

formal civic practices within non-political spheres may develop and eventually become formal politics. (Dahlgren concedes that this view stems from normative motivation in how certain features are deemed mandatory in presence in order for political participation to take place.)

Following the analysis of frames on climate change and the aspects of influence on media content, the research points to two overarching trends for further discussion with regard to doing democracy in line with Dahlgren's views. On the micro-level, the results indicate first how the political environment surrounding climate change in the U.S. has moved beyond the science governing the climate, (with climate sceptics founding their strongest arguments based within the realm of scientific practice). Second, and in the broader context of the macro-level, the results indicate how corporate interests and market logics taking on democratic practices through realisation of their political interests and advancing their goals based on principles of information to the public sphere. It stands to reason then that democracy suffers at the hands of its own principles of "promoting the idea of a public sphere, which builds on the universalism idea of something common, shared, to which all citizens are entitled (...)" (Dahlgren, 2009: 34) The drivers behind framing on climate change based on scepticism are citizens, and as citizens, they are entitled on equal footing with other citizens, as well as being part of and driving corporate interests.

Both Giddens (1998) and Mouffe (2013) address the difficulties of the opposition between liberal forces and democracy. In an attempt to reconcile the two, Giddens proposed a "third way" where wealth creation, growth and social justice and the state could take part side by side. (1998) Lodged in this thought, Mouffe sees a reformed democracy as the solution to reconciliation and democratic difficulties through her agonistic approach. "We" and "they" are in the agonistic perspective equally relevant to forming a workable and pluralistic democracy, where the goal is the process of doing democracy rather than attempting to form consensus among all parties. Instead of seeing each other as enemies and attempting to eliminate diversities, the aim is to get opponents to fight for their position by also recognising other positions as well, and in the process reveal the availability of alternatives. (Mouffe, 2013: 77) For the time being, Mouffe sees an inability on the part of the left-wing to form a collective "we", leaving a void for the right-wing to do just that and furthermore, to mobilise "passions", and what Mouffe sees as the all-important "driving force in the political field." (Mouffe, 2013: 12, 27, 30) Following Dahlgren, Giddens and Mouffe argue for this pluralistic and encompassing form of a workable democracy for adversaries in politics, the

question of willingness from all parties and in the public sphere needs also to be addressed. Additionally, from another point raised by the research in its analysis of framing, there is further a question of differences of worldviews and languages spoken by either party, which holds the key to the realisation of political engagement. In contending that fans of two different football clubs at the same match do not experience the same match (Goffman referred to in D'Angelo and Kuypers, 2010), framing, too, seems to reveal how oppositions do not experience the same world even though they may speak on the same issue.

Overall, in discussing implications for doing democracy, the role of media in offering a space for political engagement is twofold and offers opportunities as well as limitations. In line with how Mercer shows how the merits of the scientific method have been used by conservatives to stir controversy, so has framing followed this same strategy by virtue of its ability to organise experience and understanding. Yet, both media and framing are seen as vital and necessary for doing democracy in their mode of providing structures for political engagement.

Besides yielding the power of a sort of 'democratic seal of approval' through attention in the public arena, media provides common grounds of experience for talking about politics and to 'do' democracy. At the same time, barriers and hindrances for political participation are found within the very structures of both media logic and the use of media as a means to a political end. (And even with the presence of media as a necessary tool to form and base democratic citizenship, because they are the bearers of political communication beyond face-to-face settings, they are not a guarantee for shaping the democratic character of society. (Dahlgren, 2009: 2)) With reference to political framing of climate change in U.S. politics with special attention to the attributes of climate change denial (and market logic) paint a much broader perspective, in which democracy and democratic practices to a large extent are at the mercy of political interests on many sides governing U.S. democracy.

6.0 Conclusion

This thesis has looked at the aspect of framing of climate change in media and public discourse in the U.S. from a climate sceptic perspective. To narrow down the scope of the thesis, the research has focused on scepticist frames on climate change. The research has further examined the findings from the data analysis of the frames as evidence, revealing the deeper motivations behind this framing by also including relevant background material for

the further context of analysis from the data results. Several different theoretical frameworks within the fields of political science, social sciences and humanities have been employed in the undertaking of the research ranging from political communication to frame and media analysis. By employing such a broad spectrum of fields, the aim has been to gain an in-depth understanding not just of the data in question, but the data seen as a phenomenon happening in the social world. Methods and methodology yielded both opportunities and limitations to the study of framing. This was in part due to the many different approaches and possible methods available for undertaking frame analysis.

The research has yielded evidence of a framing of climate change in the U.S. media and public discourses indicating a politically motivated framing of climate change. Following this, of the more prominent frames, climate change has been framed as scientifically uncertain, an economic or social progress/competitiveness opportunity, "a hoax", or naturally occurring fluctuations predating humanity. In this research, the frames on climate change were based on economic or social progress/competitiveness opportunity as well as naturally occurring fluctuations predating humanity. An additional frame of *human evolution* was employed for the framing of climate change found in the NMNH's *Educator's Guide*. Of the most important finding was how the framing of climate change aimed to combat the idea of the anthropogenic or man-made climate change.

In line with previous research on the subject of climate scepticism, the framing of climate change found in this research indicates a political environment where climate change is not just seen as the work of a left-wing agenda, but also a heated issue marking up the opposition between conservatives and democrats. That the mere issue of climate change has become so delicate that conservatives take additional and extreme measurements for combating any policy-making with regards to climate change. More broadly, it indicates a political environment of discursive practises in the U.S., in which democratic principles (here referring to Dahlgren's depiction of the term) can be cast aside for the advancement of one political agenda, rendering political deliberation between adversaries irreconcilable.

In a broader perspective, framing as communications tool is useful for improving understanding of complex subjects, however, at the expense of other potentially equally relevant information. More importantly, framing is a process of communication whereby the use of analogies are constitutional in framing the subject matter of the frame to enhance understanding, and in political framing, a particular understanding of the subject matter. While analogies are helpful in this process of deciding what is what in complex political subjects by simplifying things, this process of simplicity has the potential to distort the

complexities of exactly these political subjects. And even though making decisions based on simple analogies may come in handy, it may ultimately fall short exactly because these decisions are made based on grounds that were made simple by framing leaving out all the complexities that do not go away just because the framing process has managed to do so. Paradoxically, what is deemed a useful tool to improve understanding to begin with may ultimately undermine this same understanding on other levels exactly because other relevant information is left out. However, framing is an integrated part of communicating. When we communicate, we frame our perception of how the world is connected. As such, we cannot not frame. Therefore, framing will always be a trade-off between simple and clear communication and truth value at any rate.

The role of the exhibition *Human Origins* at the National Museum of Natural History indicates how the political and politics has moved beyond the traditional political environment and into the public sphere. (Although, perhaps not in the way that Dahlgren intended) It further plays a role in realising the climate scepticist project of creating controversy in two ways: by targeting seemingly unaware students and the public with a political agenda, and undermining scientific consensus on the anthropogenic climate change. Additionally, the media of the museum and the historic sense of how the museum is located in the public as an institution for knowledge shape the mode of the representation of climate change in an uncontested narrative. In this sense, the museum has come to take part in the world and in reality outside its traditional mode of existence, and as a medium it plays the role as a more active actor in adding to the narrative of human evolution.

In the context of climate change as made apparent due to the natural sciences, indeed, climate change arose based on the merits of the approaches and the field of studies of the natural sciences. However, the numbers and statistics are of no relevance to the public unless made relevant through modes of application that makes climate change a real issue in the social world. Through the means of simpler communication.

Lastly, the implications framing of climate change and media point to how similarly to moving away from doing democracy in the traditional ways, alternative democracy is equally at stake when it comes to yielding structures that offer both opportunities as well as limitations. Where framing is a necessary political tool to express ideas of how the world works and worldviews in the realisation of politics, framing can also hinder political participation in its mode of oversimplifying complexities and omitting information. The framing of climate change reveals the imprints of power through its presentation of what an adequate political response is to a particular framing of climate change, and in that, limits

understanding of consequences and possible alternatives. Framing in this research indicates the inclusion of new grounds for battling scepticism in the public, as well as the drawing in of the public in the political agenda of battling policymaking on climate change not in favour of those who do not believe in anthropogenic climate change. Through its impact, media promises power through its mere ubiquitous presence. Similarly to framing, media has the possibility to direct attention and understanding simply through its ability to cast focus. It is important to remember that media itself is founded on and is therefore an active player in reproducing the market system. As well as there is the power of media, there is the power over media. At the hands of those in power, media by its mode of operation should always be the subject of critical assessment.

In concluding this thesis, although the research has yielded interesting results in its undertaking of framing on climate change in the U.S., additional research is needed for the broader understanding of how framing works in practice. Especially, the researcher would here like to consider current trends and developments (or rather the opposite) in U.S. politics on climate change for this point of reference.

References

NASA. NASA, n.d. Web. 13 Dec. 2016.

Alley, R. B. "Abrupt Climate Change." *Science* 299.5615 (2003): 2005-010. Web. 20 Nov. 2016.

Andersen, Gregers. *Grænseløshedens Kultur: Et Opgør Med Hastighed, Udmattelse Og Håbløshed I Klimakrisens Tidsaler*. Kbh.: Information, 2016. Print.

Beck, Ulrich, and Mark Ritter. *Risk Society: Towards a New Modernity*. London: Sage Publications, 1992. Print.

Bennett, W. Lance. *News: The Politics of Illusion*. White Plains, NY: Longman, 1996. Print.

Boykoff, Jules. "US Media Coverage of the Cancún Climate Change Conference." *PS: Political Science & Politics* 45.02 (2012): 251-58. Web.

Boykoff, M. T. "Public Enemy No. 1?: Understanding Media Representations of Outlier Views on Climate Change." *American Behavioral Scientist* 57.6 (2013): 796-817. Web.

Boykoff, Maxwell T., and Jules M. Boykoff. "Climate Change and Journalistic Norms: A Case-study of US Mass-media Coverage." *Geoforum* 38.6 (2007): 1190-204. Web.

Bruggemann, M., and S. Engesser. "Between Consensus and Denial: Climate Journalists as Interpretive Community." *Science Communication* 36.4 (2014): 399-427. Web.

Entman, Robert M. *Framing American Politics*. Ed. Karen Callaghan and Frauke Schnell. Pittsburgh, PA: U of Pittsburgh, 2005. Print.

Callaghan, Karen. *Framing American politics*. Pittsburgh, Pa: U of Pittsburgh Press, 2005. Print.

Castells, Manuel. *Communication Power*. Oxford: Oxford UP, 2009 (2013). Print.

Chong, Dennis, and James N. Druckman. *Democratic Competition and Public Opinion*. Paper Prepared for Presentation at the Annual Meeting of the American Political Science Association, Philadelphia, PA, 31 August - 3 September 2006. Department of Political Science, Nortwestern University. Philadelphia: American Political Science Association, 2006. 1-47. Print. Paper prepared for presentation at the Annual Meeting of the American Political Science Association, Philadelphia, PA, 31 August - 3 September 2006

Chong, Dennis, and James N. Druckman. "Framing Theory." *Annual Review of Political Science* 10.1 (2007): 103-26. Web.

"Climate change: How do we know?" *Facts*. NASA, n.d. Web. 12 May 2017. <https://climate.nasa.gov/evidence/>.

D'Angelo, Paul, Jim A. Kuypers, Stephen D. Reese, Matthew C. Nisbet, Baldwin Van Gorp, Bertram T. Scheulfele, Dietram A. Scheulfele, and Robert M. Entman. *Doing News Framing Analysis: Empirical and Theoretical Perspectives*. New York: Routledge, 2010. Print.

Dahlgren, Peter. *Media and Political Engagement: Citizens, Communication, and Democracy*. Cambridge: Cambridge UP, 2009. Print.

Dahlgren, Peter. *The political web: media, participation and alternative democracy*. Houndmills, Basingstoke, Hampshire: Palgrave Macmillan, 2013. Print.

Entman, Robert M. *Democracy without Citizens: Media and the Decay of American Politics*. New York: Oxford UP, 1989. Print.

Entman, Robert M. "Framing: Toward Clarification of a Fractured Paradigm." *Journal of Communication* 43.4 (1993): 51-58. Web.

Entman, Robert M. *Projections of power: framing news, public opinion, and U.S. foreign policy*. Chicago, Ill: U of Chicago Press, 2004 (2007). Print.

Fausey, Caitlin M. "Constructing agency: the role of language." *Frontiers in Psychology* 1 (2010): n. pag. Web.

Feldman, Jeffrey. *Framing the Debate: Famous Presidential Speeches and How Progressives Can Use Them to Change the Conversation (and Win Elections)*. Brooklyn, NY: Ig Pub., 2007. Print.

Fletcher, Amy Lynn. "Clearing the Air: The Contribution of Frame Analysis to Understanding Climate Policy in the United States." *Environmental Politics* 18.5 (2009): 800-16. Web.

Ford, James D., and Diana King. "Coverage and Framing of Climate Change Adaptation in the Media: A Review of Influential North American Newspapers during 1993–2013." *Environmental Science & Policy* 48 (2015): 137-46. Web.

Giddens, Anthony. *Beyond Left and Right: The Future of Radical Politics*. Stanford, CA: Stanford UP, 1994. Print.

Giddens, Anthony. *The third way: the renewal of social democracy*. Cambridge: Polity Press, 1998 (1999). Print.

Giddens, Anthony. *Modernity and self-identity: self and society and the late modern age*. Cambridge: Polity Press, 1999. Print.

Gitlin, Todd. *The whole world is watching*. Berkeley: U of California Press, 1980. Print.

Goffman, Erving. *Frame analysis: an essay on the organization of experience*. Boston: Northeastern U Press, 1974. Print.

Goldenberg, Suzanne. "Tea Party movement: Billionaire Koch brothers who helped it grow." *The Guardian*. Guardian News and Media, 13 Oct. 2010. Web. 13 May 2017.

Goldenberg, Suzanne. "Work of prominent climate change denier was funded by energy industry." *The Guardian*. Guardian News and Media, 21 Feb. 2015. Web. 13 May 2017.

Gripsrud, Jostein. *Mediekultur, mediesamfund*. Kbh.: Hans Reitzel, 2010. Print.

Happer, C., and G. Philo. "New Approaches to Understanding the Role of the News Media in the Formation of Public Attitudes and Behaviours on Climate Change." *European Journal of Communication* 31.2 (2015): 136-51. Web.

Henning, Michelle. *Museums, media and cultural theory*. Maidenhead, England: Open U Press, 2006. Print.

Hjarvard, Stig. *En verden af medier: medialiseringen af politik, sprog, religion og leg*. Frederiksberg: Samfundslitteratur, 2008 (2011). Print.

"Home." *Americans for Prosperity*. N.p., n.d. Web. 13 May 2017.

Hulme, Mike. *Why We Disagree about Climate Change: Understanding Controversy, Inaction and Opportunity*. Cambridge, UK: Cambridge UP, 2009. Print.

"Koch Industries on the Forbes America's Largest Private Companies List." *Forbes*. Forbes Magazine, n.d. Web. 13 May 2017.

Lakoff, George. "Posts from February 18, 2017 on George Lakoff." *George Lakoff*. N.p., n.d. Web. 13 May 2017.

Lakoff, George. *Don't Think of an Elephant!: Know Your Values and Frame the Debate: The Essential Guide for Progressives*. White River Junction, VT: Chelsea Green Pub., 2004. Print.

Lakoff, George, and Elisabeth Wehling. *The Little Blue Book: The Essential Guide to Thinking and Talking Democratic*. New York: Free, 2012. Print.

Larkin, Kate. "Climate change needs social science and humanities." *Nature News*. Nature Publishing Group, 15 Sept. 2010. Web. 12 May 2017. <http://blogs.nature.com/news/2010/09/climate_change_needs_social_sc.html>.

Boyce, J. *Climate Change and the Media*. Ed. T. Lewis. N.p.: n.p., 2009. Print.

Linström, Margaret , and Willemien Marais. "QUALITATIVE NEWS FRAME ANALYSIS: A METHODOLOGY." *Communitas* 17 (2012): 21-38. Print.

Lockwood, Alex. "Seeding Doubt: How Sceptics Have Used New Media to Delay Action on

Climate Change." *Geopolitics, History, and International Relations* 1948-9145 2(2).ISSN (2010): 136-64. Print. Addleton Academic Publishers

Madsen, Kristian. "Mogens Lykketoft vender hjem til en seniorkarriere som klimaaktivist." *Politiken*. N.p., 3 Sept. 2016. Web. 12 May 2017.

"Makers of goods. Advocates of better." *Koch Industries*. N.p., n.d. Web. 13 May 2017.

Mayer, Jane. "The Koch Brothers' Covert Ops." *The New Yorker*. The New Yorker, 22 Nov. 2016. Web. 13 May 2017.

McCombs, Maxwell E. *Setting the Agenda: The Mass Media and Public Opinion*. Cambridge, UK: Polity, 2014. Print.

Mccright, Aaron M., and Riley E. Dunlap. "Challenging Global Warming as a Social Problem: An Analysis of the Conservative Movement's Counter-Claims." *Social Problems* 47.4 (2000): 499-522. Web.

McQuail, Denis. "Mass Communication Theory: An introduction." *(1st ed.)* (1983): n. pag. *Sage*. Web. 20 Dec. 2016.

Mercer, David. "Why Popper can't resolve the debate over global warming: Problems with the uses of philosophy of science in the media and public framing of the science of global warming." *Public Understanding of Science* (2016): 096366251664504. Web. 20 Dec. 2016.

Mouffe, Chantal. *Agonistics: thinking the world politically*. London: Verso, 2013. Print.

Nisbet, E. C., K. E. Cooper, and M. Ellithorpe. "Ignorance or Bias? Evaluating the Ideological and Informational Drivers of Communication Gaps about Climate Change." *Public Understanding of Science* 24.3 (2014): 285-301. Web.

"No Climate tax Pledge:." *AFP No Climate Tax*. N.p., n.d. Web. 13 May 2017.

Olausson, Ulrika. "'We're the Ones to Blame': Citizens' Representations of Climate Change and the Role of the Media." *Environmental Communication* 5.3 (2011): 281-99.

Oreskes, Naomi, and Erik M. Conway. *Merchants of Doubt: How a Handful of Scientists Obscured the Truth on Issues from Tobacco Smoke to Global Warming*. New York: Bloomsbury, 2011. Print.

Painter, James, and Teresa Ashe. "Cross-national Comparison of the Presence of Climate Scepticism in the Print Media in Six Countries, 2007–10." *Environmental Research Letters* 7.4 (2012): 044005. Web.

Cass, Loren R., and Mary E. Pettenger. *The Social Construction of Climate Change: Power, Knowledge, Norms, Discourses*. Ed. Mary E. Pettenger. Aldershot, Hampshire, England: Ashgate, 2007. Print.

Pettenger, Mary. *The social construction of climate change: power, knowledge, norms, discources*. Aldershot: Ashgate, 2009. Print.

Pielke, Roger A. *The Climate Fix: What Scientists and Politicians Won't Tell You about Global Warming*. New York: Basic, 2010. Print.

Ragin, Charles. "The Goals of Social Research." *Constructing Social Research: The Unity and Diversity of Method, Northwestern University, Pine Forge, Thousand Oaks* (1994): Pp. 31-54. Web. 20 Sept. 2016.

Regan, Patrick M. *The Politics of Global Climate Change*. Boulder: Paradigm, 2015. Print.

Runnel, Pille, and Pille Pruulmann-Vengerfeldt. *Democratising the museum: reflections on participatory technologies*. Frankfurt: PL Academic Research, 2012 (2014). Print.

Salazar, Juan Francisco. "The Mediations of Climate Change: Museums as Citizens' Media." *Museum and Society* 9.2 (2011): 123-35. Web. 20 Feb. 2017.

Sayer, Andrew. *Realism and social science*. Los Angeles: Sage, 2000 (2010). Print.

Schmid-Petri, H., S. Adam, I. Schmucki, and T. Ha Ussler. "A Changing Climate of Skepticism: The Factors Shaping Climate Change Coverage in the US Press." *Public Understanding of Science* (2015): n. pag. Web.

Schulz, Winifried. "Reconstructing Mediatization as an Analytical Concept." *European Journal of Communication* 19.1 (2004): 87-101. Web.

Shoemaker, Pamela J., and Stephen D. Reese. *Mediating the message in the 21st century: a media sociology perspective*. New York: Routledge, 2014. Print.

Smithsonian's National Museum of Natural History. "Exhibition." *Exhibit | The Smithsonian Institution's Human Origins Program*. N.p., 01 Mar. 2010. Web. 12 May 2017.

Smithsonian's National Museum of Natural History. "Climate Effects on Human Evolution." *Climate Effects on Human Evolution | The Smithsonian Institution's Human Origins Program*. Smithsonian's National Museum of Natural History, 01 Mar. 2010. Web. 12 May 2017.

Sonnett, J. "Climates of Risk: A Field Analysis of Global Climate Change in US Media Discourse, 1997-2004." *Public Understanding of Science* 19.6 (2009): 698-716. Web.

Stoknes, Per Espen. *What We Think About When We (Try Not to) Think About Global: Warming*. White River Junction: CHELSEA GREEN PUBLISHING CO, 2015. Print.

Sørensen, Mikkel. *Klima og mennesker: humanistiske perspektiver på klimaforandringer*. København: Museum Tusculanums Forlag, 2014. Print.

Thibodeau, Paul H., and Lera Boroditsky. "Metaphors We Think With: The Role of Metaphor in Reasoning." *PLoS ONE* 6.2 (2011): n. pag. Web.

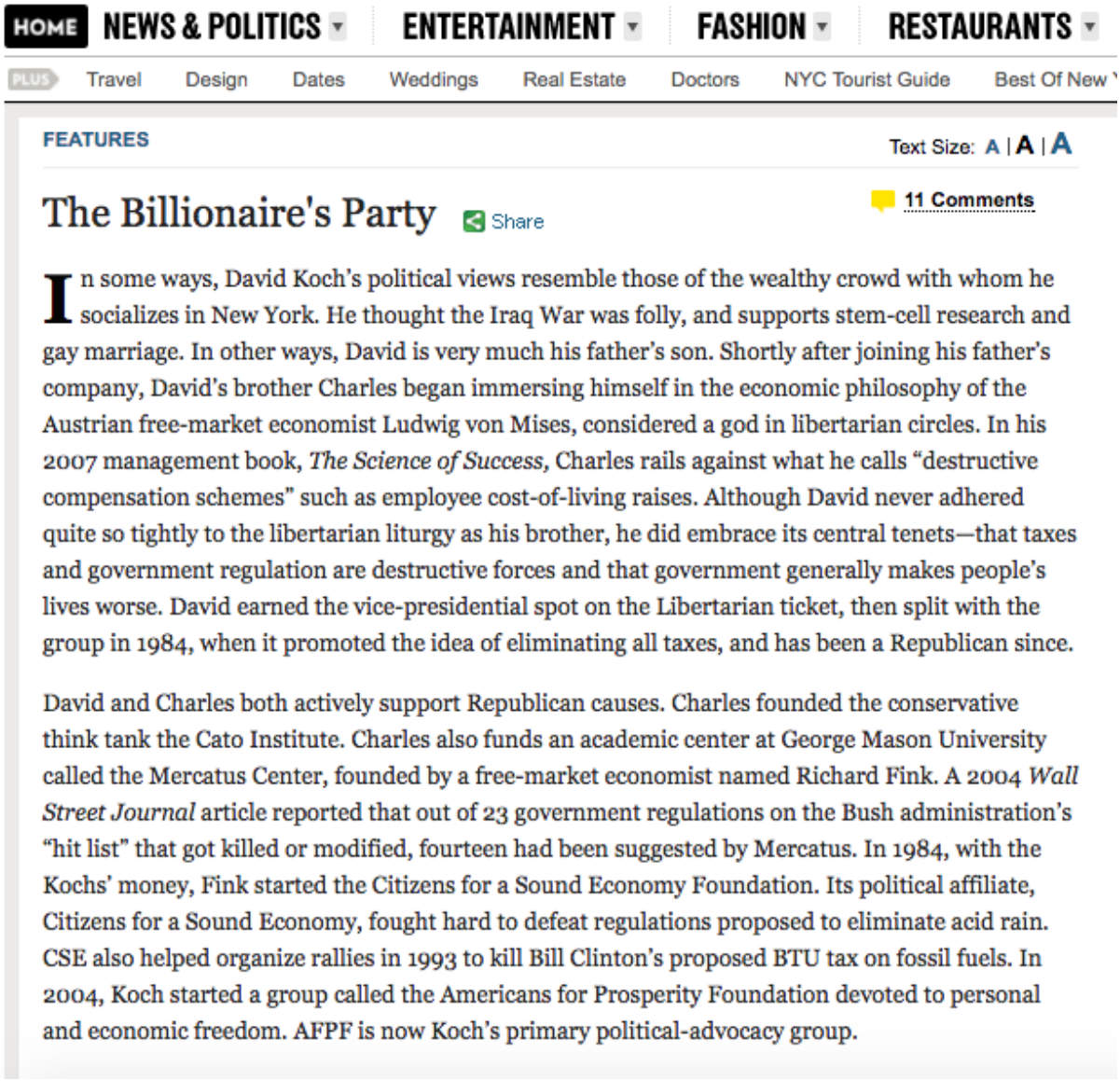
Thibodeau, Paul H., and Lera Boroditsky. "Natural Language Metaphors Covertly Influence Reasoning." *PLoS ONE* 8.1 (2013): n. pag. Web.

Tversky, Amos, and Daniel Kahneman. "Rational Choice and the Framing of Decisions." *The Journal of Business: Part 2: The Behavioral Foundations of Economic Theory* 59.S4 (1986): S251-S278. Print.

Yin, Robert K. *Case study research: design and methods*. Los Angeles: Sage, 2014. Print.

Appendices

Appendix 1: Article from NY Magazine: Interview with Charles Koch



HOME NEWS & POLITICS ENTERTAINMENT FASHION RESTAURANTS

PLUS Travel Design Dates Weddings Real Estate Doctors NYC Tourist Guide Best Of New

FEATURES

Text Size: A | A | A

11 Comments

The Billionaire's Party

Share

In some ways, David Koch's political views resemble those of the wealthy crowd with whom he socializes in New York. He thought the Iraq War was folly, and supports stem-cell research and gay marriage. In other ways, David is very much his father's son. Shortly after joining his father's company, David's brother Charles began immersing himself in the economic philosophy of the Austrian free-market economist Ludwig von Mises, considered a god in libertarian circles. In his 2007 management book, *The Science of Success,* Charles rails against what he calls "destructive compensation schemes" such as employee cost-of-living raises. Although David never adhered quite so tightly to the libertarian liturgy as his brother, he did embrace its central tenets—that taxes and government regulation are destructive forces and that government generally makes people's lives worse. David earned the vice-presidential spot on the Libertarian ticket, then split with the group in 1984, when it promoted the idea of eliminating all taxes, and has been a Republican since.

David and Charles both actively support Republican causes. Charles founded the conservative think tank the Cato Institute. Charles also funds an academic center at George Mason University called the Mercatus Center, founded by a free-market economist named Richard Fink. A 2004 *Wall Street Journal* article reported that out of 23 government regulations on the Bush administration's "hit list" that got killed or modified, fourteen had been suggested by Mercatus. In 1984, with the Kochs' money, Fink started the Citizens for a Sound Economy Foundation. Its political affiliate, Citizens for a Sound Economy, fought hard to defeat regulations proposed to eliminate acid rain. CSE also helped organize rallies in 1993 to kill Bill Clinton's proposed BTU tax on fossil fuels. In 2004, Koch started a group called the Americans for Prosperity Foundation devoted to personal and economic freedom. AFPF is now Koch's primary political-advocacy group.

Global warming could be good for the planet, Koch says. "A far greater land area will be available to produce food."

David Koch is deeply antagonistic to the Obama administration. He fought the health-care bill, and the financial-regulation measure that was passed last week ("Everyone I know in the financial world is terrified by the powers it gives the federal government"). He also opposes the president's climate-change proposals. In his office, Koch showed me a photocopied flyer Greenpeace had produced with sketches of him and Charles below the words wanted for climate crimes and shook it in the air. Koch Industries' emissions, Koch told me, are far less than legally required. "And yet they're attacking us as environmental criminals," he said. "Wanting to put me and Charles in jail." Koch says he's not sure if global warming is caused by human activities, and at any rate, he sees the heating up of the planet as good news. Lengthened growing seasons in the northern hemisphere, he says, will make up for any trauma caused by the slow migration of people away from disappearing coastlines. "The Earth will be able to support enormously more people because a far greater land area will be available to produce food," he says.

Koch concedes that he sympathizes with the tea party. "It demonstrates a powerful visceral hostility in the body politic against the massive increase in government power, the massive efforts to socialize this country, which goes against the conservative grain of the average American," he says. He insists he vigorously opposes the elements of the party "that go too far" and that he stands firmly against "violence" and other "bad things" perpetrated by tea-party members. "I'm not a racist. I'm very broad-minded," he says.

Koch's critics, however, say he's being coy about his tea-party connections. "David Koch likes putting his name on all his things that aren't evil," says Lee Fang, a blogger for the liberal Thinkprogress.org. "He'll put his name on his theater at Lincoln Center, but look at the Americans for Prosperity website and his name is virtually missing. All of his groups have used these same tea-party tactics before they actually had the tea-party brand." Americans for Prosperity, AFPF's political arm, has certainly not shied away from joining arms with the tea party. In April of last year, AFP took credit on its website for helping to organize Taxpayer Tea Party rallies in Sacramento, Austin, and Madison, and told visitors to "save the date" for National Tea Party Tax Day in Washington, which AFP would be hosting.

Koch's detractors also like to point out the irony of the so-called grassroots tea-party movement's being funded by a billionaire. Koch's real motives, they say, are self-serving. In April, Fang posted a dossier on Koch that attributes to his groups a decades-long pattern of "Astroturfing"—funding movements designed to look grassroots, but which in fact represent corporate interests. Richard Fink insists that Koch's political activity is about principles, not money. "I view David as a courageous American who has a set of beliefs that he's willing to support consistently over time despite all the flak he gets," Fink says. "Very few people would do that."

Next: Koch's speech at the Defending the American Dream Summit.

Appendix 2: Educator Guide from the Human Origins Exhibition at the National Museum of Natural History in Washington, DC

(Attached)

Appendix 3: Discovery Newsletter, 2010, Koch Industries

(Attached)

Appendix 4: Koch Invitation and programme

(Attached)

Smithsonian
National Museum of Natural History

DAVID H. KOCH **HALL OF HUMAN ORIGINS**

EDUCATOR GUIDE

GRADES 5-12

This guide will help you plan a successful field trip to the David H. Koch Hall of Human Origins.

HumanOrigins.si.edu

Table of Contents

What the Hall Offers

This exhibition is a great place to explore:

- *some of the milestones in human evolution;*
- *a variety of early human species that evolved and went extinct over the past 6 million years;*
- *the relationship between human evolution and the dramatic climate fluctuations that occurred during this time;*
- *examples of the survival challenges early humans faced–and how they adapted;*
- *how scientists use evidence such as fossils and DNA to learn about human evolution.*

The exhibit also provides an opportunity to instill a passion for scientific discovery by building on students' natural curiosity about human origins.

What this Guide Offers

This guide contains basic information and a range of strategies for using the exhibit to engage your students in the subject of human evolution. Links direct you to other supportive information on this website, humanorigins.si.edu.

Because human evolution can fit into different areas of the curriculum, we have developed itineraries related to five themes:

1. Milestones in Human Evolution
2. Human Family Tree
3. How Do We Know?
4. Primate Heritage
5. Climate and Survival

You can select those themes and activities that best meet your particular curriculum goals and needs.

Human evolution is a vibrant scientific field, and the origins of our own species is a topic of great personal interest to most people. We hope this guide will help you and your students experience the excitement of scientific discovery.

National Science Standards

All of the following standards are supported by a field trip to the Koch Hall of Human Origins. This guide focuses on those related to Life Science.

Science as Inquiry	Life Science	Earth and Space Science Standards	History and Nature of Science
· Abilities necessary to do scientific inquiry · Understanding about scientific inquiry	· Regulation and behavior · Populations and ecosystems · Diversity and adaptations of organisms	· Earth's history	· Science as a human endeavor · Nature of science

THE HALL OF HUMAN ORIGINS

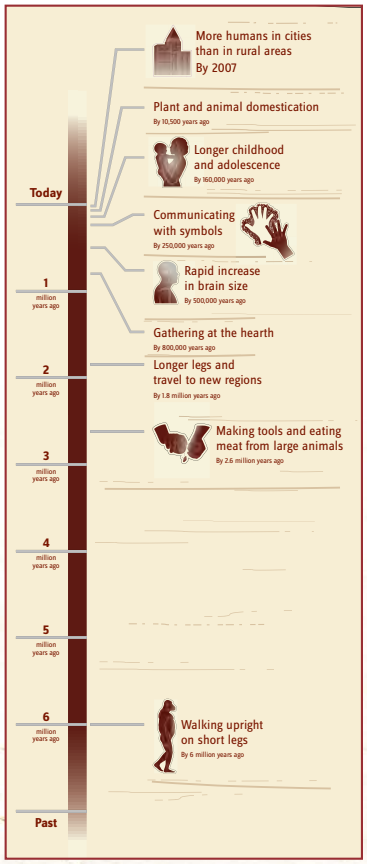
What does it mean to be human?

There are, of course, many answers to that question–including physical traits, behaviors, values, beliefs, emotions, and spirituality. This exhibit invites you and your students to explore milestones in the evolution of several human traits over the past 6 million years. You can then incorporate this knowledge into your personal understanding of what it means to be human.

THE BIG IDEAS

Over a long period of time, as early humans adapted to a changing world, they evolved certain traits that help define our species today.

This exhibit focuses on several human traits that evolved over the past 6 million years. As you and your students explore the scientific evidence, you will discover that these traits did not emerge all at once or in any one species. There were important milestones along the way. For example, early humans began walking upright before they began making tools. A rapid increase in brain size occurred before early humans began using symbols to communicate. And all of these traits emerged before humans began domesticating plants and animals.

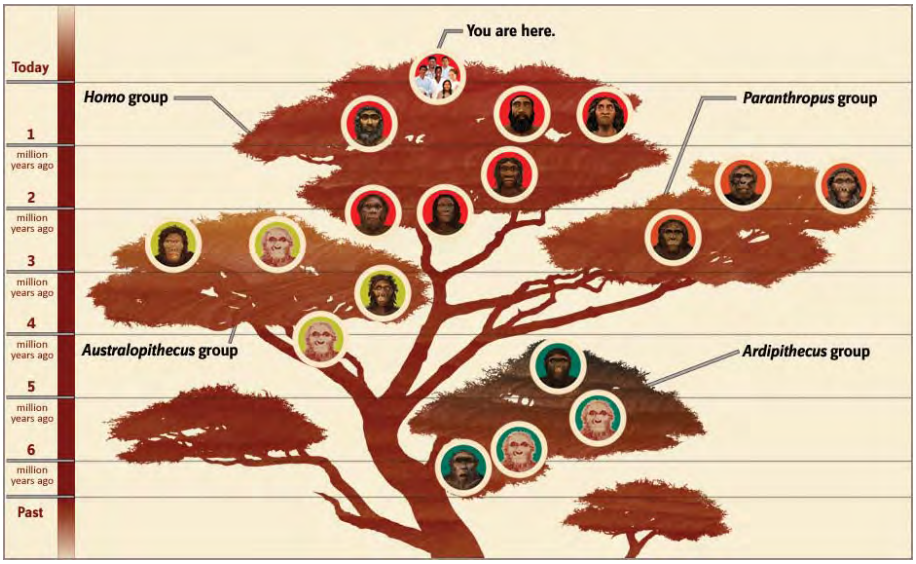


Human beings share many traits with other primates.

DNA evidence confirms that humans are primates and that we belong to the same biological group as great apes. Our closest relatives are chimpanzees and bonobos, with whom we share many physical and behavioral traits. In fact, there is only about a 1.2 percent genetic difference between modern humans and chimpanzees throughout much of their genetic code. In the exhibit students will discover what traits humans share with our closest primate relatives and what traits are unique to humans.

The human family tree is diverse.

For much of the 6 million years of human evolution, more than one early human species lived on Earth at the same time. Researchers have identified fossils of around twenty early human species so far. Over time, these species became extinct. Our own species, *Homo sapiens*, is the lone survivor. Students will see reproductions of some early human species, learn how they survived, and discover how early and modern humans relate to each other on the human family tree.



Humans evolved during a time of dramatic environmental change.

Earth's climate has always fluctuated between warm and cool, moist and dry. But during the last 6 million years (the period in which humans evolved), these fluctuations became more extreme. The traits that early humans evolved helped them survive. Throughout the exhibit students will encounter examples of how early humans responded to the challenges presented by changing climates–and how this led to the evolution of unique human traits.

Website Links

Introduction to Human Evolution

Broader Social Impacts Committee

Human Characteristics

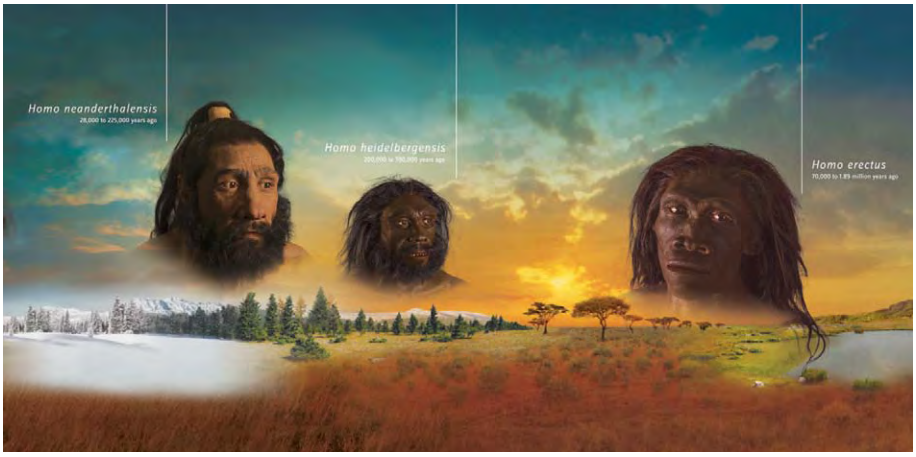
Glossary

EXHIBIT FLOOR PLAN

Each major area is described in the following pages.

TIME TUNNEL

As students enter the exhibit, they walk through a short tunnel that takes them back through time from the present to 6 million years ago. They see animations of some of their distant relatives and examples of different environments in which early humans lived.



ORIENTATION (OCEAN HALL SIDE)

The displays in this area are good places to introduce students to the hall's overall themes.

Human Family Tree

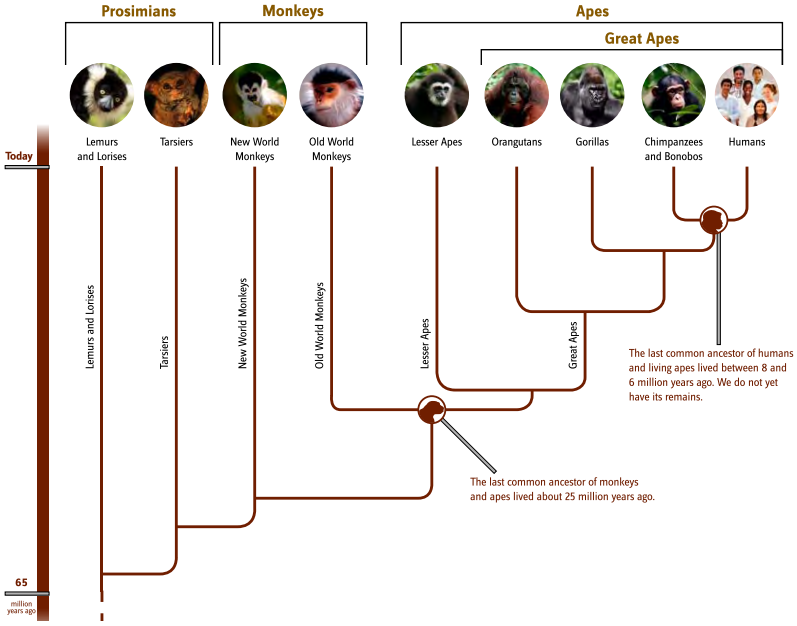
- Students explore a large illustration of the human family tree and locate our own species, *Homo sapiens*. We are the lone survivor on the tree today.
- Nearby are reproductions of skulls of five early human species that students touch and compare. They can find each species on the human family tree.

Climate Video

- A 2-minute video shows how Earth's climate has shifted between periods that were warm and cool, and periods that were moist and dry. These shifts became more extreme over time.
- Students see how human traits such as toolmaking and large brains emerged during times of extreme climate shifts.

Primate Family Tree

- This illustration shows how genetically similar modern humans are to chimpanzees (98.8%)–as well as to mice (85%), chickens (75%), and banana trees (60%)!
- A panel nearby explains that DNA confirms humans are primates. Between 8 and 6 million years ago, modern humans branched off from the common ancestor we share with chimpanzees and bonobos.



EVOLUTIONARY MILESTONES

These exhibits provide an opportunity for students to explore some major milestones in human evolution and to examine scientific evidence for each milestone. The milestones are organized in six major sections.

Milestones in Human Evolution Timeline

- This timeline shows when some of the major human traits emerged over the past 6 million years–from walking upright to domesticating plants and animals.
- Students will see similar timelines throughout the exhibit.

Walking Upright

- Fossils show how early humans made a gradual transition from walking on four legs to walking on two legs. Walking upright enabled early humans to move around in a variety of environments and to cope with changing climates.
- Students examine the cast of a 3.2-million-year-old early human skeleton (Lucy) with both apelike and humanlike features. They can also walk a trail of early human footprints made in East Africa 3.6 million years ago.

New Tools, New Foods

- Students compare a variety of early human tools and discover how these tools helped early humans obtain new foods, alter their surroundings, and survive in a variety of environments.
- Students see the oldest-known human tool kit and some tools made by chimpanzees.

Changing Body Sizes and Shapes

- Students compare the body shapes of several early human species and discover how the different shapes emerged in response to changing climates and new diets.
- Students also compare the skeletons of a *Homo erectus* boy who lived in a warm climate and an adult Neanderthal who lived in a cold climate.

Bigger Brains

- A series of brain endocasts (replicas of the insides of braincases) illustrates that brains increased in size as early humans faced new environmental challenges and as their bodies got bigger.
- Students use an interactive to compare their brain with a chimpanzee's.

Social Life

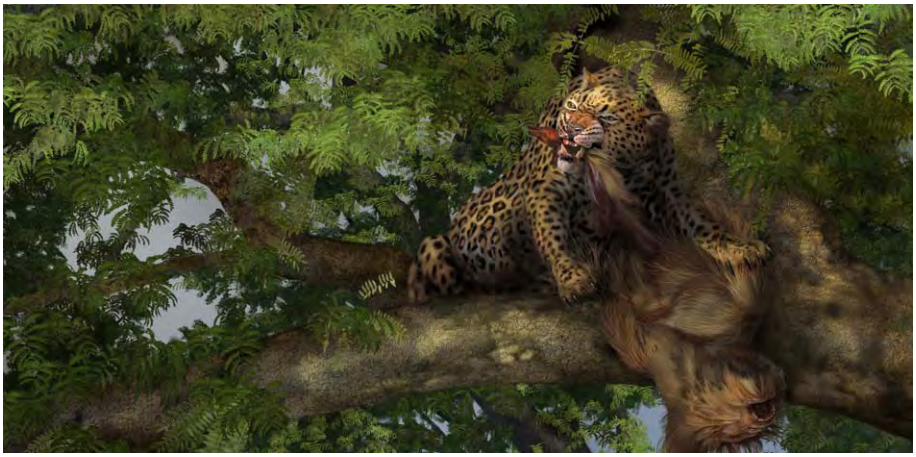
- Students examine evidence that shows how early humans met the challenges of survival by sharing food, caring for infants, creating shelters, using fire, and building social networks.
- They also compare casts of the skeletons of two early human children.

Creating a World of Symbols

- Human artifacts show how symbols such as color, words, and sound changed the way early and modern humans lived and provided new ways to cope with an unpredictable world.
- Students see reproductions of some of the earliest-known human art. They can also compare their hands with handprints left by humans in caves and rock shelters around the world.

SNAPSHOTS OF SURVIVAL

In these interactive media experiences, students use scientific evidence to reconstruct scenes from the past.



1.8 Million Years Ago, Swartkrans, South Africa

- This experience unveils the life and death challenges one early human species *(Paranthropus robustus)* faced in South Africa's wooded grasslands.
- Students examine fossil clues, and then watch an animation of a leopard preying on an early human as his group forages for food.

990,000 Years Ago, Olorgesailie, Kenya

- This media experience shows how a group of *Homo erectus* used tools and cooperated with others to survive during one of East Africa's dry periods.
- Students examine fossil and artifact clues, and then watch an animation showing a group of *Homo erectus* butchering an elephant.

65,000 Years Ago, Shanidar Cave, Iraq

- This media experience re-creates a scene in which a group of Neanderthals bury and mourn a member of their community.
- Students examine fossil and artifact clues, and then watch an animation showing the mourners placing colorful flowers in the burial pit.

SMITHSONIAN RESEARCH STATION

Students discover what Human Origins Program scientists have learned about early humans and past environments in the Rift Valley of East Africa and in northern China.

They can use a computer interactive to explore ancient hippo footprints, an early human fossil skull, and a variety of other important finds at the program's research site in Kenya.

MEET YOUR ANCESTORS

In this area students can compare fossils of different early human species and explore how the species are related to each other.

Six Million Years of Human Evolution

- This display features 76 fossil skulls from 15 species of early humans–including the oldest-known fossil human (*Sahelanthropus tchadensis*) and Cro-Magnon Man.
- Students use a computer interactive to examine some of the skulls more closely, to compare skulls, and to explore relationships among a variety of early human species.

Head Reconstructions

- Students look into the eyes of eight early human species in this display of lifelike reconstructions.
- They can learn what made each species unique and how the species compare with each other.

Morphing Station

- Here students can transform themselves into an early human.
- They select one of eight early human species and watch their own faces morph into the face of that species.

Survival Stories

- These fossils provide clues to the dangers and survival challenges early humans faced.
- Students examine the fossils to see how four individuals died–from an eagle attack, crocodile bite, vitamin overdose, and blow to the head.

Neanderthal Skeleton

- This is a rare opportunity to see the remains of an original fossil Neanderthal skeleton discovered in 1957 in a cave in Iraq.
- Students examine the skeleton to discover how we know the individual's age (40-50 years old), sex (male), and what he ate (plants). They also look for the stab wound that may be evidence of the oldest-known homicide in the fossil record.

CHANGING THE WORLD

This area focuses on how *Homo sapiens* became the sole surviving human species, how modern humans changed the world, and how our human traits help us imagine our future.

Climate and Survival

- Students explore some of the environmental challenges that both Neanderthals and modern humans faced.
- They find out why Neanderthals became extinct–but not us.

Imagine Your Descendents

- This computer game challenges students to decide what humans might look like millions of years from now as Earth continues to change and humans continue to evolve.
- Students imagine what a future human might look like by deciding how arms, legs, heads, and other body parts might evolve.

Keep Your Species Alive

- In this group game, students face a series of imaginary survival challenges and make choices that affect our species' survival.
- Students learn that whether *Homo sapiens* thrives or becomes extinct depends in part on how adaptable we are and how well we cooperate with each other.

ONE SPECIES, LIVING WORLDWIDE

This 5-minute media presentation explores the origins of modern humans in Africa about 200,000 years ago and celebrates our species' epic journey around the world. Students learn that this shared genetic history is written in every cell of their bodies and that the DNA of all humans living today is 99.9% identical.

ORIENTATION (MAMMALS HALL SIDE)

Ape Heritage

- This display explores the body features that humans share with chimpanzees, gorillas, orangutans, and other apes.
- Students can touch fossil skulls of extinct apes–including two that could be an ancestor of modern humans.

Introductory Video

- This 1-minute video provides a quick introduction or review of milestones in human evolution.
- Students can also examine the family tree representing the common ancestry of every living human.

SPECIES SCULPTURES

Five bronze sculptures of early human species that lived between 2.3 million and 17,000 years ago and that are now extinct

TEACHING ABOUT EVOLUTION

The David H. Koch Hall of Human Origins focuses on what has been learned about human evolution through scientific methods and evidence.

There are, of course, other ways of approaching the topic of human origins, and students bring with them a variety of worldviews and religious beliefs. There need not be a conflict between these religious beliefs and the concept of evolution. For suggestions on how to handle questions about the relationship between science and religion, go to Broader Social Impacts Committee.

What Is Evolution?

Evolution is the biological process responsible for the magnificent diversity of life on Earth. Through the process of evolution, new species emerge–including our own, *Homo sapiens*.

FACTS ABOUT EVOLUTION

Evolution is a well-established scientific theory.

It is the cornerstone of modern biology, enabling us to understand the history of life on Earth–including that of humans.

Like gravity and plate tectonics, evolution is a scientific theory. Outside of science, a theory implies an untested opinion or even a guess. But in science, a theory is far more than a mere opinion or guess. It is the highest level of scientific knowledge. It is the best explanation for natural processes. It is well-tested and supported by abundant evidence. Scientific theories such as evolution enable scientists to make predictions. They drive investigations and the continued search for evidence.

Evolution is a biological process.

To survive, living things adapt to their surroundings. Occasionally a genetic variation gives one member of a species an edge. That individual passes the beneficial gene on to its descendents. More individuals with the new trait survive and pass it on to their descendents. If many beneficial traits arise over time, a new species–better equipped to meet the challenges of its environment–evolves.

There is ample evidence for evolution.

Scientists have discovered millions of fossils that provide evidence for how one life form evolved into another over time. In the case of human evolution, the evidence includes fossils of more than 6,000 early human individuals representing 6 million years of evolution. Comparisons of DNA, anatomy, and behavior provide other critical evidence that tells us how living organisms are related and how they evolved over time.

In addition, scientists have developed more than a dozen highly reliable methods for determining the age of fossils, human artifacts, and the sediments in which they are found.

MISCONCEPTIONS ABOUT EVOLUTION

Misconception: Evolution involves only random changes–things happening by chance.

Response: Random mutation is the ultimate source of genetic variation. But natural selection (the process by which only some variants survive) is *not* random. For example, streamlined body shapes evolved among some aquatic animals like sharks and dolphins. They could swim faster and therefore better capture prey and escape danger. They were more likely to survive, reproduce, and pass on their traits to the next generation.

Misconception: Evolution is about progress. Organisms are always changing and getting better, with humans as the culmination.

Response: Evolution is not about organisms marching up a ladder of progress. Many organisms–including some mosses, fungi, opossums, and crayfish–have changed little over long periods of time. They are fit enough to survive and reproduce in their environment, which is enough to ensure their existence. Other organisms–such as beetles and finches–changed and diversified greatly as they adapted to changing climates or new competitors. But that doesn't mean they got "better." And humans were definitely *not* the last organism to evolve. Numerous other species have evolved since the onset of human evolution.

Misconception: Evolution is directed toward an intentional goal or need.

Response: The process of biological evolution is not intentional. There is no evidence that evolution responds to what a species "needs." It does, however, shape adaptations that enable organisms to survive and thrive in their environments. If an individual has a particular genetic variation that enables it to survive better than others, it will have more offspring and the population will evolve. Without this process of adaptation, or natural selection, a population may die out. Natural selection is a response to genetic variation and environmental conditions–*not* to an organism's goal.

Misconception: Individuals can evolve during their lifetimes.

Response: Evolution happens to populations and species, *not* to individuals. An individual giraffe's neck will *not* grow longer during its lifetime due to selection pressure to eat from taller trees. But if pressure for long necks exists, then individual giraffes with longer necks will survive and reproduce more often than those with shorter necks. They will produce offspring with longer necks, resulting in a population or species shift to giraffes with longer necks.

Misconception: Gaps in the fossil record disprove evolution.

Response: Science actually predicts gaps in the fossil record. Many species leave no fossils at all, and the environmental conditions for forming good fossils are not common. The chance of any individual organism becoming fossilized is incredibly small. Nevertheless, new fossils are constantly being discovered. These include many transitional fossils–e.g., intermediary fossils between birds and dinosaurs, and between humans and our primate ancestors. Our lack of knowledge about certain parts of the fossil record does not disprove evolution.

Misconception: Humans are no longer evolving, and we can't actually observe evolution in action.

Response: Human evolution usually occurs over so many generations that we can't observe it. But sometimes it happens over a relatively short span. One recent example is the evolution of the ability to digest milk. Most adult mammals, including humans, are lactose-intolerant and cannot digest milk. But nearly 80% of adults of European ancestry have a gene that enables them to digest milk. Researchers think that this genetic change evolved in response to the spread of dairy farming 5,000-10,000 years ago.

Misconception: Humans are too complex to have evolved.

Response: Humans are the product of evolutionary processes that go back more than 3.5 billion years. We evolved new physical traits and behaviors on top of those inherited from earlier primates, mammals, vertebrates, and the very oldest living organisms. Take the human eye, for example. Scientists think that 550 million years ago or more, a light-sensitive spot on the skin of an ancestral creature provided a survival advantage. Random changes over millions of years led to the evolution of a pit with a narrow opening, a retina, and eventually a lens. Eyes corresponding to these stages exist in living species. According to one calculation, only 364,000 years would have been needed for a complex eye like ours to evolve from a light-sensitive patch.

Misconception: If humans evolved from apes, there wouldn't still be apes.

Response: Humans and chimpanzees both evolved from a common ape ancestor that is now extinct. Based on genetic differences between humans and chimpanzees, scientists estimate that this common ancestor lived between 8 and 6 million years ago. Humans evolved a series of differences from this common ancestor; chimpanzees evolved their own unique series of differences. Like many other species that evolved from the same common ancestor, modern humans and modern chimpanzees continue to exist at the same time.

Website Links

Introduction to Human Evolution
Fossil Evidence
Glossary
How Do We Know?
Genetics & Primate Family Tree
Broader Social Impacts Committee

FIELD TRIP STRATEGIES

Customize Your Field Trip

Here are five itineraries based on different themes related to human origins:

1. Milestones in Human Evolution
2. Human Family Tree
3. How Do We Know?
4. Primate Heritage
5. Climate and Survival

You may choose to have all your students focus on one theme or on a combination of several themes. Or, you may assign different groups of students to different itineraries and have them share their findings with other students back in the classroom.

It should take about one hour for students to complete each of the above structured itineraries. Be sure to leave some additional free time for students to explore displays other than those on the itineraries.

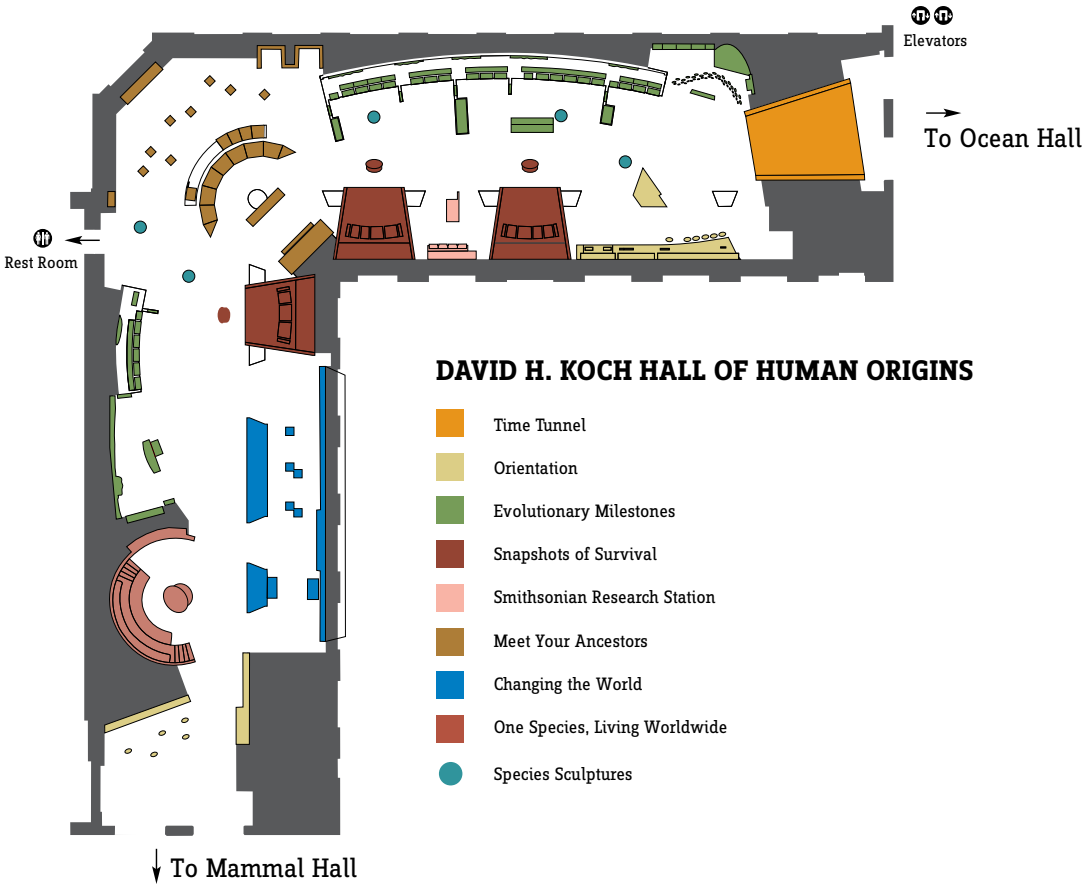
Find the Best Place to Start

The hall is located on the First Floor of the National Museum of Natural History. There are two entrances–one through the Ocean Hall, and one from the Mammals Hall.

We strongly recommend that you enter through the Ocean Hall.

Chronologically and conceptually, the displays are easiest to follow from this direction. In addition, this entrance enables your students to start off with the dramatic experience of walking through a Time Tunnel and coming face to face with a variety of early humans.

- *As you walk through the Ocean Hall, point out that the same biological processes that produced such amazing diversity in the sea also led to the evolution of our own species on land.*
- *As you exit through the Hall of Mammals, remind students that humans are part of this major group of vertebrates. You might stop at the primate display to see some of our closest relatives.*



Before the Field Trip

Spend some time in the classroom orienting students to the exhibit and to the mission of the field trip. Research shows that the more familiar students are with the physical space of an exhibit and what they will be doing there, the better they can focus once they enter the exhibit's novel and stimulating setting.

- *Explain why students will be visiting the exhibit, what they will be doing there, and how it relates to what they are studying.*
- *Use the photos, exhibit map, and interactive floorplan available on this website to orient students to the space and how it is organized, including where they will enter and where they will leave.*
- *Point to each of the major areas on the map and give examples of different things students can do in each area.*
- *Encourage students to think about what they might look for in the exhibit, and what interests them most.*
- *Answer any questions.*

Website Links:

Exhibit Interactive Floorplan

FIELD TRIP ITINERARIES

Theme #1: Milestones in Human Evolution

A. PREPARING FOR THE FIELD TRIP

Ask students to name some of the traits that make us human. Write the traits on the board, grouping them in categories–*e.g., physical traits, mental abilities, behaviors, emotions, spirituality, etc.* Emphasize that all of students' responses are valid.

Explain that in the exhibit, students will be exploring several human traits that emerged and changed at different times.

The traits are organized in six sections:

Walking Upright

New Tools and Foods

Body Size and Shape

Bigger Brains

Social Life

Language and Symbols

Each section presents a series of milestones in the evolution of human traits. It took millions of years for all the traits that define our species to accumulate.

Their mission is to explore at least one human trait. They should find out when that trait emerged, how it changed, and what scientific evidence there is for those changes (or milestones). Students should also think about how the trait helped early humans adapt to different environments and how it expanded their capabilities.

B. AT THE MUSEUM

Before you enter the Time Tunnel, remind students of the field trip's theme and their mission. Divide the class into groups, and encourage students to work together and to discuss their questions and discoveries with each other.

Give each student an exhibit map and a copy of the handout for this theme. Make sure students understand what displays on the map will help them complete their mission.

C. BACK IN THE CLASSROOM

Have each group of students report on what they discovered about the milestones that occurred in the evolution of human traits–and about the evidence for those milestones.

1. What was one of the human traits that emerged first? How do we know?
2. What was one of the last traits to emerge? How do we know?
3. How long did it take for all the traits to emerge?
4. Does it surprise students that it took so long?

Then discuss how traits such as walking upright on two legs, large brains, and complex social lives helped early humans adapt to their environments and survive.

5. How do modern humans use these same traits?
6. What can students themselves do as a result of their uniquely human traits?

If time allows, have students produce a large timeline (perhaps illustrated with students' drawings or photos of scientific evidence) that presents major milestones in human evolution.

Website Links:

Human Characteristics

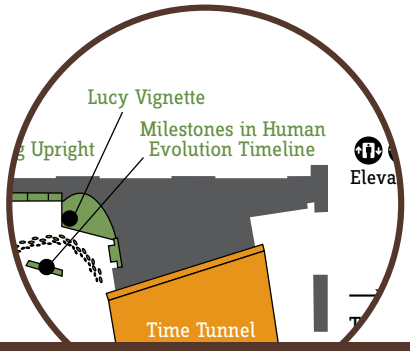
Interactive on "What Does It Mean to Be Human?"

Video on fossil evidence of human evolution

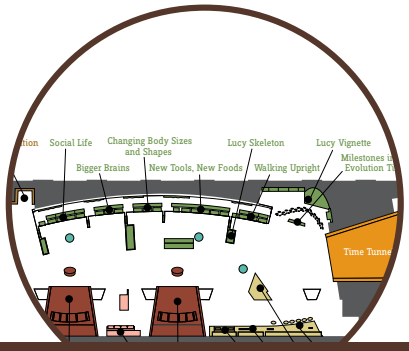
MILESTONES IN HUMAN EVOLUTION

These displays will help you complete your mission.

Look for them on the full exhibit floor plan.

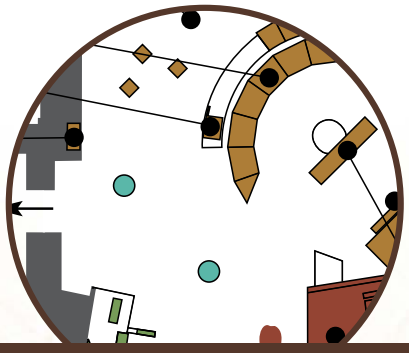


Milestones in Human Evolution Timeline
Notice which milestones emerged before others.



Evolutionary Milestones Displays
Visit at least one of these displays to look for milestones in the evolution of human traits. Use the worksheet to record your findings.

Changing the World Displays
Find out when humans became a turning point in the history of life on Earth–and why.



Species Sculptures
Can you tell what human traits each early human species had–and what traits each species did not have?

NAME

DATE

DATA COLLECTION GUIDE

Name of human trait: _____

PART 1:

What was the first milestone to occur as early humans evolved this trait?

When did that milestone occur?

Describe at least one piece of scientific evidence for that milestone. *(You can also draw or take a photo of the evidence.)*

PART 2:

What was the next milestone?

When did that milestone occur?

Describe at least one piece of scientific evidence for that milestone. *(You can also draw or take a photo of the evidence.)*

PART 3:

What was another milestone?

When did that milestone occur?

Describe at least one piece of scientific evidence for that milestone. *(You can also draw or take a photo of the evidence.)*

PART 4:

How did this trait help early humans adapt to their environment and survive?

Other notes or questions:

Theme #2: Human Family Tree

A. PREPARING FOR THE FIELD TRIP

Ask students if they've seen or heard of family trees that represent the genealogy, or history, of particular human families. Discuss how these trees show how all members of a family are related, and how living members descended from their ancestors. The human family tree is very similar, but it shows relationships among species rather than individuals. It also covers a much longer time period–about 6 million years.

Make sure students understand that all humans living today belong to one species: *Homo sapiens*. The exhibit refers to our species as "modern humans." There are many other species on the human family tree that are now extinct. The exhibit refers to these species as "early humans."

- » *Ask students if they've heard of any specific early human species.*
- » *Which species have they heard of?*
- » *What impressions do they have about what these early humans were like?*

Use the descriptions of early human species on this website humanorigins.si.edu/evidence/human-fossils/species to introduce some of the species featured in the exhibit and to begin to explore some of the ways the species differ from each other. Explain that students will learn a lot more about these species in the exhibit.

Their mission is to find out all they can about at least one early human species, including how it was like–and unlike–our own species. Students will use their findings to produce a human family tree.

B. AT THE MUSEUM

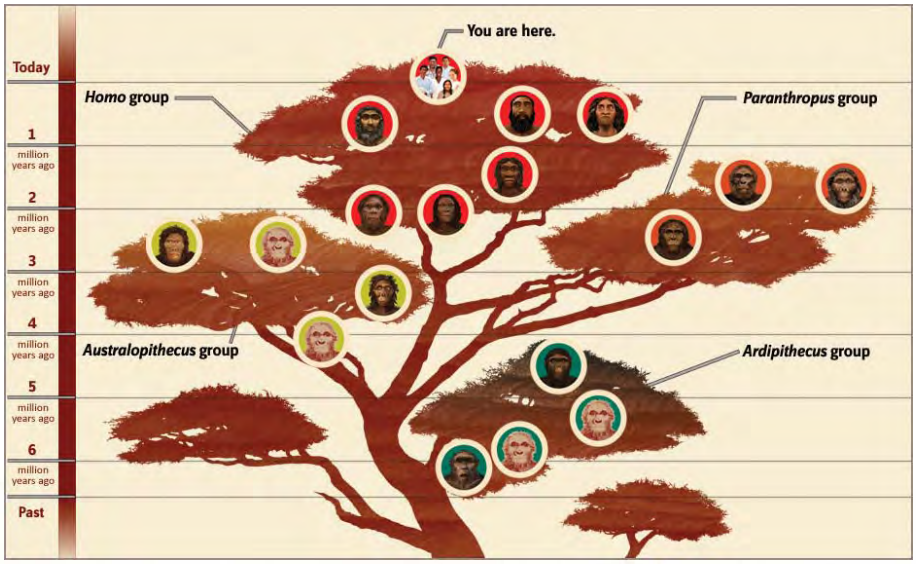
Before you enter the Time Tunnel, remind students of the field trip's theme and their mission. Divide the class into groups, and encourage students to work together and to discuss their questions and discoveries with each other.

Give each student an exhibit map and a copy of the handout for this theme. Make sure students understand what displays on the map will help them complete their mission.

C. BACK IN THE CLASSROOM

Create a classroom display using the photos students had taken of themselves as early human species (at the Morphing Station). Then have students report on the early human species they researched. Discuss the similarities and differences between these early humans and modern humans.

1. What did students find most interesting about the species they researched?
2. What was most surprising?
3. Have their impressions of early humans changed at all?
4. Did they realize that the human family tree had so many members and groups?



If time allows, have students construct a human family tree featuring the early human species they researched in the exhibit. Have them place each species in the appropriate group on a family tree and describe some traits the species shares with other members of that group.

Website Links:

Fossil Evidence Family Tree

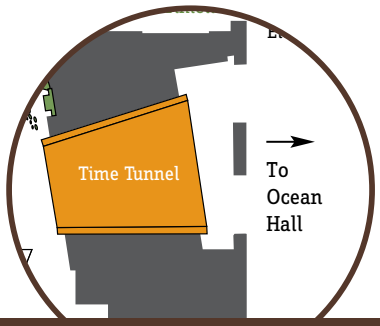
Early Human Species

One Species Worldwide Video

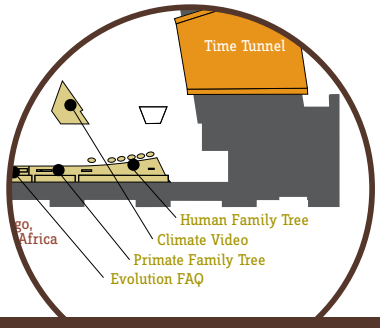
HUMAN FAMILY TREE

These displays will help you complete your mission.

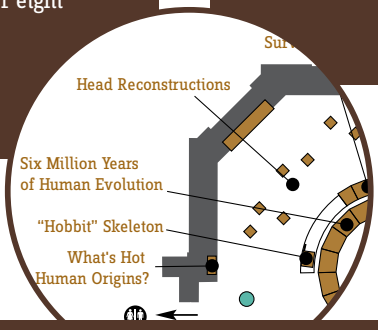
Look for them on the full exhibit floor plan.



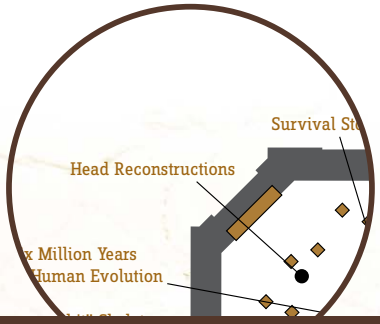
Time Tunnel
As you travel back in time, watch for eight early human species. Notice that more than one species existed at different times in the past. Pay attention to what the species are doing.



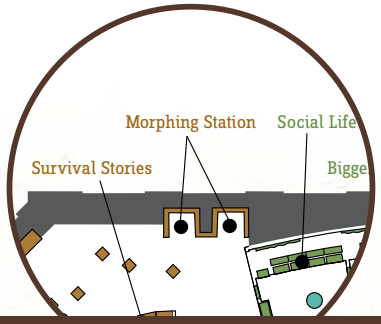
Human Family Tree
Notice the four major groups on the tree. Find our species: *Homo sapiens*. Which group do we belong to? What early human species existed at the same time as us? Touch and compare the five skulls of early humans displayed nearby. Then find them on the tree.



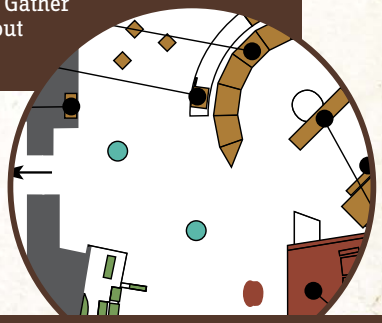
Six Million Years of Human Evolution
The 76 fossil skulls in this display come from 15 early human species as well as our own species, *Homo sapiens*. They are arranged chronologically. Look for the oldest skull, one from our own species, and one from the sculpture or head reconstruction species that interested you most. What differences do you see between earlier and later skulls?



Head Reconstructions
Take a close-up look at eight early human species. Gather more information about one of the species.



Morphing Station
Have your face transformed into the face of an early human, and have the depiction emailed to your home or school.



Species Sculptures
Visit all five sculptures. Then gather information about the early human species that interests you most.

One Species, Living Worldwide
Watch this 5-minute video to follow the worldwide journey of our own species and to find out how scientists know all humans living today belong to the same species.

NAME

DATE

DATA COLLECTION GUIDE

Visit the early human sculptures and head reconstructions, then select the species that interests you most.

Why does this species interest you?

What is the name of the species?

When did the species live?

Where did it live?

How tall was this species?

What did it eat?

What is one physical feature you notice?

In what ways does this early human seem like us?

In what ways does this early human seem different from us?

What can you conclude about this species' lifestyle?

Draw or take a photo of your species.

Theme #3: How Do We Know?

A. PREPARING FOR THE FIELD TRIP

Tell students to imagine that they are detectives who have been hired to find a missing person. How would they go about tracking down that person and solving the mystery? Students will probably mention the need to look for clues. Discuss how scientists who study human origins are a lot like detectives. They must look for clues and figure out how all the pieces fit together. In the exhibit students will have a chance to examine a variety of kinds of scientific evidence.

Their mission is to find at least three different kinds of clues that scientists use to reconstruct the story of human evolution, to think about the questions those clues help answer, and to come up with questions of their own and a plan for answering them.

B. AT THE MUSEUM

Before you enter the Time Tunnel, remind students of the field trip's theme and their mission. Divide the class into groups, and encourage students to work together and to discuss their questions and discoveries with each other.

Give each student an exhibit map and a copy of the handout for this theme. Make sure students understand what displays on the map will help them complete their mission.

C. BACK IN THE CLASSROOM

On the board, list the clues students found, grouping them into appropriate categories such as: fossil clues, genetic clues, behavioral clues, geological clues, archaeological clues, etc. Discuss what questions the different kinds of clues help answer.

1. What questions intrigued students the most?
2. What other kinds of clues might help answer the same questions?

Then ask students to share some of their own questions about human evolution.

3. What kinds of evidence could help answer these questions?
4. Do students see how questions drive scientific research and discovery?
5. Are students surprised by how much evidence there is for human evolution?

Finally, show students the short video narrated by Dr. Matt Tocheri, Human Origins Program scientist, illustrating some of the modern technologies that help scientists find answers to questions about human evolution. Students can research the Smithsonian's Human Origins Program to meet some other scientists and find out what they are discovering about human evolution. What questions are they trying to answer?

Website Links:

How Do We Know

Video on fossil evidence of human evolution

Video on latest technologies meet human evolution

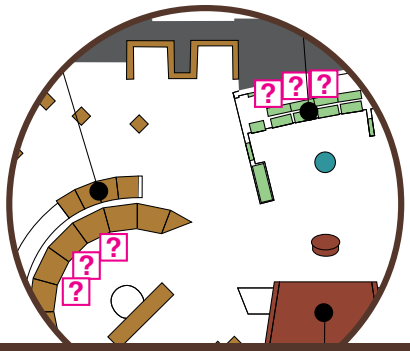
Human Evolution Research

Video on personal stories

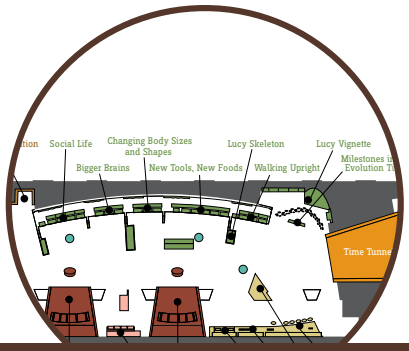
HOW DO WE KNOW?

These displays will help you complete your mission.

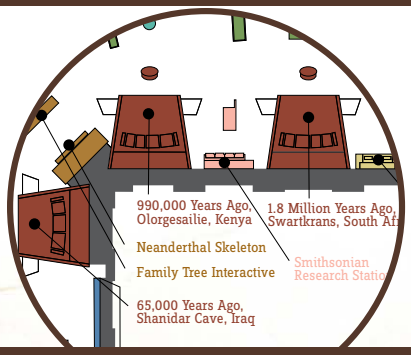
Look for them on the full exhibit floor plan.



How Do We Know? Labels
There are 17 of these labels spread throughout the exhibit. Use them to explore questions that scientists ask and scientific evidence that answers these questions.

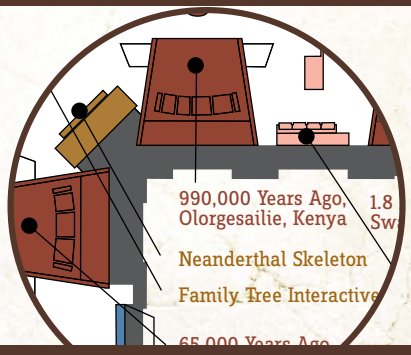


Evolutionary Milestones Displays
Visit at least one of the six sections. What different kinds of scientific evidence do you see for the milestones in human evolution?

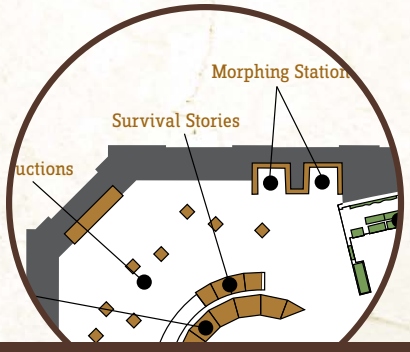


Snapshots of Survival Displays
Visit at least one of these three interactive stations. Use the fossil clues to reconstruct what happened in the past.

Smithsonian Research Station
Discover what clues helped Human Origins Program scientists figure out how environments have changed in Africa's Rift Valley. Explore the scientists' research site on the computer interactive.



Neanderthal Skeleton
Examine a fossil skeleton of a Neanderthal for clues to the age and sex of the individual, what his life was like, what he ate, and how he died.



Survival Stories
Look for clues that tell us how four early humans died.

NAME

DATE

DATA COLLECTION GUIDE

1. What questions do scientists ask about human evolution?

Find three questions that interest you, and list at least one piece of evidence that answers each question.

Scientist's Question	Evidence
1.	
2.	
3.	

2. What questions do you have about human evolution?

List your questions and what evidence you could look for to answer them.

My Question	Possible Evidence
1.	
2.	
3.	

Theme #4: Primate Heritage *(older students)*

A. PREPARING FOR THE FIELD TRIP

Remind students that humans are primates, and that we belong to the same group as great apes. Ask students if they can name some of the great apes (e.g., chimpanzees, gorillas, and orangutans). Which one is our closest relative? (It's the modern chimpanzee.) Make sure students understand that being closely related does *not* mean we evolved from a chimpanzee, or another kind of ape, or a monkey. It means that sometime in the past–more than 6 million years ago–we shared a common ancestor.

Use the primate images to introduce some of our primate relatives.

- *How do students think we are similar to other primates?*
- *How are we different?*

Explain that in the exhibit, students can learn more about how we are related to other primates, and how we are like and unlike our close primate relatives.

Their mission is to find at least one piece of evidence for how we know humans are primates, and to describe at least two ways humans are similar to other primates–and two ways we are different.

B. AT THE MUSEUM

Before you enter the Time Tunnel, remind students of the field trip's theme and their mission. Divide the class into groups, and encourage students to work together and to discuss their questions and discoveries with each other.

Give each student an exhibit map and a copy of the handout for this theme. Make sure students understand what displays on the map will help them complete their mission.

After you leave this exhibit, stop at the primate section of the Mammals Hall to observe some of the basic features of primates. You can also see a model of the now-extinct species scientists believe is the common ancestor of all mammals: *Morganucodon oehleri.*

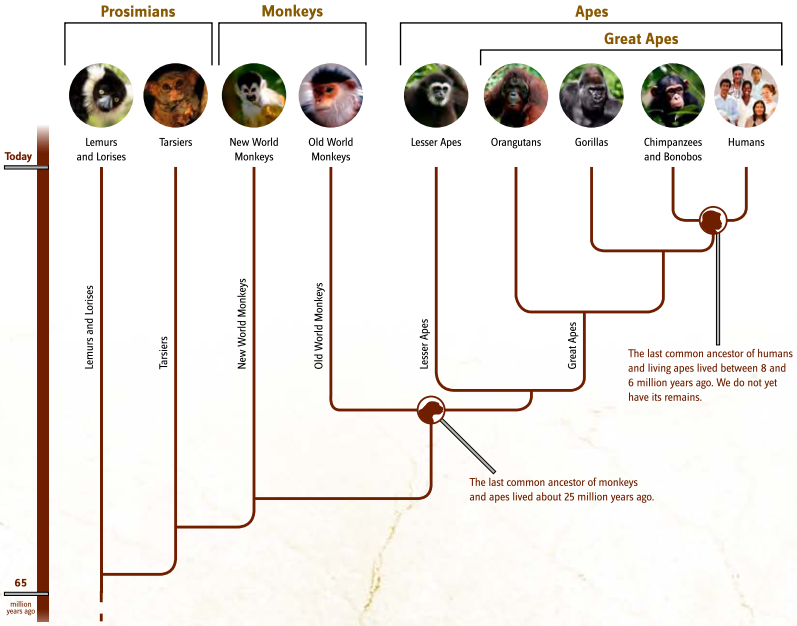
C. BACK IN THE CLASSROOM

Discuss what evidence students found for how we know humans are primates (e.g., physical similarities, genetics, behavior).

Then discuss some of the ways we are similar to our primate relatives (chimpanzees in particular), and what makes us different. Refer to some of the traits covered in the Evolutionary Milestone Display sections: Walking Upright, New Tools and Foods, Body Size and Shape, Bigger Brains, Social Life, and Language and Symbols.

1. If chimpanzees occasionally walk upright, what makes humans different?
2. How are human tools different from the tools chimpanzees make?
3. How does your brain compare with a chimpanzee's?

Students might even demonstrate some of the differences–e.g., walking or using tools like a chimpanzee and a human. If time allows, have students do more research on the features of primates and discuss how humans reflect those features.



Website Links:

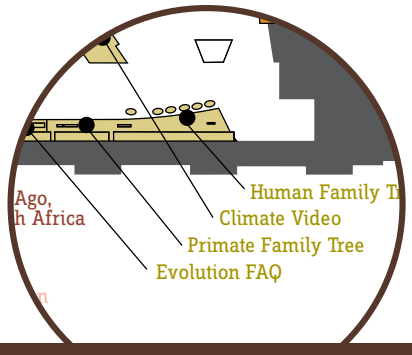
Primate Videos

Genetics & Primate Family Tree

PRIMATE HERITAGE

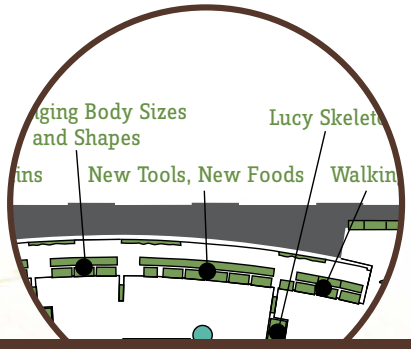
These displays will help you complete your mission.

Look for them on the full exhibit floor plan.



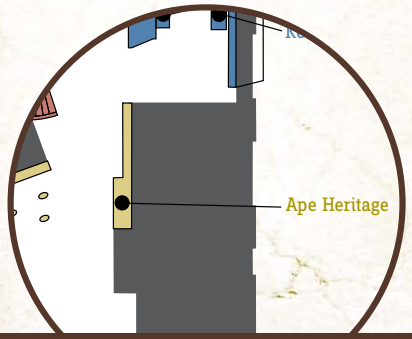
Primate Family Tree

Find humans on the primate family tree, and discover how scientists know humans are primates. Look for your closest primate relative, and learn how genetically similar you are to a chimpanzee, mouse, and banana tree.



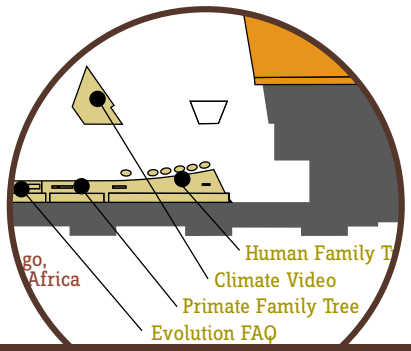
New Tools, New Foods

Look for the chimpanzee tools, and compare them with the stone tools made by early humans and with the more specialized human tools that came later.



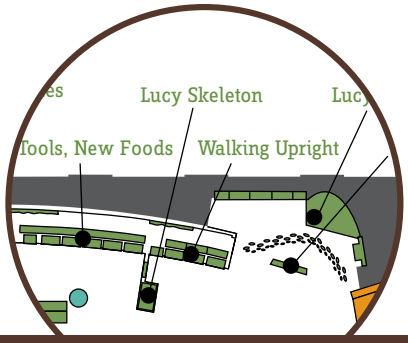
Ape Heritage

Explore the adaptations we share with other apes. Touch casts of fossil skulls from extinct apes–including some who could be an ancestor of humans.



Primate Heritage Videos

Watch these four 1-minute videos to find out some ways humans are like and unlike chimpanzees and other primates. Try walking and communicating like a chimpanzee!



Lucy Skeleton

Visit the 3.2-million-year-old skeleton of Lucy, an early human with both apelike and humanlike features. Then look for the nearby Lucy Vignette that shows Lucy at home both in the trees and on the ground. Walk in the trail of footprints made by other members of Lucy's species. How do the footprints compare with yours?

Head Reconstructions

Look closely at these reconstructions of eight early human species, and compare the earlier and later species. Notice how the earlier species have flatter noses, larger faces, and smaller braincases–features that are more apelike. The later species have larger braincases, smaller faces, and more prominent noses. How does the angle of the face change over time?

NAME

DATE

DATA COLLECTION GUIDE

How do we know humans are primates?

Describe at least two sources of scientific evidence.

How were early humans like other primates?

Describe at least three similarities. You can also draw or take photos of the similarities.

How are modern humans like other primates?

Describe at least three similarities. You can also draw or take photos of the similarities.

How are modern humans different from other primates?

Describe at least three differences. You can also draw or take photos of the differences.

Theme #5: Climate & Survival *(older students)*

A. PREPARING FOR THE FIELD TRIP

Ask students to list some of the survival challenges modern humans face. They may suggest problems such as disease, accidents, or warfare. Then have students imagine some of the survival challenges early humans might have faced–e.g., finding food and water, staying warm, and avoiding predators.

- » *What kinds of conditions would have made it hard for early humans to find food, water, and shelter?*
- » *What if the climate kept changing? How would that have affected early humans?*

Explain that scientists in the Smithsonian's Human Origins Program are investigating the relationship between climate change and human evolution.

- » *Did climate change have an impact on human evolution?*

Their mission will be to look for evidence in the exhibit to answer that question, to find out more about the survival challenges early humans faced, and to think about the survival challenges modern humans face.

B. AT THE MUSEUM

Before you enter the Time Tunnel, remind students of the field trip's theme and their mission. Divide the class into groups, and encourage students to work together and to discuss their questions and discoveries with each other.

Give each student an exhibit map and a copy of the handout for this theme. Make sure students understand what displays on the map will help them complete their mission.

C. BACK IN THE CLASSROOM

Discuss what students learned about climate change over the past 6 million years–the period in which humans evolved.

1. How did the Earth's climate change during that time?
2. Did it have an impact on human evolution? If so, what was it?
3. What is the evidence?

Show students the short video on environmental change and human evolution (see link below), narrated by Rick Potts, director of the Human Origins program. Discuss how Dr. Potts used research and scientific evidence to test the hypothesis that climate change was an important factor in human evolution.

Finally, discuss climate change today, how it is different from climate change in the past, and whether or not it still affects us.

4. Is the climate still changing?
5. What effect does climate have on students' lives and on the lives of other humans worldwide?
6. How are modern humans affecting the climate in ways early humans did not?
7. Could climate change affect the future survival of humans?

Website Links:

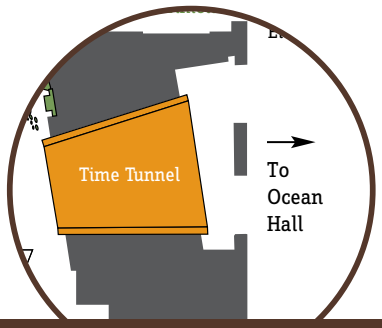
Video on environmental change and human evolution

Climate Change

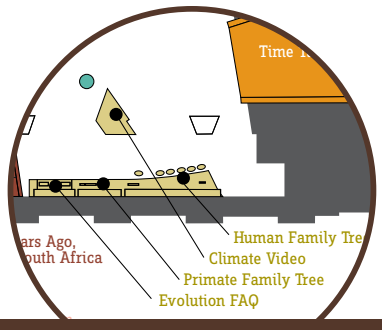
Humans Change the World

CLIMATE & SURVIVAL

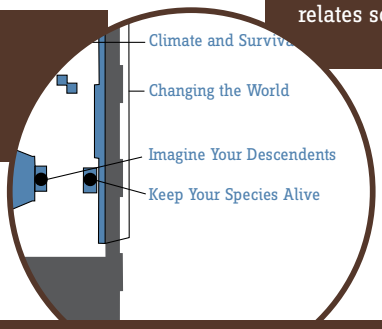
These displays will help you complete your mission.
Look for them on the full exhibit floor plan.



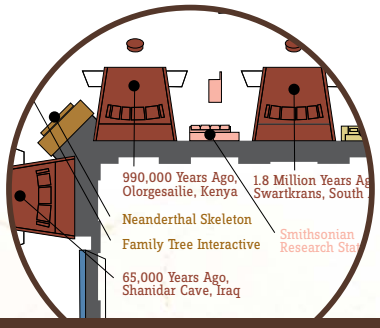
Time Tunnel
As you walk through the tunnel, notice some different environments and climates early humans encountered.



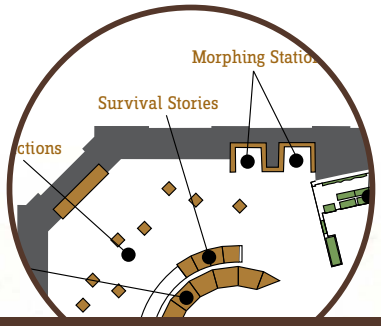
Climate Video
Don't miss this brief presentation. It shows how Earth's climate has shifted over time. It also relates some periods of dramatic climate change to milestones in human evolution.



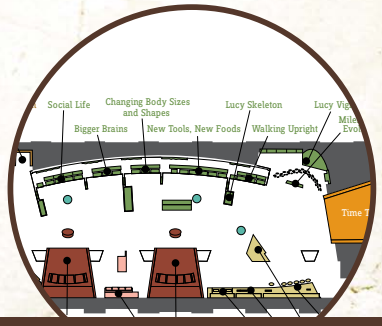
Keep Your Species Alive
Today our species is the only one remaining on the human family tree. But will we continue to survive? Work with your classmates to try to prevent our species from going extinct.



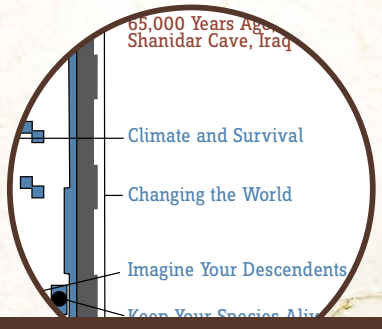
Snapshots of Survival Displays
Visit either the Swartkrans or Olorgesailie interactive display. What challenges did those early humans face? How did they respond to the challenges?



Survival Stories
What survival challenges did these four early human individuals face? How do we know?



Evolutionary Milestones Displays
Visit at least one of these displays. Can you find evidence for how a particular trait helped early humans survive?



Life and Death in a Changing World
Explore some of the environmental challenges that Neanderthals and modern humans both faced. Why did Neanderthals become extinct–but not us?

NAME

DATE

DATA COLLECTION GUIDE

Did climate change have an effect on human evolution?

Your conclusion: ☐ No ☐ Yes

Describe the evidence for your conclusion. *You can also draw or take photos of the evidence.*

Describe at least three survival challenges that early humans faced.
What traits helped them survive?

What are some of the survival challenges that modern humans face?
What traits will help us survive?

OTHER RESOURCES

American Association for the Advancement of Science. *Benchmarks for Science Literary* (1993), http://www.project2061.org/publications/bsl/online/index.php

American Association for the Advancement of Science. "Evolution on the Front Line: An Abbreviated Guide for Teaching Evolution," http://www.Project2061.org

Charlie's Playhouse. "Charles Playhouse, Evolution for Kids," http://www.charliesplayhouse.com/

DeWitt, Jennifer. "Supporting Teachers on Science-focused School Trips: Towards an Integrated Framework of Theory and Practice," *International Journal of Science Education*, 29(6), 685-710

Hosler, Jay. "The Sandwalk Adventures: An Adventure in Evolution Told in Five Chapters" (2003), Active Synapse, http://www.activesynapse.com (grades 4-8)

Kisiel, James F. "Teachers, Museums and Worksheets: A Closer Look at a Learning Experience," *Journal of Science Teacher Education*, 14(1):3-21, 2003

Loxton, Daniel. Evolution: *How We and All Living Things Came To Be* (2010), Kids Can Press (grades 4-8)

Lawson, Kristan. *Darwin and Evolution for Kids: His Life and Ideas with 21 Activities*_ Chicago Review Press (grades 5-9)

Museum of the Earth. "The Evolution Project," http://www.museumoftheearth.org/outreach.php?page=overview362548

National Academy of Sciences. *Learning Science in Informal Environments: People, Places, and Pursuits*, http://www.nap.edu/openbook.php?record_id=121908&page=1

National Academy of Sciences. *Taking Science to School: Learning and Teaching Science in Grades K-8*, http://www.nap.edu/openbook.php?record_id=11625&page=1

National Academy of Sciences. *Teaching about Evolution and the Nature of Science*, http://www.nap.edu/catalog/5787.html

National Committee on Science Education Standards and Assessment, National Research Council. *National Science Education Standards*, http://www.nap.edu/catalog/4962.html

National Conference on the Teaching of Evolution. *Teacher Workshop Blueprint*, University of California Museum of Paleontology, http://www.ucmp.berkeley.edu/ncte/twb/

National Museum of Natural History, Smithsonian Institution. "Statement on Evolution," http://www.mnh.si.edu/press_office/statements/evolution.htm

National Science Teachers Association. "Evolution Resources," http://www.nsta.org/publications/evolution.aspx?lid=tnavhp

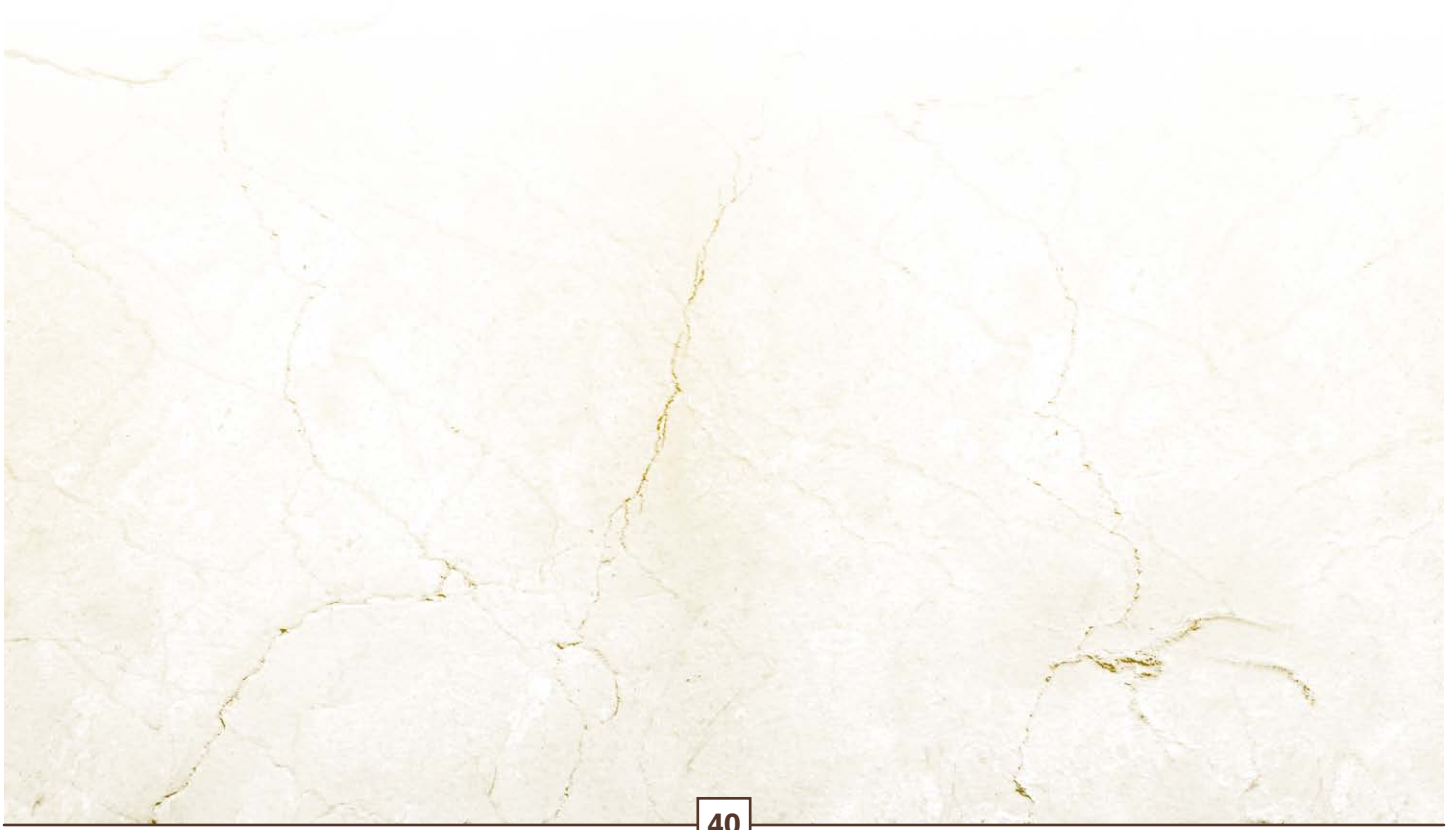
NOVA. "Evolution," http://www.pbs.org/wgbh/nova/beta/evolution/

Peters, Lisa Westberg. *Our Family Tree: An Evolution Story* (2003), Harcourt Childrens Books (grades K-3)

Spiegel, Amy N., E. Margaret Evans, Wendy Gram, and Judy Diamond. "Museum Visitors' Understanding of Evolution," *Museums & Social Issues*, Volume 1, Number 1, Spring 2006 (pp. 69-86)

University of California Museum of Paleontology. "Understanding Evolution," http://evolution.berkeley.edu/

Winston, Robert M. L. *Evolution Revolution: From Darwin to DNA* (2009), DK Publishing (grades 4-8)



Discovery

JANUARY 2010

KOCH FLINT HILLS resources INVISTA Georgia-Pacific

THE QUARTERLY NEWSLETTER OF KOCH COMPANIES

Governments going broke

Throughout history, those societies with a high degree of economic freedom have not only been more prosperous, but healthier and happier.

The opposite is true for those whose governments heavily interfered in business and commerce.

And yet, despite all the evidence, all too many governments seem intent on reducing economic freedom these days.

They do so by spending enormous sums of borrowed money and taking away the ability of individuals to make decisions for themselves.

This is not the path to prosperity or freedom. It is a formula for misery and national bankruptcy.

Binge spending

Individuals who insist on spending more than they make not only go into debt, they eventually go bankrupt. The same is true for governments.

At some point, both borrow more than they can ever pay back. They reach that point even sooner when income drops.

The hallmarks of government overspending are easy to spot. They include wasteful programs, record deficits and frightening levels of national debt.

Last fiscal year, the U.S. government saw its tax receipts fall by more than 16 percent, yet its spending rose by more than 18 percent.

That spending included more than $1 trillion in borrowed money, much of it earmarked for pet projects in the name of "economic stimulus." Such spending pushed the federal deficit to a record $1.4 trillion.

Not surprisingly, Congress recently raised the overall federal debt ceiling by $1.9 trillion to a record $14.3 trillion.

To be clear, the blame for such fiscal irresponsibility is non-partisan. During the recent Bush administration, Congress approved eight increases in the debt ceiling totaling $5.4 trillion.

From Britain to India to Mexico, debt ceilings have recently been raised, often to unheard-of levels. Clearly, debt ceilings do nothing to limit government debt if they are continuously raised.

Do the math

When consumers max out their credit cards (charge the limit on them), is it wise to keep raising their borrowing limit?

When government debts rise, economic growth lowers. On average, nations with debts exceeding 90 percent of GDP have less than half the growth rate of when debt is less than 30 percent of GDP.

By its own accounting, the U.S. government has unfunded liabilities exceeding more than $100 trillion, more than the entire value of the nation's economy. Those liabilities include Social Security, Medicare and pension benefits that the government has promised to its citizens but has no money to pay.

With the world's third-largest population – much of it rapidly approaching retirement age – the United States is facing the real prospect of bankruptcy. Many would argue it already is bankrupt.

Deadly deficits

U.S. PUBLIC DEBT

2008 21% of GDP

2009 42% (projected)

If citizens do not hold their governments accountable and insist on fiscal responsibility, the situation can only go from bad to worse – a frightening prospect for those whose finances are already under pressure.

To overcome large deficits, governments have few choices. These include raising taxes, cutting spending and inflating the volume of currency to water down debts.

The Bank of England has already chosen the last option (called quantitative easing) by creating £200 billion out of thin air.

The debt level of the Greek government has led its Prime Minister to suggest raising individual income tax rates as high as 90 percent while cutting Social Security payments by 10 percent.

For award-winning TV newsman John Stossel, U.S. government overspending is cause for concern – and some grim humor.

"I'd say they're spending like drunken sailors," quipped Stossel, "but that would be insulting drunken sailors, who spend their own money."

www.kochind.com/ViewPoint/gov.Growth.aspx

this issue...

Postal Pipeline

Letters may be edited for length and clarity

We thoroughly enjoyed reading the October *Discovery* magazine. We wish somebody would go to Washington and drum into their heads some of the ideas put forth in this edition.

Regarding the picture of the five presidents across the front page and on page seven – we don't know who most of those men are. We'd like them identified in print.

Jane Melton
Coordinator, personnel
Koch Specialty Plant Services
Houston, Texas

The Presidents of Koch Industries and their tenures (from left to right): Bill Hanna (1987-1999), the late Sterling Varner (1974-1987), Charles Koch (1968-1974), Joe Moeller (1999-2005) and Dave Robertson (2005-present).

For decades, Koch companies have advocated for a market-based approach to public policy development. The following letters regarding that advocacy were received at kochind.com.

I read Byron York's article in the *Examiner* on the current push to blame your company for "everything that ills us."

To sum up my feelings, thank God for people like you, for without you we would surely sink.

Thank you for your values and for your propensity to project these values in the current toxic political environment.

Charles Jones
Brownsboro, Texas

I read with interest that your critics are blaming Charles and David Koch as the reason the "progressives" are having such a problem in winning the hearts of America.

If this is true, as an American who is concerned with the freedoms of our country, I thank you for doing what you are doing.

My greatest hope is that we as Americans will wake up in time.

Bob Schneider
Topeka, Kan.

Until reading a recent article in biggovernment.com, I was unaware of the outstanding work your company and employees have done in the realm of charity and defense of true American values.

I thank you for your support of the traditional American values that have built this exceptional nation.

F.J. Foley II

Due to the attacks on your company, my family will research your companies and attempt to purchase or recommend anything you sell.

We appreciate your courage in standing up to the demonization of all of our country's producers.

Stephen Tougias
Raleigh, N.C.

On behalf of hundreds in the Dominican Republic, I want to say a hearty thank you for INVISTA's donation of surplus desktop and laptop computers!

We are on the constant look-out for items that will enhance development in a way that brings the greatest number of people out of wretched poverty.

These computers will be used in a small community computer lab in a suburb of Santo Domingo. We have already graduated one small class of community members. The donated computers will do that job so much faster and easier!

Linell Stabler, President
ACES North America
Williamsport, Penn.

John Allen of INVISTA has coordinated the donation and delivery of more than 700 used computers to the Dominican Republic. These computers will help Dominicans develop marketable skills.

Discovery January 2010 | Volume 16 | Number 1

Editorial Board
Philip Ellender
Rich Fink
Mary Beth Jarvis
Jeff Gentry
Dale Gibbens
Charles Koch
Jim Mahoney
Dave Robertson

Questions? Comments? Reprints?
Contact: Rod Learned
316.828.6136
rod.learned@kochps.com

Publication Design:
Deanna Bauman
Koch Creative Group

www.kochind.com

International News

Sète - This port city serves markets in southern and eastern France and along the Mediterranean.

London - There are half a dozen Koch companies, including Koch Carbon, with employees in or near London.

Brussels - Koch Companies Public Sector now has employees in Europe as well as Canada and the U.S.

Sète – Koch Fertilizer Trading Sarl has signed an agreement to expand a fertilizer import terminal in Sète, France. The new facility will serve markets in southern and eastern France as well as the Mediterranean.

The agreement calls for SEA-invest Sète, S.A. to build a 25,000-metric-ton storage facility for exclusive use by Koch Fertilizer Trading. Construction should be complete by the end of this year.

Koch Fertilizer will be able to market a number of products from the expanded terminal, including urea, CAN, ammonium sulfates, phosphates and potash.

These products can be transported to and from the port via barge, truck and rail shipments. This agreement is the first of several international agreements by Koch Fertilizer likely to be announced this year.

Similar projects involving new deepwater terminals or expansions of existing port operations in South America, Europe and the Asia-Pacific region are also in development.

In 2008, Koch Fertilizer expanded internationally by acquiring a U.K.-based fertilizer import and marketing firm, and also entered into a terminal agreement involving Avonmouth Port in the U.K.

"Operating fertilizer terminals in ports around the world enhances our global marketing, distribution and production network," said Steve Packebush, president of Koch Fertilizer, LLC.

"It also puts us in a better position to add value to our expanding global customer base."

Brussels – In years past, if a Koch company had an issue to discuss with local policymakers, it would send its own representative. Three or four different representatives might call on the same legislator during the course of a year.

From the policymaker's point of view, this approach must have seemed disjointed. Why not have just one Koch representative?

With the formation of Koch Companies Public Sector, LLC last year, that's exactly what has happened.

KCPS is one of several shared services organizations owned by KII. Others include Koch Aviation; Koch Business Solutions, LP; Market-Based Management®, LLC; Koch Companies Services, LLC; and Koch International Shared Services, L.P.

As a shared services company, KCPS can provide legal, government and public affairs assistance to other Koch companies domestically and, through Koch International Shared Services, in several international jurisdictions.

If a member of parliament happens to have three different Koch companies with facilities in his district, a single KCPS employee can now answer questions or keep him up to speed on them all.

Under this shared services model, Switzerland-based Thomas Dubois, who originally joined INVISTA in 2005, now serves as a central source for European and other international government and public affairs work.

On behalf of INVISTA, Georgia-Pacific, and other Koch companies, Dubois can tap into internal and external resources, including INVISTA's government affairs staff members in South America and Asia, and outside consultants in regions around the world. This helps leverage knowledge of a wide range of global policy issues that affect Koch companies' business strategies.

Katarina Elbogen, based in Germany, has begun serving the communication and public affairs needs of not only INVISTA, but also other Koch companies with a European footprint, such as Koch Chemical Technology Group and Koch Supply & Trading.

The numerous Koch companies with facilities and issues in Canada now turn to Paul Brown, based in Ontario, for government and public affairs help.

"This is so much more efficient and effective," said Dubois. "Sharing information and work product and presenting integrated points of view to external entities really benefits all of us, including our counterparts in government.

"Before this change, each Koch company that did business in a given jurisdiction had to go through the same learning curve.

"That can be very wasteful, and, quite frankly, inconsistent with MBM® principle six, which is all about sharing and leveraging knowledge."

Lowering standards?

The production and use of transportation fuels accounts for about one-fourth of all carbon emissions in the United States.

By limiting the carbon "intensity" associated with gasoline and diesel, Low Carbon Fuel Standards proponents hope to reduce carbon emissions.

Ethanol and biodiesel are familiar examples of this kind of thinking.

Paying the bills

Although the emissions benefits of LCFS are debatable, one thing is not: LCFS will increase energy prices.

Consumers will pay those higher energy prices in several ways. The first is through tax dollars.

In the U.S., ethanol production is subsidized at a whopping 45 cents of taxpayers' money per gallon.

Another cost to consumers comes in the form of increased fuel purchases.

Because ethanol delivers about one-third less energy than gasoline, drivers have to buy more ethanol-blended fuel to travel the same distance they used to get with a gallon of gasoline.

"If a low carbon fuel standard is enacted," said Brad Razook, president of Flint Hills Resources, "it would be very bad news for our industry, our employees and our customers."

Crude logic

"LCFS would not only mean higher costs at the pump," said Razook, "it would force us to purchase more crude oil from the Middle East and less from our neighbors in Canada."

FHR's Pine Bend Refinery in Minnesota is one of the most efficient refineries in the world. It was specifically designed to process heavy, sour crude piped in from Canada.

> "Low carbon fuel standards have a large cost in terms of efficiency and effectiveness."
> - American Economic Journal

If Canadian crude cannot be processed in the U.S. because of LCFS, that oil will probably be shipped (at a much higher cost) to countries with high demand but perhaps lower emissions standards.

The net result of that switch would be an increase in global greenhouse gas emissions, including those from tanker ships moving crude oil halfway around the world.

Pine Bend Refinery in Minnesota was designed to process high-carbon Canadian crude.

Unlike cap-and-trade (see page 9), which is essentially a tax, LCFS would also raise costs by making the energy industry less efficient.

Relying on unproven technologies – such as those for producing cellulosic ethanol – is risky and impractical, at least for now. Converting sawgrass (above) into fuel is a promising concept, but it may not be commercially viable for many years to come, especially in the quantities necessary to meet the demands of the market at a reasonable cost.

Meanwhile, jobs will be lost in both the U.S. and Canada as highly efficient refineries and pipelines end up with much less product to process or transport.

Conclusion

All Koch companies believe in the efficient use of resources and maintaining a clean and healthy environment.

By ignoring such improvements and forcing a different approach, LCFS proposals have the potential to inflict a host of unintended consequences.

"We don't believe that many of our political leaders have a full understanding of the implications of LCFS," concluded Razook.

"LCFS means higher energy costs for consumers, lower employment, less reliable foreign oil sources and probable fuel shortages.

"Then, to make matters even worse, you have the prospect of even higher global emissions. Let's face it: LCFS just doesn't make sense."

As LCFS is debated at the state and national level, Razook encourages all Koch company employees in the U.S. to learn about this issue.

"You can never be too aware of policies that affect your business," said Razook.

JANUARY

20 Crude oil prices drop to $32.70 per barrel.

21 Barack Obama is inaugurated as the 44th President of the United States.

30 Charles Koch's *Discovery* editorial compares proposed policy "solutions" with those that prolonged the Great Depression.

31 Georgia-Pacific Professional named a Champion by the U.S. EPA for its tissue manufacturing process and hand soap products.

MARCH

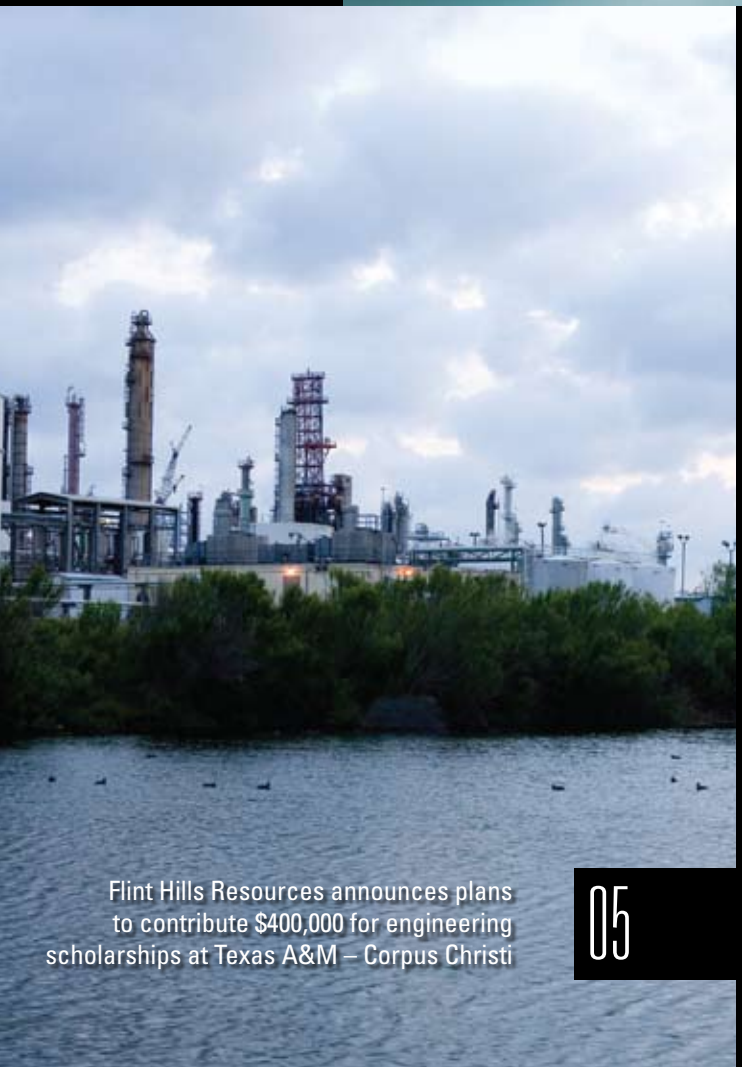
08 Due to low jet fuel demand, FHR's North Pole, Alaska, refinery shuts one of three jet fuel processing units.

18 The U.S. Federal Reserve decides to inject $1 trillion into the U.S. economy.

18 FHR announces plans for a new central Texas fuels terminal.

23 Koch Nitrogen completes upgrade and expansion of its Enid, Okla., plant.

26



Flint Hills Resources announces plans to contribute $400,000 for engineering scholarships at Texas A&M – Corpus Christi

05

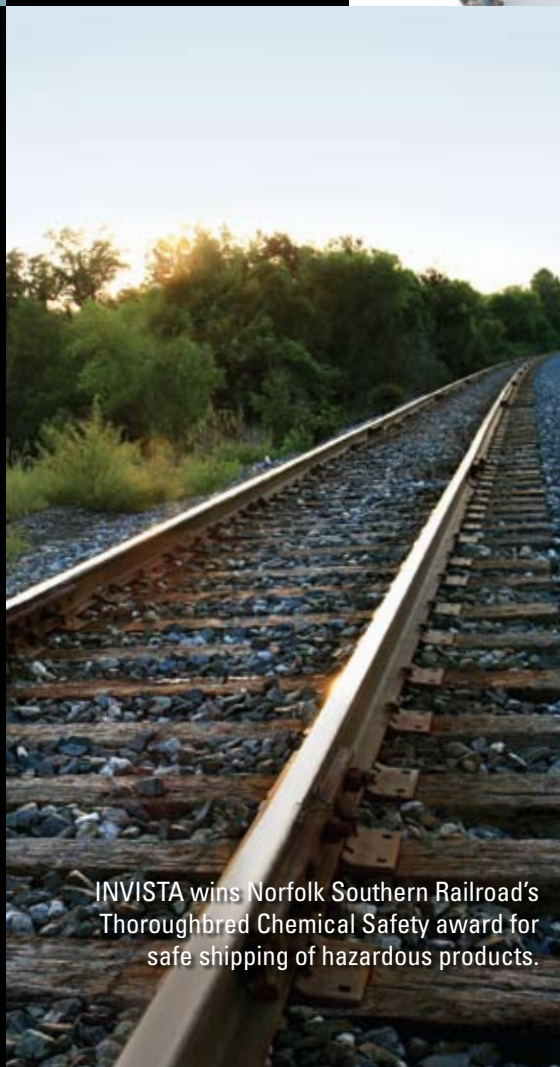
FEBRUARY

05 The Bank of England cuts its lending rate to 1 percent, lowest rate since its creation in 1694.

05 INVISTA completes a $1.7 billion refinancing and recapitalization effort.

19 Dow Jones Industrial Average sinks to 7,465.95, a 47 percent drop from its record high in Oct. '07.

26 President Obama proposes a $3.6 trillion budget with a $1.75 trillion deficit.



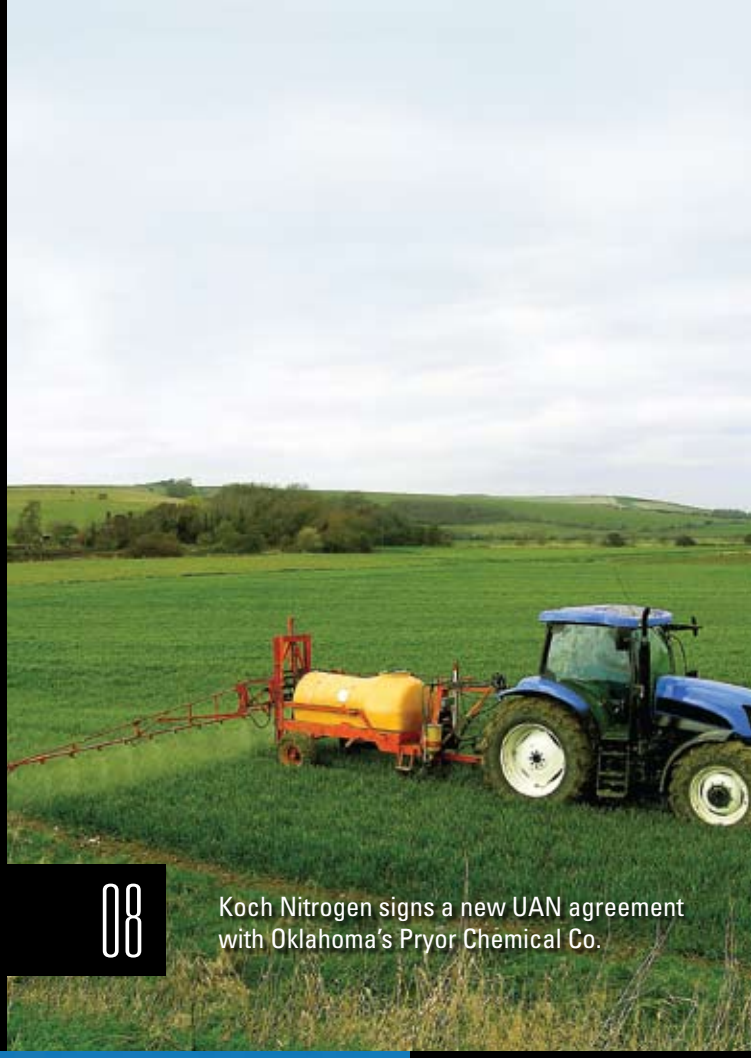
INVISTA wins Norfolk Southern Railroad's Thoroughbred Chemical Safety award for safe shipping of hazardous products.

Koch Pipeline completes eight years (6 million work-hours) of operation without a lost-time incident.

MAY

13 FHR receives nine National Petrochemical and Refiners Association safety awards.

29 General Motors stock drops to 75 cents per share in anticipation of the company's bankruptcy filing.



08

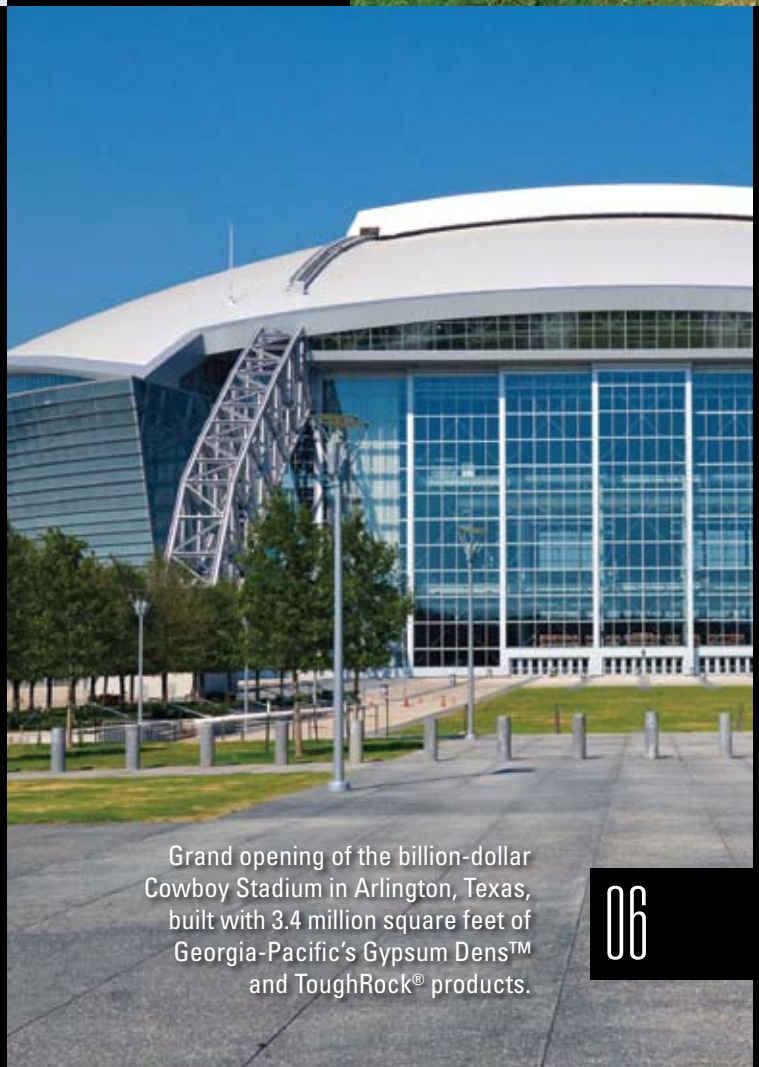
Koch Nitrogen signs a new UAN agreement with Oklahoma's Pryor Chemical Co.

22

APRIL

27 Concern over an H1N1 ("swine flu") outbreak prompts precautionary measures at many facilities around the world.

30 U.S. home prices drop an average of 19.1 percent, the largest quarterly drop ever.



Grand opening of the billion-dollar Cowboy Stadium in Arlington, Texas, built with 3.4 million square feet of Georgia-Pacific's Gypsum Dens™ and ToughRock® products.

06

JUNE

04 John Zink Co. receives two safety and health awards from the Oklahoma Safety Council.

24 Robert Pamplin, former chairman of GP, dies at age 97.

30 GP's gypsum business is assigned U.S. Patent #7,553,780 for panels with UV-cured moisture-resistant coating.

JULY

25 INVISTA's manufacturing facility in Paulínia, Brazil, celebrates 35 years – more than 23 million work-hours – without a lost-time injury.

01 INVISTA announces OXYCLEAR™ scavenging resin, a high-performance PET oxygen barrier for clear applications such as juice and water.

SEPTEMBER

09 Koch Nitrogen provides a challenge grant to help fund the purchase of rescue equipment for the Enid, Okla., fire department.

10 INVISTA's DACRON® fiber celebrates its 50th anniversary with product extensions and a new marketing campaign.

16 Koch Carbon's pet coke facility in Long Beach celebrates California VPP Star status.

30

Matador Ranch becomes the first contributor to commit to a video project documenting the history of Motley County, Texas.

31

AUGUST

2009 YEAR IN REVIEW

The Smithsonian announces the David H. Koch Hall of Human Origins, scheduled to open in March 2010.

Reich+Petch Design International

Former KII president Sterling Varner, 89, dies.

NOVEMBER

13 An Illinois jury finds BP guilty of misrepresenting assets sold to Flint Hills Resources and awards FHR $41.7 million.

30 Koch Pipeline announces a 25 percent expansion of its South Texas crude transportation capacity.

11 INVISTA's STAINMASTER® and ANTRON® carpet fibers become the first to be certified as Environmentally Preferable Products.

14

OCTOBER

01 Amount of U.S. natural gas in storage reaches a record 3.589 trillion cubic feet.

01 Koch Chemical Technology Group sells its Unifin International unit to Wabtec Corp.

21 Crude oil trades at its highest price for the year: $82 per barrel.

31 U.S. unemployment hits 10.2 percent, the highest in 26 years.

Employees at FHR's Corpus Christi complex celebrate nine years without a lost-time incident.

23

DECEMBER

02 Gold trades at a record $1,218.40 per oz.

31 Koch Supply & Trading concludes its most successful year ever.

31 GP closes the books on the most profitable year in its 83-year history.

31 GP had two brands with more than $1 billion in sales in 2009: Angel Soft© and Quilted Northern© bath tissue.

Blowing smoke

We are often told our planet will be devastated unless we immediately make drastic reductions in man-made greenhouse gas (GHG) emissions.

The list of possible climate catastrophes caused by GHGs seems endless.

The BBC warns there may be no more fish in the sea in 50 years. Greenpeace frets that summer ice in the arctic could disappear completely by 2030.

The Intergovernmental Panel on Climate Change, a United Nations Organization, asserted that Himalayan glaciers may be gone by 2035.

Meanwhile, professors from Penn State University say polar bears are becoming extinct as we swelter through the hottest decade in history.

Interestingly enough, all of these claims have been disproven or grudgingly retracted.

So why would a reasonable society rush to implement far-reaching (and costly) climate change policies based on such shaky understanding of the science?

Furthermore, are the actual outcomes of these policies even going to be beneficial?

Feeble foundation

Climate misinformation has gotten so out of hand that a high court in London has ruled the film "An Inconvenient Truth" amounts to promoting "partisan political views" and cannot be shown to schoolchildren unless its many factual errors are addressed.

So why are such unproven or false claims promoted?

Al Gore's explanation in a magazine interview was: "It is appropriate to have an overrepresentation of factual presentations … for opening up the audience."

Advocates of GHG proposals want us to believe they have a monopoly of scientific thought on their side.

But what the recent "Climategate" scandal at the University of East Anglia may have illustrated is just how suspect many of those scientific assumptions may be.

Correspondence indicates that when the data didn't support their hypothesis, leading climate change advocates in England decided to change, hide, or, if necessary, destroy conflicting data.

The scientific process of discovery is completely undermined if important information gets modified, manipulated, distorted or dropped if it contradicts a preferred outcome.

Scientists have also perverted the peer review process, doing everything possible to prevent opinions contrary to the alarmist view from being heard.

Camden, S.C. – This INVISTA plant uses coal as a fuel, as do INVISTA plants in Chattanooga, Tenn., and Waynesboro, Va. Forcing plants to convert to other energy sources would cost hundreds of millions of dollars, threatening productivity, competitiveness and jobs.

Leonard Weinstein, a senior research scientist with 30 years of experience at NASA, is one of those voices climate change proponents are trying to silence.

"Any reasonable scientific analysis" of man-made global warming, said Weinstein, "must conclude the basic theory [is] wrong."

Rather than encouraging open and honest scientific enquiry and debate about the issue, climate extremists are trying to shout down any and all dissenters.

All of this should be a warning flag for anyone proposing actions to respond to climate change on the mistaken assumption that "the science is settled."

Cap-and-trade

In the United States, the most-discussed proposal for addressing climate change is a cap-and-trade scheme that involves charging companies for permits to emit greenhouse gases.

Cap-and-trade advocates claim this will gradually diminish GHG emissions and generate large revenues without damaging the economy.

Experience proves otherwise.

In Europe, overall emissions went up, not down, after the world's largest emissions trading program was established in 2005.

The revenue stream expected by E.U. officials and many traders has failed to materialize. Instead, that revenue went to politically favored companies and developing countries.

And to make matters worse (especially for consumers), prices for electricity and gasoline are now significantly higher.

Due to the E.U.'s disappointing results, many legislators and environmental activists are now urging a flat-out tax on carbon emissions of any kind, whether from power plants, cattle or lawnmowers.

As drastic as that sounds, others want to go even farther. The director of the European Environment Agency has proposed not only taxing carbon in all forms, but non-energy resources such as water.

Cause for concern

Cap-and-trade is essentially a stealth tax on energy. As such, it inevitably leads to higher energy costs and job losses.

The U.S. Office of Management and Budget, a non-partisan government agency, calculates cap-and-trade proposals would add at least 77 cents to the cost of a gallon of gasoline.

Spain learned the hard way that only one

in ten new "green" jobs tend to last even a year. And each new green job displaces more than two "traditional" jobs.

In 2009, White House officials estimated the value of cap-and-trade revenues in their budget proposal at $646 billion over ten years. Subsequent estimates have tripled that amount.

For any government running record deficits and burdened with unprecedented levels of debt, such a huge source of new revenue must be enticing. But is it worth devastating the economy?

Policymakers have a history of using new revenue streams to promote pet projects and punish what they consider to be "bad" industries.

If, for example, the U.S. Congress wants to reduce all CO_2 emissions, why would proposed regulations penalize refining emissions at six times the rate of emissions from utilities?

Wrong focus

Richard Muller, a physics professor at the University of California, Berkeley, has raised serious concerns about the effectiveness of proposed climate change policies in North America and Europe.

Estimated costs of a U.S. cap-and-trade program with a goal of 70 percent CO_2 reduction

- 4 million jobs lost
- $7,000 less annual household income
- 129 percent increase in electricity prices

Sources: U.S. Energy Information Administration, SAIC, Heartland Institute

Regardless of what developed nations do about climate policy, he says, emerging nations are the real issue.

Even under a "best case scenario," with the U.S. reducing carbon emissions by 80 percent and other developed nations by 60 percent, Muller believes global carbon emissions will quadruple.

That's because emerging countries, such as India and China (which already emits 30 percent more carbon than the U.S.), will inevitably increase their emissions as their economies grow.

> Utilities "will pass that [cost] on to consumers under my plan of a cap-and-trade system. Electricity rates would necessarily skyrocket."
> - Barack Obama, 2008 interview

It takes energy to achieve economic growth and quality-of-life improvements for a society. No developing nation on earth – large or small – is likely to reduce its carbon emissions if it means suffering economically.

Opportunity or obstacle?

Mark Dobbins, executive vice president for Koch Supply & Trading in Houston, is helping develop corporate strategies for emissions trading.

"It's clear from the data that the science on greenhouse gases is not really settled," said Dobbins. "But, at the same time, emissions trading has already been launched in the U.K. and E.U., and on a regional basis here in the U.S."

Emissions markets are fundamentally different from other markets because they're mandated by government.

"So it's essentially a compliance market that wouldn't exist if not for government. But a second-order effect of that is government can always change the rules." Court challenges from unhappy parties can add to the uncertainty.

"With emissions we're talking about commitments five or ten years out. There's no confidence if the rules can change in a way that would modify or eliminate these markets.

"In Europe, they've continually tinkered with the rules. In the middle of a scheme one nation suddenly gets a few more credits, which then upsets the supply/demand balance.

"It's very scary, but it's what you'd expect from government, which has a history of not keeping hands off."

True costs

Last year, the Minnesota Pipeline System spent close to $9 million on fuel and power. That line item for energy is one of the largest of its operating expenses.

"If our throughput and crude quality remain the same but electricity prices go up 129 percent because of cap-and-trade," said Kim Penner, president of Koch Pipe Line Co., "we could be looking at roughly $20 million per year for power. That's a huge increase for a business our size."

If company plants with coal-fired boilers or generators – such as those owned by INVISTA and Georgia-Pacific – have to switch to other fuels because of new policies, hundreds of millions of dollars will be spent on conversion projects with little or no return.

The enormous amount of capital spent on those conversions would then be unavailable for projects that could create permanent jobs and products that people value.

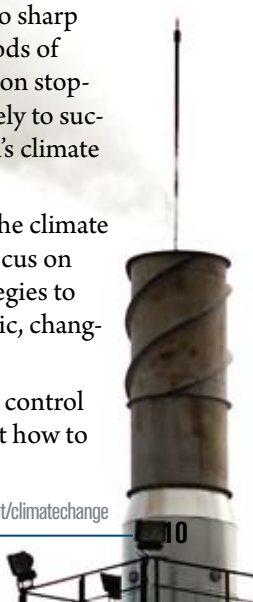
What should be done?

Last November, Kenneth Green, an environmental scientist, testified before the Senate Committee on Finance about global warming. His conclusions are worth repeating:

"The earth's climate is prone to sharp changes over fairly short periods of time. Plans that focus simply on stopping climate change are unlikely to succeed; fluctuations in the earth's climate predate humanity.

"Rather than trying to make the climate static, policymakers should focus on implementing resilience strategies to enable adaptation to a dynamic, changing climate."

In other words, since we can't control Mother Nature, let's figure out how to get along with her changes.

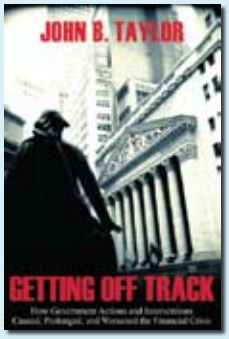


Noteworthy

Getting Off Track – by John B. Taylor

The subtitle of this slender book speaks volumes: "How government actions and interventions caused, prolonged and worsened the financial crisis."

Taylor, a former economic advisor to several Presidents (Republicans and Democrats alike), is a senior fellow at the Hoover Institution and a professor of economics at Stanford.



Taylor's thesis is simple. If you can avoid a boom, he says, you can avoid a bust. And avoiding a bust is essential for avoiding a crisis.

In less than 90 pages, Taylor makes several simple but devastating arguments.

First, without the government-sponsored boom in the housing market, there would have been no bust.

Second, misguided U.S. government policies intended to address the bust only deepened and prolonged the crisis.

As a result, global economies derailed, uncertainty increased and a great deal of harm was inflicted upon millions.

Taylor makes a point of offering constructive processes, too.

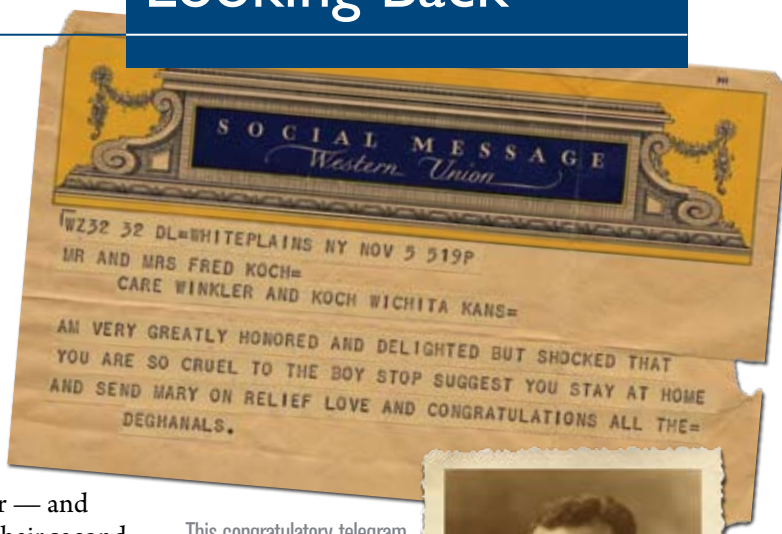
If, writes Taylor, the Federal Reserve Bank had stuck with the monetary policies that led to stability (and growing prosperity) from the early 1980s through the middle of this decade, the current economic crisis could have been avoided.

Too True

"Parliamentary reform and financial re-regulation will treat the symptoms, not the cause. … Without a shared moral code there can be no free society."

- Lord Sacks of Aldgate

Namesake and mentor


SOCIAL MESSAGE
Western Union

WZ32 32 DL=WHITEPLAINS NY NOV 5 519P
MR AND MRS FRED KOCH=
CARE WINKLER AND KOCH WICHITA KANS=

AM VERY GREATLY HONORED AND DELIGHTED BUT SHOCKED THAT YOU ARE SO CRUEL TO THE BOY STOP SUGGEST YOU STAY AT HOME AND SEND MARY ON RELIEF LOVE AND CONGRATULATIONS ALL THE=
DEGHANALS.

This congratulatory telegram was sent following the birth of Charles de Ganahl Koch on Nov. 1, 1935.

Charles de Ganahl (1869 - 1939)

Charles de Ganahl Koch, chairman and CEO of Koch Industries, thinks it is quite unusual for somebody to name a child after a business associate.

And yet, that is exactly what Charles Koch's father — and grandfather — did when their second sons were born.

Newspaper publisher Harry Koch, a Dutch immigrant, settled in Quanah, Texas, in 1891. One of his first acquaintances there was a local businessman, Fred Chase.

When Harry and Margaret Koch's second son was born Sept. 23, 1900, he was named Fred Chase Koch.

Similarly, Fred C. Koch's second son, Charles, was named after Charles de Ganahl, a Texas-born entrepreneur who, in 1924, hired Fred Koch to help design and build a refinery in England.

(Left - right) Charles, Fred and Harry Koch. Both Harry and Fred named their second sons after business associates.

By the time Koch completed his work on that project, de Ganahl was calling Fred "the soundest chemical engineer in the world."

"There was a mutual respect there," said David Koch, Charles' brother and executive vice president of Koch Industries. "I'm sure that father thought of Charles de Ganahl almost as a second father."

Fred and Mary Koch visited de Ganahl in Kenya in 1933. Fred also corresponded with de Ganahl, and his sons Frank and Carl, for many years.

"My father developed great admiration for Mr. de Ganahl," said Charles Koch.

"He believed he was an excellent entrepreneur with great integrity. He was also very intense, very disciplined and a very generous person.

"So my father ended up naming me after him."

Charles de Ganahl died in 1939, less than four years after his namesake was born. Following de Ganahl's death, Dr. James Ewing of Memorial Hospital in New York wrote a moving tribute.

It said, in part: "At the end of a busy life he had organized enterprises on three continents, in sugar production, river transportation, oil production, ship building, exploration, gold mining in Africa and in British Columbia, and finally in airplane manufacture – thus completing one of the most versatile careers in the history of American industry."

Charles G. Koch Perspective

Chairman and CEO, Koch Industries, Inc.

As a lifelong student of history, I have always been eager to learn from our past.

History clearly shows that societies have benefitted from the encouragement of certain principles. Those principles include personal accountability, political freedom, the rule of law, sound money, open markets and respect for property rights.

To the extent that nations have embraced these freedoms and disciplines, their citizens have benefitted in every measurable way, including longer lives.

But, as is often the case with history, we can learn at least as much from the world's failures as we can from its successes. Let me share two such examples with you.

Argentina

At the beginning of the twentieth century, Argentina was one of the freest and most prosperous nations on earth.

When my parents visited Buenos Aires during their honeymoon, Argentina was one of the 10 wealthiest nations in the world.

For half a century, annual incomes there grew by an average of 7 percent per year (essentially doubling every decade).

This began to change in the 1920s and completely changed when Juan Peron came to power in 1946.

Peron's government nationalized entire industries, censored media critics, promoted runaway budget deficits, multiplied government programs and increased taxes. It also demonized successful businesses and the wealthy.

As a result, the Argentine Republic was transformed – and not for the better. Unemployment jumped, as did inflation, which hit 50 percent in 1956 and soared even higher in later years.

Even after Peron was eventually deposed, a series of military coups left citizens demoralized and powerless, and their economy in a shambles.

Argentina now ranks 105th in the world when it comes to economic freedom. (Hong Kong is first, Zimbabwe is last.) Annual inflation is estimated at 22 percent and current unemployment at 23 percent.

Venezuela

For nearly 40 years (from 1920 to 1957) Venezuela was a prosperous and thriving nation, with growth rates even greater than those of West Germany, Europe's economic powerhouse.

In 1960, the gross domestic product per Venezuelan worker was equal to that of Canada, Australia and Switzerland.

Venezuela's downhill slide began when new administrations (including those of Betancourt and Perez) instituted a series of devastating policies. Taxes went up, the government began to bloat and runaway budget deficits became the norm.

In 1976, President Carlos Andres Perez nationalized the oil industry, taking control of projects largely developed and funded by British, Dutch, French, Norwegian and U.S. companies.

Living conditions in Venezuela have deteriorated under current President Hugo Chavez, whose policies have included further nationalizations, wage and price controls, media censorship and suppression of dissent.

Venezuela now ranks 138th in economic freedom, suffers from 30 percent annual inflation and has negative growth rates.

Although rich in natural resources, including several forms of energy, Venezuela suffers routine power outages. Food shortages are becoming more widespread as the economy collapses and freedoms are being curtailed.

Parallels

Today, regardless of whether we prefer to focus on policies coming out of Brussels or Washington, there are too many disturbing parallels with South America's failures to overlook.

Nations that have benefitted from freedom and prosperity are now saddled with governments that want to assert ever-increasing control over every aspect of our lives. Supporters of these policies are enriched and ennobled; opponents and detractors are punished and demonized.

In the U.S., where economic freedom and the standard of living have traditionally been among the world's greatest, the push for centralized government control is unprecedented.

In just one year, the U.S. government has bought a stake in or bailed out more than 600 firms. Entire industries have essentially been taken over, enabling bureaucrats to dictate who earns what, who makes what and who gets to stay in business.

Like Chavez, who recently lectured Venezuelans on limiting their showers to three minutes of cold water, Washington and Brussels are throwing cold water on their citizens. All these governments are taking control away from individual consumers regarding how resources are used.

Such centralized control comes at an enormous cost. In the U.K., the government swung from a budget surplus of £2.2 billion to a deficit of £7.7 billion in just one year. Net debt as a percentage of the U.K.'s GDP has more than doubled.

German officials recently admitted their budget gap for 2010 will exceed E.U. limits by more than 33 percent. France, Spain, Ireland and Greece are also out of compliance by even larger percentages.

Meanwhile, the current U.S. administration is on the biggest spending spree in history, dwarfing even the huge increases piled up during the Bush administration. In fact, this year's U.S. budget deficit is larger than the combined budget deficits of the past eight years.

The new administration says it wants to "fundamentally transform America." Given what we've seen so far, which looks alarmingly similar to failed policies of the past, is this the kind of transformation we really want?

KOCH INDUSTRIES INC

CHARLES G. KOCH
CHAIRMAN AND
CHIEF EXECUTIVE OFFICER

September 24, 2010

"If not us, who? If not now, when?"

That question was posed by a member of our network of business and philanthropic leaders, who are dedicated to defending our free society. We cannot rely on politicians to do so, so it is up to us to combat what is now the greatest assault on American freedom and prosperity in our lifetimes.

Twice a year our network meets to review strategies for combating the multitude of public policies that threaten to destroy America as we know it. These meetings have been critical in improving and expanding our efforts.

Our next meeting will be held January 30-31, 2011, at the Rancho Las Palmas Resort in Rancho Mirage, California. You would be a valuable addition to our gathering, and we hope you can join us.

In Palm Springs, we will assemble an exceptional group of leaders along with a strong line-up of speakers. Together, we will develop strategies to counter the most severe threats facing our free society and outline a vision of how we can foster a renewal of American free enterprise and prosperity.

At our most recent meeting in Aspen, our group heard plans to activate citizens against the threat of government over-spending and to change the balance of power in Congress this November. In response, participants committed to an unprecedented level of support. The important work being done with these initiatives continues. However, even if these efforts succeed, other serious threats demand action.

Everyone benefits from the prosperity that emerges from free societies. But that prosperity is under attack by the current Administration and many of our elected officials. Their policies threaten to erode our economic freedom and transfer vast sums of power to the state. We must stop – and reverse – this internal assault on our founding principles.

316.828.5201 Tel

P.O. Box 2256
Wichita, Kansas 67201

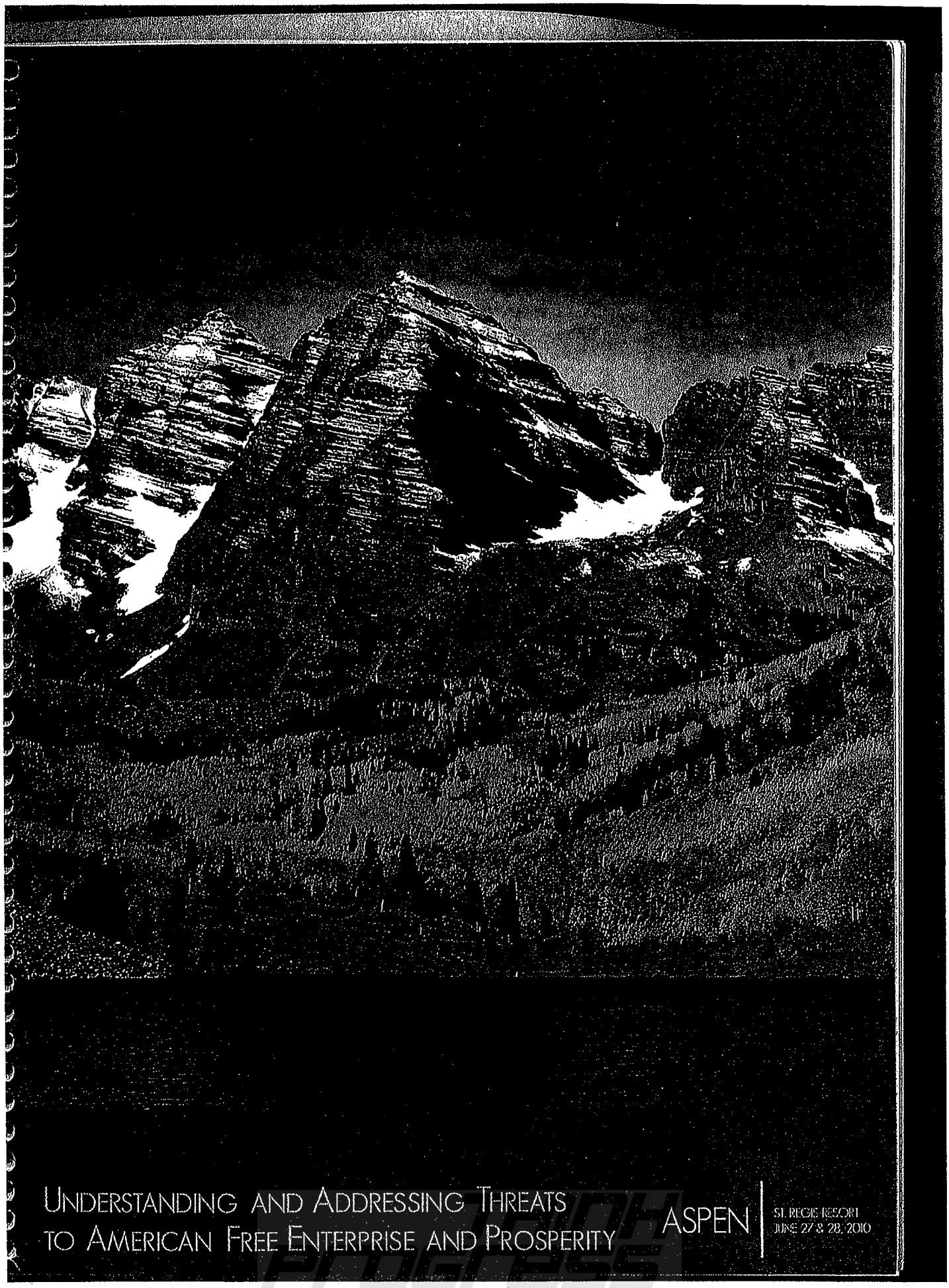
Fighting back with incremental changes will only lead to a slower rate of decline. We must dedicate ourselves to making major advances in the direction of economic freedom. Our goal for these meetings must be to advance ideas that strengthen that freedom, beat back the unrelenting attacks and hold elected leaders accountable.

To give you a better idea of the nature of this event, I have enclosed the program from our Aspen meeting. While we will have great speakers and a beautiful setting, our ultimate goal is not "fun in the sun." This is a gathering of *doers* who are willing to engage in the hard work necessary to advance our shared principles. Success in this endeavor will require all the help we can muster.

[redacted]

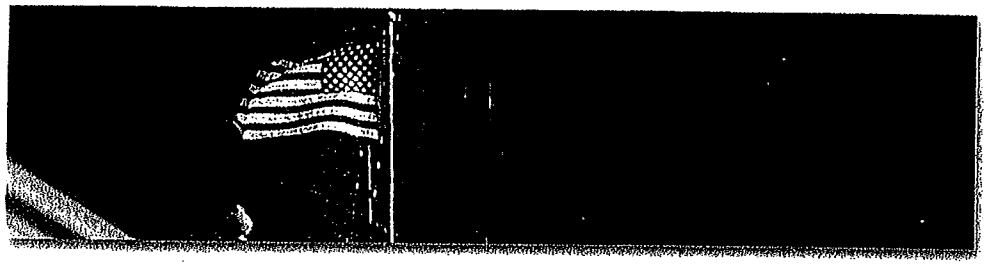
Your active participation would increase our probability of success during this pivotal time in our nation's history. We hope to see you in Palm Springs, January 30-31.

Sincerely,



Understanding and Addressing Threats to American Free Enterprise and Prosperity

ASPEN | St. Regis Resort
June 27 & 28, 2010



GOALS & MISSIONS

At our seminars, we work to understand and address the threats to American free enterprise and prosperity. These meetings provide an opportunity to discuss these threats and the appropriate strategies to counter them. To that end, we focus on four main objectives:

- Attracting principled leaders and investors who will effectively defend our free society
- Sharing best practices and opportunities to defend our free enterprise system from destructive public policies
- Fashioning the message and building the education channels to reestablish widespread belief in the benefits of the principles of a free and prosperous society
- Building principled, effective institutions that identify, educate and mobilize citizens in pursuit of a free and prosperous society

Our seminars bring together business and philanthropic leaders who possess the vision and knowledge to develop innovative strategies to achieve results. The combination of knowledgeable speakers and motivated participants produces a dynamic environment that inspires creative approaches to advancing a free society.

CONFIDENTIALITY AND SECURITY

In order to understand issues and develop strategies more effectively, the proceedings of this meeting are confidential. The meetings are closed to the public, including media. Please be mindful of the security and confidentiality of your meeting notes and materials, and do not post updates or information about the meeting on blogs, social media such as Facebook and Twitter, or in traditional media articles. These meetings are invitation-only and nametags should be worn for all meeting functions.

AGENDA

Saturday, June 26

12:00 – 6:00 pm
ST. REGIS LOBBY

Seminar Registration
You may pick up your seminar materials, including your nametag and an updated copy of this booklet. For security purposes, please remember to wear your nametag to all seminar functions.

4:30 – 6:00 pm
MILL STREET COURTYARD

Welcome Reception for Locals and Early Arrivals at the St. Regis
Enjoy a cocktail and some conversation with your fellow participants at this informal kick-off to our time together.

6:15 – 8:30 pm
VARIOUS LOCATIONS

Small Group Dinners
Enjoy the company of other participants at one of these small dinners centered on areas of focus for our meeting. Policy experts and seminar speakers relevant to each dinner topic will make brief remarks to help facilitate a broader discussion. If you have not indicated your interest in participating, please contact us. Groups will gather after the reception and walk to the dinner locations. Topics include:

- **November 2010:** What's at stake? What is the range of possible outcomes? Will this be a watershed election year?

- **The Bankrupting of America:** Are Americans waking up to the negative consequences of government growth and spending? What messages cut through the clutter? Will this issue be of concern to voters this fall?

AGENDA

- **Energy and Climate:** What drives the regulatory assault on energy? What are the economic and political consequences of this? How discredited is the climate change argument? What effect does this have on the electorate, especially in key states?

- **Higher Education:** At a time when we face so many immediate threats, how do we also maintain focus on longer-term investments in higher education? What leveraged opportunities exist on campuses now that make a real difference in advancing liberty?

- **Issue Micro-Targeting:** What gaps do we face in thoroughly understanding the electorate? What has been learned from research so far? How can we take advantage of this advanced technology?

Sunday, June 27

9:00 am – 4:00 pm
CAPITOL ROOM,
LOWER LEVEL

Seminar Registration and Hospitality Center
If you did not pick up meeting materials on Saturday, you may pick up those materials today in the Capitol Room on the lower level of the St. Regis. You might also enjoy a snack or visit with your fellow participants.

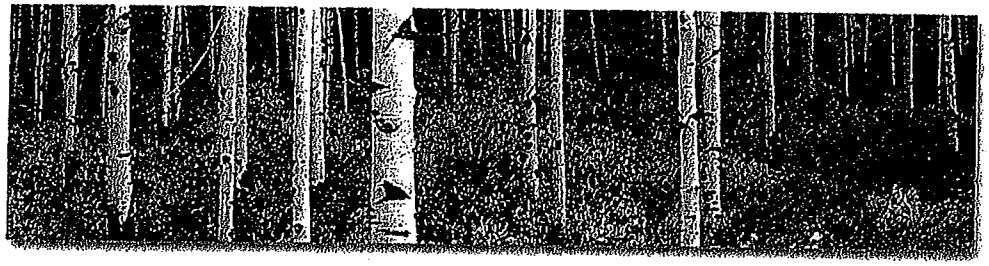
11:15 am – 12:45 pm
ASPEN ROOM
MAIN LEVEL

An Introduction to these Meetings for First-Time Participants
Participants new to these meetings are invited to a welcome luncheon to learn about the strategic framework that has guided past success and that guides future action.

Richard Fink, Koch Industries

AGENDA

1:00 – 1:40 pm GRAND BALLROOM LOWER LEVEL	**The Threats to American Freedom and Prosperity** We are undergoing the greatest internal assault on American freedom and prosperity in our lifetimes. Rather than cede ground to more government, we must strengthen economic freedom. Business leaders have an important role to play in promoting prosperity, countering the dangerous attacks on our founding principles, and reversing this trend. Charles Koch, Koch Industries
1:40 – 2:10 pm GRAND BALLROOM	**What's the Outlook for Future Prosperity?** Government spending continues to climb to dangerously high levels, putting our economy at risk. This session will explore the precarious path that we are on, led by one of the analysts best known for predicting the financial crisis. Peter Schiff, Euro Pacific Capital
2:10 – 2:30 pm GRAND BALLROOM	**Q&A with Charles Koch and Peter Schiff**
2:30 – 2:50 pm	**Break**
2:50 – 3:50 pm GRAND BALLROOM	**Understanding the Persistent Threats We Face** The current administration swept into office with a promise to "fundamentally transform America." From the nationalization of healthcare to the rising power of unions, as well as a push for major new climate and energy regulations, financial regulation, and even more government spending, there is no lack of significant threats for us to understand and address. Moderated by Steve Moore, *The Wall Street Journal* Phil Kerpen, Americans for Prosperity Ramesh Ponnuru, *National Review* Peter Wallison, American Enterprise Institute



AGENDA

3:50 - 4:30 pm
GRAND BALLROOM

An Integrated Strategy to Address These Threats
While the threats we face are significant, we have seen progress. Building on the lessons learned from the past and capitalizing on several unique opportunities we face this year, we believe there is a way to reverse this present course and build a more prosperous future.

Richard Fink, Koch Industries

4:30 – 6:30 pm

Free Time

6:30 – 9:00 pm
FOUNTAIN COURTYARD

Reception and Dinner at the St. Regis

Is America on the Road to Serfdom?

Glenn Beck

9:00 – 10:15 pm
RESTAURANT BAR
MAIN LEVEL

Cocktails and Dessert Reception hosted by DonorsTrust
Conclude your evening with a cocktail or dessert at the St. Regis' Restaurant Bar.

Monday, June 28

7:30 – 8:30 am
FOUNTAIN COURTYARD

Breakfast Buffet and Presentation

7:50 – 8:30 am
FOUNTAIN COURTYARD

We're Spending Too Much
Americans are increasingly concerned with the growth of government, but we also need a positive vision of what smaller government means, a vision that goes beyond lower taxes and economic efficiency. Without that positive vision, the appeal of liberty is limited. This presentation provides a vision of how we can regain the moral high ground and make a new case for liberty and smaller government that appeals to all Americans, rich and poor.

Russ Roberts, Mercatus Center

AGENDA

8:30 – 8:45 am	**Break and Transition to Grand Ballroom**
8:45 – 9:30 am GRAND BALLROOM	**Understanding This Electorate** This spring's primaries have produced many surprises and upsets. What is causing this electorate to vote the way they are? What does this mean for the November elections? This session will offer insight into the mood of this year's electorate. Michael Barone, *The Almanac of American Politics*
9:30 – 10:30 am GRAND BALLROOM	**Framing the Debate on Spending** Polls show that the American public is deeply concerned about government growth and spending – and they are making their frustrations known. In this session, we will better understand if this is a fleeting circumstance or one that holds opportunities for advocates of free enterprise into the future. Nancy Pfotenhauer Jeff Crank, Americans for Prosperity - Colorado Veronique de Rugy, Mercatus Center Gretchen Hamel, Public Notice
10:30 – 10:50 am	**Break**
10:50 am – 11:50 pm GRAND BALLROOM	**Mobilizing Citizens for November** Is there a chance this fall to elect leaders who are more strongly committed to liberty and prosperity? This session will further assess the landscape and offer a strategic plan to educate voters on the importance of economic freedom. Sean Noble Karl Crow, Themis Mark Mix, National Right to Work Tim Phillips, Americans for Prosperity

11:50 – 12:05 pm	Break and Transition to Lunch in the Fountain Courtyard
12:05 – 2:00 pm FOUNTAIN COURTYARD	Lunch Buffet & Next Steps
	Winning the Fight between Free Enterprise and Big Government America was built on the free enterprise system. That's how America became a prosperous nation with abounding opportunities for all. Now, freedom is under a relentless attack. What happens if it slips away? Arthur Brooks will share with us how free enterprise is more than an economic system – it is a moral imperative, and we must defend it at all costs. Arthur Brooks, American Enterprise Institute
2:00 – 2:15 pm	Break
2:15 – 3:00 pm	**Small Group Discussions** These five discussion-oriented sessions offer you the opportunity to explore several topics that go beyond the issues already discussed. We will hold these sessions twice so that you may attend the two that most interest you.
ASTOR LIBRARY, 4TH FLOOR	**Opportunities in Higher Education:** For long-term success, we must develop future leaders committed to the principles of a free society. Can we have a major impact in higher education over the next ten years? Where are the most leveraged opportunities for investment? Russ Roberts, Mercatus Center Kristen Short, Charles G. Koch Charitable Foundation Ryan Stowers, Charles G. Koch Charitable Foundation

MAROON BELLS, BALLROOM LEVEL	**Decision-Making in Philanthropy:** How can you maximize the impact of your gift-giving? What different giving options are available to you? How can you determine which groups and causes are effective? Advisors to several of America's most generous philanthropists will share their experiences in working toward strategic and informed decisions. Annie Dickerson Mina Nguyen Michael Sullivan
CAPITOL ROOM, BALLROOM LEVEL	**K-12 Ed Reform & Charter Schools:** What is the best way to reform our education system? How can we ensure children learn core concepts? This discussion will explore what is working and what the future holds for K-12 reform. John Bryan
PYRAMID ROOM, BALLROOM LEVEL	**Judicial Elections:** Several states this year will hold important judicial elections. Is there an opportunity here for advocates of free enterprise to have their voices heard? David Chavern, U.S. Chamber of Commerce Kevin Watson, U.S. Chamber of Commerce
ASPEN ROOM MAIN LEVEL	**Choices in 2012:** As important as the 2010 elections might be, 2012 also offers an opportunity to address the threats to free enterprise. This session will allow for an informal discussion of how supporters of economic freedom might start planning today. Jerry Milbank Bill Walton
3:00 – 3:15 pm	**Break and Transition to Second Discussion**
3:15 – 4:00 pm	**Session II of Small Group Discussions**

4:00 – 6:00 pm	Free Time
6:00 – 6:50 pm	**Gondola Ride to the top of Aspen Mountain** Groups will leave every few minutes from the front drive of the St. Regis to walk or ride to the gondolas, only a few blocks away. The trip to the top of Aspen Mountain on the gondola takes about 15 minutes and offers scenic views of the Aspen valley and the surrounding mountains.
6:00 – 9:00 pm SUNDECK, ASPEN MOUNTAIN	**Reception & Dinner atop Aspen Mountain** **What's Ahead for America?** Charles Krauthammer
9:00 – 10:15 pm BENEDICTS, ASPEN MOUNTAIN	**Cordials & Dessert Buffet** Before descending the mountain, you are welcome to enjoy dessert and a farewell cocktail as you continue your dinnertime conversations. The gondolas will be continuously available to return you to the base of Aspen Mountain following dinner, and they will run until 10:15 pm.

Tuesday, June 29

7:30 – 9:30 am FOUNTAIN COURTYARD	**Drop-In Breakfast Buffet** A buffet breakfast will be available for you as you conclude your stay in Aspen. Grab your breakfast and run or stay and converse with your fellow participants.

Understanding and Addressing Threats to American Free Enterprise and Prosperity

PALM SPRINGS | RANCHO LAS PALMAS JAN. 30 & 31, 2011

Goals & Mission

At our seminars, we work to understand and address the threats to American free enterprise and prosperity. These meetings provide an opportunity to discuss these threats and the appropriate strategies to counter them. To that end, we focus on four main objectives:

- Attracting principled leaders and investors who will effectively defend our free society
- Sharing best practices and opportunities to defend our free enterprise system from destructive public policies
- Building principled, effective institutions that identify, educate and mobilize citizens in pursuit of a free and prosperous society
- Fashioning the message and building the education channels to reestablish widespread belief in the benefits of the principles of a free and prosperous society

Our seminars bring together business and philanthropic leaders who possess the vision and knowledge to develop innovative strategies to achieve results. The combination of knowledgeable speakers and motivated participants produces a dynamic environment that inspires creative approaches to advancing a free society.

The Program

This action-oriented program brings together top experts and leaders to discuss – and offer solutions to counter – the most critical threats to our free society. Recent sessions have focused on addressing rapid government growth, countering climate change alarmism and the move toward socialized healthcare, developing strategies to advance liberty on college campuses, strengthening our state-based capabilities, and promoting judicial reform. Past meetings have featured such notable leaders as Supreme Court Justices Antonin Scalia and Clarence Thomas; Governors Bobby Jindal and Haley Barbour; commentators John Stossel, Charles Krauthammer, Glenn Beck, and Rush Limbaugh; Senators Jim DeMint and Tom Coburn; and Representatives Paul Ryan, Mike Pence, and Tom Price.

General Schedule

Saturday, January 29

4:30 – 6:00 pm	Welcome Reception for Locals and Early Arrivals
6:00 pm	Small-group Dinners

Sunday, January 30

11:15 am	Luncheon for First-Time Participants
1:00 – 5:00 pm	Formal Program Begins
6:30 – 9:00 pm	Reception & Dinner at Rancho Las Palmas Resort and Spa

Monday, January 31

7:30 am – 4:30 pm	Breakfast / General Sessions / Luncheon
6:30 – 9:30 pm	Reception & Closing Dinner

Tuesday, February 1

7:30 – 9:30 am	Drop-in Breakfast Buffet (No Program)

Meeting Registration

PALM SPRINGS | RANCHO LAS PALMAS JAN. 30 & 31, 2011

Invitations are non-transferable. Spouses are welcome at all events.
You may also register online at www.regonline.com/PalmSprings2011.
Registrations received after January 1 will be accepted if space remains.

Daytime Phone:

Assistant: _____

Cell Phone: _____

Email: _____

☐ **I/We will attend the meeting in Palm Springs, January 30 & January 31.** As a first-time participant, I understand that my fee for the event will be waived.

Names for nametags (informal): _____ _____

☐ **I/We cannot attend the Palm Springs meeting.**

☐ Please consider me for future events.

☐ Please include me in informational mailings about issues addressed at these meetings.

Accommodations

The Rancho Las Palmas Resort and Spa, located in Rancho Mirage, California, will host our meeting. A block of rooms is held for our group and will be available until December 27, 2010. For your convenience, all hotel reservations will be handled through our office; *please do not contact the Rancho Las Palmas directly to place a reservation.*

Please indicate below if accommodations will be needed and, if so, your desired room type. Most participants arrive on Saturday or Sunday and depart on Tuesday. The per-night room rates below do not include a $10/night resort fee, a 10% federal, state and local tax, a 2% Local Business Improvement District assessment fee, or a 0.15% California tourism assessment fee. A deposit of the first night's charges will be made upon booking. Cancellations must be made seven days before scheduled arrival to receive a refund of the deposit. Suites are limited and will be available on a first-come first-served basis.

Rooming Details

☐ I will **not** require a room at Rancho Las Palmas.

☐ Please reserve me a room at Rancho Las Palmas.

☐ Plaza Room $209

Arrival Date: January _____, 2011
Departure Date: Jan/Feb _____, 2011

Optional: ☐ I would like a second room.
☐ Connecting / ☐ King or ☐ Double

Hotel Payment Information

Card Type: ☐ American Express ☐ MasterCard ☐ VISA

Name on Card: _____

Card Number: _____

Exp. Date: _____

Please return this form to:

Mr. Kevin Gentry
Koch Companies Public Sector
600 14th Street NW, Suite 800
Washington, DC 20005
Fax: 202-737-8080 Tel: 202-737-8377

Or: www.regonline.com/PalmSprings2011

Privacy notice: We respect your personal information. We will keep your contact details confidential and will use them only for our internal purposes and for the purpose of making the conference arrangements you have requested. We will maintain your credit card information in a secure fashion and will disclose it only to the relevant hotel for the purposes of securing your reservation. The Rancho Las Palmas Privacy Policy is available on its website.

PARTICIPANTS

Jack and Rose Marie Anderson	Addison, Texas
Neil Anderson and Amy Fisher-Smith	Addison, Texas
Phil and Nancy Anschutz	Denver, Colorado
Cliff Asness	Greenwich, Connecticut
Nate and Lynda Bachman	Cincinnati, Ohio
Whitney Ball	Alexandria, Virginia
Michael Barone	Washington, DC
Frank and Kathy Baxter	Pacific Palisades, California
Steve and Betty Bechtel	San Francisco, California
Glenn Beck	New York, New York
Benard and Margaret Blasingame	Adamsville, Tennessee
Alan and Lisa Boeckmann	Irving, Texas
Boysie Bollinger	New Orleans, Louisiana
Patrick and Paula Broe	Denver, Colorado
Arthur Brooks	Bethesda, Maryland
David and Ann Brown	Oklahoma City, Oklahoma
John Bryan	Lake Oswego, Oregon
Bob and Martha Buford	Wichita, Kansas
Tim Busch	Irvine, California
Shelby and Nell Bush	Dallas, Texas
Tim Carney	Washington, DC
Charlie and Marla Chandler	Wichita, Kansas
David Chavern	Falls Church, Virginia
John Childs	Vero Beach, Florida
Paul and Lea Clifton	Oro Valley, Arizona
Susie Coelho	Los Angeles, California
Bill Cooper and Kristin Tollefson	Wayzata, Minnesota
Dino and Joan Cortopassi	Stockton, California
Joe Craft	Tulsa, Oklahoma
Alex Cranberg	Greenwood Villiage, Colorado
Jeff Crank	Colorado Springs, Colorado
Karl Crow	Arlington, Virginia
Eric Crown and Isabella King	Phoenix, Arizona
Kevin Crutchfield	Abingdon, Virginia
Ravenel and Beth Curry	New York, New York
Jim and Shirley Dannenbaum	Houston, Texas
Veronique de Rugy	Arlington, Virginia
Rich and Helen DeVos	Ada, Michigan
Annie Dickerson	New York, New York
Ned and Nancy Diefenthal	Metairie, Louisiana
Jim and Dorothy Patterson	Louisville, Kentucky
Dan and Kellie Peters	Cincinnati, Ohio
Tom Petrie	Denver, Colorado

Presenters in italics

Dixon and Carol Doll	Menlo Park, California
Karl and Stevie Eller	Phoenix, Arizona
Ron and Kris Erickson	Bloomington, Minnesota
Melvyn and Suellen Estrin	Bethesda, Maryland
Dick Farmer	Cincinnati, Ohio
Peter Farrell	San Diego, California
Jim and Zibbie Ferrell	Houston, Texas
Dave Fettig	Darien, Wisconsin
Bob Fettig	Darien, Wisconsin
Steve Fettig	Darien, Wisconsin
Jerry and Nanette Finger	Houston, Texas
Richard Fink	Centreville, Virginia
Budd and Laurie Florkiewicz	Scottsdale, Arizona
Charlie and Kaye Lynn Fote	Englewood, Colorado
Randy and Jean Foutch	Tulsa, Oklahoma
Foster Friess	Jackson, Wyoming
Steve and Polly Friess	Jackson, Wyoming
Jerry and Leah Fullinwider	Dallas, Texas
Richard and Leslie Gilliam	Keswick, Virginia
Susan Gore	Cheyenne, Wyoming
Oliver and Carolyn Grace Jr.	Palm Beach, Florida
Judson and Joyce Green	Orlando, Florida
Ken and Anne Griffin	Chicago, Illinois
Gretchen Hamel	Arlington, Virginia
Fred and Jane Hamilton	Denver, Colorado
Bob and Mary Sue Hawk	Denver, Colorado
Dick and Ethie Haworth	Holland, Michigan
Robin and Barbara Hayes	Concord, North Carolina
Dan and Carolyn Heard	Houston, Texas
Diane Hendricks	Beloit, Wisconsin
Steve and Regina Hennessy	Morrow, Georgia
James and Heather Higgins	New York, New York
Paul Hill	Regina, Saskatchewan
John and Joan Hotchkis	Los Angeles, California
Allan and Kathy Hubbard	Indianapolis, Indiana
Stan and Karen Hubbard	St. Paul, Minnesota
Ethelmae Humphreys	Joplin, Missouri
Manley and Mary Johnson	Upperville, Virginia
Merritt Johnson	Upperville, Virginia
Gerry and Priscilla O'Shaughnessy	Wichita, Kansas
Michael O'Shaughnessy	Wichita, Kansas
Tim O'Shaughnessy	Wichita, Kansas

Presenters in italics

Marshall Johnson	Upperville, Virginia
Kyle and Kirsten Johnstone	Orinda, California
Mike and Beth Kasser	Tucson, Arizona
Ken and Randy Kendrick	Paradise Valley, Arizona
Phil and Joanna *Kerpen*	Washington, DC
Gerry and Kathryn Kingen	Seattle, Washington
Scott Kirkpatrick	Jackson, Wyoming
Charles and Liz Koch	Wichita, Kansas
Chase and Annie Koch	Wichita, Kansas
David and Julia Koch	New York, New York
Elizabeth Koch	Brooklyn, New York
Bob and Cindy Koch	Evansville, Indiana
Bob Kohlhepp	Cincinnati, Ohio
Charles Krauthammer	Washington, DC
Dennis Kuester	Milwaukee, Wisconsin
Andrew Kupersmith	New York, New York
Andre Lacy	Indianapolis, Indiana
Ken and Elaine Langone	New York, New York
Jay and Sally Lapeyre	Harahan, Louisiana
Ken and Frayda Levy	Mountain Lakes, New Jersey
Tom Love	Oklahoma City, Oklahoma
Bob Luddy	Raleigh, North Carolina
Fred and Marlene Malek	Washington, DC
Elaine Marshall	Dallas, Texas
Pierce Marshall	Dallas, Texas
Preston Marshall	Houston, Texas
Bill Mayer	New York, New York
Glen and Diane Meakem	Sewickley, Pennsylvania
Ed Meese	Washington, DC
Lew and Suzy Meibergen	Enid, Oklahoma
Don and Deede Meyers	Paradise Valley, Arizona
Jerry and Caroline *Milbank*	New York, New York
Jack and Goldie Miller	Buffalo Grove, Illinois
Mark Mix	Springfield, Virginia
Joe and Mary Moeller	Scottsdale, Arizona
Steve Moore	Falls Church, Virginia
David Murfin	Wichita, Kansas
Walter and Suzette Negley	Houston, Texas
Mina Nguyen	Greenwich, Connecticut
Larry and Polly Nichols	Oklahoma City, Oklahoma
Sean Noble	Phoenix, Arizona
Tim and Teresa Oelke	Rogers, Arkansas
Eric O'Keefe	Spring Green, Wisconsin

Presenters in italics

Kurt and *Nancy Pfotenhauer*	Oakton, Virginia
Tim Phillips	Leesburg, Virginia
Ramesh Ponnuru	Alexandria, Virginia
Art and Kathy Pope	Raleigh, North Carolina
Russ Roberts	Arlington, Virginia
Corbin and Barbara Robertson	Houston, Texas
Richard Roder and Karin Hsu	Addison, Texas
Gary and Kathleen Rogers	Oakland, California
Durk Rorie	Cincinnati, Ohio
Chris Rufer	Sacramento, California
Peter Schiff and Martha O'Brien	Westport, Connecticut
Steve and Christine Schwarzman	New York, New York
Rick and Sherry Sharp	Richmond, Virginia
Mike and Lin Simmonds	Omaha, Nebraska
Peter Smith	Scottsdale, Arizona
Dick Strong	Milwaukee, Wisconsin
Michael Sullivan	Greenwich, Connecticut
Ray and Ladeine Thompson	Kalispell, Montana
Lynn Tilton	New York, New York
Dave and Melanie True	Casper, Wyoming
Steve Twist	Scottsdale, Arizona
Jim and Gayla Von Ehr	Richardson, Texas
Rick and Debra Waller	Kenosha, Wisconsin
Peter Wallison	Washington, DC
Bill and Sarah *Walton*	Washington, Virginia
Lew and Myra Ward	Enid, Oklahoma
Dick Weekley	Houston, Texas
Fred and Susie Wehba	Los Angeles, California
Nestor Weigand and Darcy Buehler	Wichita, Kansas
Dick and Mary Beth Weiss	Hinsdale, Illinois
Howard and Rhonda Wilkins	Dallas, Texas
Don and Sue Wills	Dallas, Texas
Larry and Lorraine Winnerman	Aspen, Colorado
Joe Woodford	Colorado Springs, Colorado
Earl Wright	Englewood, Colorado
Karen Wright and Tom Rastin	Mount Vernon, Ohio
Cliff and Susan Yonce	Greenwich, Connecticut
Fred and Sandra Young	Racine, Wisconsin

Presenters in italics