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Who Will Cry For the Ice?

A Preliminary Sketch of Metaphorical Framing and Conceptual Understanding in Climate Change Terminology

Carter Brooks

INTRODUCTION

The Inuit, one of the indigenous cultures of the Arctic Circle, have an interesting problem lately. They've been encountering robins, a bird they've never seen before. Previously confined to the temperate zones further south, these animals are so unfamiliar that the Inuit literally do not have words in their language for them. "Climate change and unfamiliar species leave Inuit lost for words" reads the headline in *The Independent* of London. The Inuit also have no words to describe the changes to their landscape brought on by the rising temperatures of global warming. What the Inuit face is a foreshadowing of what humanity faces more generally. Do we have any experiences that will provide us with a conceptual understanding of the events and changes we are likely to see as a result of climate change? More to the point, do we even have a proper conceptual understanding of what global warming is? How can conceptual metaphors be used to better understand climate change? The logical place to start such an exploration is with the terms we have used to label and name the phenomena.

"GLOBAL WARMING"

"Global Warming" was the first term to become popular to describe climate change, and it is easy to see why. While the real event is arguably the loading of the atmosphere with various carbon molecule gases, the most direct result is a rising temperature. Specifically, the "globally averaged surface temperature" is going up. The "global" brings to mind the image of the a "globe," and, in

fact, likely a memory of a common photograph of the earth from space.¹ We immediately understand that we are talking about the planet as a whole.

The choice of the word “warming,” however, turns out to be unfortunate. We understand that if something is warming the temperature is going up. But, because of our cultural understanding of “warming”—our folk theory of “warming”—the term does not convey the sense of a problem. “Warming” after all is generally perceived as a good thing. If it is the weather we are talking about, we tend prefer it warmer than colder. We use “warm” if it is pleasant. If it is too warm, we don’t say “too warm,” we say “hot.” But “warm” is not confined to just temperature. It is an emotional term as well. We associate warmer with affection, for example. “She warmed up to me.” We warm up to ideas. Warm colors make us feel good. When it is cold outside, we try to keep warm. Searching for an answer or a hidden object, we are “warm” when we are closer. WARM IS GOOD. At least in general.

There are examples where warm can be the first signs of a potential problem. (When a parent feels a child’s forehead to see if they are warm, it is to detect a possible fever.) But in general, when the temperature is a problem, other words are favored. “He’s burning up.” “It’s too hot to go outside.” “Global warming” has a nice sound to it, but “global heating” would have been a much better term for conveying the idea of a problem.

CLIMATE CHANGE AND THE WEATHER FRAME

From a scientific perspective, “global warming” is also problematic, for it only describes one aspect of a very complex interaction. In point of fact, temperatures will not go up everywhere. Some places they will go down. Nor will they go up uniformly. Relatively speaking, for example, the temperatures at the equator will not be all that different, but temperatures in the Arctic will go up 2 or 3 times the average. They already are.

But the more significant problems with global warming are all the indirect effects that result from increasing carbon dioxide and temperature. These include, name just a few, changing air and water currents, rainfall patterns, timing of the seasons, range of species habitats. This is not to mention the increased probability of

sever storms, rising sea levels, insect infestations, spread (and incubation) of disease. And, of course, the effects we are yet to discover.

To emphasize that “global warming” is about more than temperature, the term “climate change” is usually favored by those people familiar with the science. “Climate change” is a more accurate term in this sense, but it suffers many of the same problems as “global warming.”

“The weather” is the primary frame evoked, for example. And what do we know about the weather? It is natural for it to change. “Don’t like the weather? Wait 5 minutes.” Furthermore, the weather is something that we traditionally don’t have control over. “You can’t change the weather.”² It is simply beyond most people’s conceptual understanding to think that we can have any effect on the weather. “Climate” has a more specific meaning beyond just weather, which is the sense in which it is used by climate scientists, but the subtlety is often lost. In general, the metaphor is THE CLIMATE IS THE WEATHER. It is an instance of the GENERAL IS SPECIFIC in which case the inferences we have about the general, larger, frame are limited by the inferences we have about the specific case.

The degree to which the “weather” overrides a true understanding of “climate” is worthy of more specific research. Certainly “climate” as meaning the general conditions over time is understood. We know for example that certain climates are better for growing good wine grapes, while others are perfect for pineapples. The word “climate” is also used to describe general conditions in other frames. We speak of the “political climate” and the “business climate,” for example. “We could never pass the Kyoto protocol in the current political climate.”

GREENHOUSE GASES

Global warming is caused by an accumulation of “heat trapping” gases in the atmosphere. They include carbon dioxide, methane, and a host of other.³ These gases tend to let light energy through our atmosphere, but tend not to let heat energy out. So they have earned the name “greenhouse gases,” because, to put it bluntly, the metaphor is, more or less, spot on for describing the science. But

while “greenhouse gases” describes the mechanism well, and is scientifically honest, it does little to raise a sense of urgency. Like “warming,” a “greenhouse” is a good thing. It is a place that nurtures plants, and allows things to grow in inhospitable environments.

Linguistically, “greenhouse gases” is rich and complicated. It is a metonymy.⁴ That is, it uses one characteristic to refer to gases that have many other functions and qualities. (Just like we say “The White House” to refer to the entire presidential administration.)

The main metaphor, however, is THE EARTH IS A GREENHOUSE. The atmosphere is the windows of the greenhouse. The inhabitants of the earth are the plants growing in the greenhouse. Either god or humanity—your preference—is the gardener. The larger metaphor is THE EARTH IS A GARDEN, which, aside from the specific mappings described above, reinforces the idea that the earth is something that we tend, control, and manage. More greenhouse gases may be metaphorically connected to building more greenhouses, which, again, seems like a good thing. Of course, it is possible for a greenhouse to get too hot. Certain plants could die. But the inference from a greenhouse is that one can always open a window. This is, unfortunately, not possible with our atmosphere. There is no way to open a window and let out the extra heat.

Another, and perhaps more important, metaphor is also suggested—THE EARTH IS A BUILDING. The greenhouse is a special case. It is a common metaphor. How often do we hear “the Earth is our home?” If the planet is a building, then we are its inhabitants. Space is outside the building. The atmosphere is the inside. This metaphor comes with an important entailment. Conceptually we understand that we can control the environment of a building. In a modern society, we adjust temperature by fiddling with the thermostat. Many of our buildings are “climate controlled,” and so it is not uncommon for people to use the term “climate control” when talking about climate change.⁵ This, unfortunately, is an improper inference, because though we can affect the climate, we cannot control it.⁶

This metaphor shows up in the scientific discussion of the climate system. Scientists in describing fluctuations in historical climate will say that the climate has “sticky thermostat.” Different

gases have different “windows” that allow or trap different frequencies of energy.

THE SCIENTIFIC FRAME

“Global warming,” “climate change,” and “greenhouse gases” also have in common their origin in a scientific frame. (That is, they are terms that come from the scientific literature, and are primarily understood as such.) But people don’t generally think like scientists or understand the norms of science—i.e., ranges of uncertainty, degrees of confidence, caveats and qualifications. Most lay people expect simple answers.⁷

The most important consequence is that climate change is understood not as an event, but rather a scientific debate. Framing the issue as a scientific has played right into the hand of those in whose interests it is to not do anything about climate change—the fossil fuel industry. It is a matter of public record that the fossil fuel industry has conducted a public relations campaign to frame climate change and global warming as a “theory,” and then to attack it as unproven. To a dramatic extent, this has worked.

On a very practical level, the dominant question has been is “is climate change happening?” As the evidence suggests the answer is yes, the question has shifted to “is climate change attributable to human activity?” It is proper for the scientist to be careful about attributing causation too quickly without a solid theory. But the “so called” skeptics have played into this, by insisting this issue is one of proving or not being able to prove human causation, rather than discussing the effects and events related to climate’s shift. The threshold for proving human causation to climate change is very high. (Or, at least it can be set high.) Once in the frame of theories, the skeptics⁸ are able to label the science as “junk,” and claim that what is needed is more “sound” science, invoking another building metaphor, THEORIES ARE BUILDINGS. The public, unable to judge the science themselves is left in a quandary.

CLIMATE CHANGE AS A MYTH

“[climate change is a myth, sea levels are not rising]”
—International Policy Network ⁹

For those that would rather not recognize climate change is a reality, the idea of climate change as a “myth” is often used. “Myth” is a very powerful term, both understood as important cultural stories, but twisted in our modern usage to refer to ideas that have made it into popular knowledge but are “just stories.” It is, in a way, the ultimate dismissal of knowledge.

CARBON EMISSIONS AS POLLUTION

“If we can reverse the emission of the pollution that causes climate change in time..”
— Geoffrey Lean, *The Independent*

There are other conceptual systems which we use to understand climate change. A common understanding of climate change is as a pollution problem. Carbon dioxide is the pollutant. Society is the polluter. We have a whole set of inferences that go along with pollution. Our prototypical example is the pipe oozing sludge into the river, or the smoke stack spewing dark clouds into the air. Pollution is something we can see. Or smell. Or hear. And there is a known solution. Clean it up. Stop polluting. But this conflicts with our experience of carbon dioxide. We do, after all, exhale it ourselves. The dangerous inference is that seeing climate change as a “pollution” problem may give us a false sense of confidence in solving it. It is primarily from the pollution frame that we get such ideas as “clean” energy.

There are other, more abstract conceptual framings of climate change as well. And though they derive from some basic metaphors we use to understand more than just climate change, their implications are nonetheless important.

CLIMATE CHANGE AS AN OBJECT IN MOTION

Can we stop global warming? How do we fight climate change? For the activists and environmentalists, these are common questions. The Green House Network sponsors the “Race to Stop Global Warming.”¹⁰ As a thing that can be stopped, the specific metaphor involved is CLIMATE CHANGE AS AN OBJECT IN MOTION. This is nothing unique, simply a special case of understanding of CHANGE IS AN OBJECT IN MOTION. As understood in the context of climate change, climate change is the object. Changes in the climate system is the motion of the object. The impacts of climate change are collisions with the object. The causes of climate change are the forces directing the object.

This metaphor provides the conceptual understanding that climate change is something that has momentum and will cause damage by collisions. Importantly, this metaphor works best if the object is considered to be a big heavy object. The lead author of a recent report, for example referred to the “supertanker of climate change.” The entailment that heavy objects in motion have momentum is appropriate. Global Warming is driven by atmospheric concentrations of carbon dioxide, a gas which stays in the atmosphere a long time. So the idea of momentum is important and valid. In addition, the release of carbon dioxide is largely due to the burning of fossil fuels, which, being linked to economic activity, also has a certain momentum. In the case of the metaphor dressed up as a supertanker, we have the idea that even if we could “shut off the engines” (i.e., stop emitting carbon dioxide today) we would still be heading towards an inevitable collision. With a supertanker, the engines would need to be put in reverse, which is, talk of carbon sequestration aside, less than likely.

The entailment that damages from climate change come from collisions is also important, though it makes for an important misconception. That is, a collision tends to be a single event, rather than a process that unfolds over time. This leads to the idea that the impacts from climate change may be avoided by changing the direction of the object, or getting out of its way. The question becomes *avoiding* climate change, rather than adjusting to and responding to it. And indeed this is a common conception of climate change—something we can stop if we apply enough force.

A variation on the object in motion theme comes out of the metaphor of THE EARTH AS A VESSEL/SHIP. If the Earth is a ship, then CLIMATE CHANGE IS A HAZARD/OBSTACLE. Or more specifically, CLIMATE CHANGE AS ICEBERG. If climate change is an iceberg, the earth is a ship, the forward motion of the ship is progress, a collision with the iceberg are the catastrophic effects of climate change.

This really, is the Titanic Analogy. The human economy is speeding along, in reasonable luxury and with a sense of invincibility. Its momentum is such that it cannot change course quickly. The boat is guided as we may believe our human economy is with proper leadership. If you dig deeper into the Titanic story to find that the boat was much less maneuverable than the captain had experience with (because of its scale.) Similarly, our human economy and our potential to change the world is now of a scale with which we have no experience, which maps to our overconfidence that we can fix climate change. Embellishing it a little further, imagine that the survival of passengers relies on not only the boat staying afloat, but also on the engines running at full speed. At this moment in time, we have hit the iceberg, the boat is taking on water and is listing. A small group of people is running around trying to convince people we need to slow down and not hit the iceberg (at least any harder), a few others have decided that the best thing to do is bail. They are mostly focused not on the bailing, but on the convincing people that bailing is important. Most people, however, are engaged in an elaborate gambling game, or the riot on deck 2. Much of the analogy does not map. What is the result of sinking? What are the lifeboats? The analogy can create more confusion than understanding, though it is worth considering that there may soon be no more icebergs that could sink the Titanic.

CLIMATE CHANGE AS AN INVADING FORCE

*“Experts see states as force in fighting global warming.”
—New York Times*

Another conceptual metaphor arises from the idea of “fighting” climate change. Here we have CLIMATE CHANGE AS A THREATENING ENTITY. Or, perhaps CLIMATE CHANGE AS AN INVADING FORCE.

This is also a special case of a basic metaphor, OBSTACLES ARE OPPONENTS. Climate change is the enemy, the battle is the effort to reduce carbon dioxide emissions, and the soldiers are the people working on the issue. This frames climate change as an outside threat that must be fought off. It tends not to see it as something of our own making. It also frames the advocates for industry and oil burning as on the other side. On the other hand, the fight highlights the idea that climate change is a serious threat. But it is put on par with say, the war on drugs or abortion. Of course, an entailment of this metaphor is the idea of enemies and villains. This conceptual understanding also adds a sense of urgency. As a battle or a war, it is an ongoing activity.

CLIMATE CHANGES AS A THREAT TO THE ECONOMY

The idea of CLIMATE CHANGE IS A THREAT is also seen from another angle. That is, not as a threat because of the direct effects, but the implied response to mitigate climate change (reducing emissions) as a threat to the economy, jobs and people's livelihood. This is the position, undeniably, taken by the U.S. government and the Bush administration most recently. Specifically, the claim is that the U.S. cannot "afford" to curb emissions or reduce energy consumption without threatening its competitive position in the world economy. It is a threat to the "health" of the economy. And it is implied that meeting reduced emissions targets will be a threat to jobs.

There are a few metaphors at play in this part of the discussion. One is the SOCIETY IS A BODY metaphor. Energy is sustenance. Consuming energy is eating. Emissions are the natural body's waste, which is perceived as inevitable. We know that insufficient nutrition is a threat to health, so a "restricted" energy diet is a threat to economic health as well. Though not explicit, it may be that there are mapping conceptually to the type of energy. Fossil fuels are high energy content substances and would map to protein, while solar and wind energies by comparison are like a vegetarian diet. But more importantly, the body's waste is inevitable. We cannot eat food without needing to excrete our waste later. So the same goes for emissions. They are seen as inevitable. At least the only way to reduce them is perceived to be

to “eat” less, which, as mentioned, is implied to be an unacceptable risk.

The metaphor is also evoked by the environmental community in the idea of being “addiction to oil.” It is an apt inference. The definition of addiction includes the idea that the body will not function properly if the addict does not get the accustomed dose. The addict refuses to admit the addiction. The addict will fight to get what he needs. The addict will become increasingly belligerent to others who try to point out the addiction. The parallels in the current international situation are uncanny.

The SOCIETY IS A BODY metaphor also interacts with another metaphor, The ECONOMY IS A RACE. The body of the United States is seen as in a competition with other bodies/societies. In this context, the need to consume to keep the advantage is simply assumed. The race is a special case of the larger competition frame, which can include competitions of life or death. So the need to compete, and win, the competition is not inferred to be a matter simply of pride, but of life and death.

THE SOCIETY IS A BODY metaphor is important for other reasons. For we use it to conceptualize society’s contribution to the causation regarding climate change. Thus, scientists talk of the “human fingerprint” as the specific evidence that anthropogenic activities influence climate. (Largely, these are being found as expected.) But we also understand CAUSES AS FORCES and human agents as entities that act to direct force. This is implicitly inferred when we talk about “man-made” climate change.

CAP AND TRADE, CARBON MARKETS AND THE ECONOMY METAPHOR

On the political front Russia recently ratified the Kyoto protocol, which means that the infamous climate change treaty will “come into force” soon. This is an historic moment in the climate change story, because, in theory, the nations of the world will have “binding” commitments to reduce their carbon dioxide emissions to below 1990s levels. It also means engagement of a whole set of metaphors.

A key “mechanism” for controlling emissions is a “cap and trade” system for carbon emissions. That is, the “right” to emit

carbon dioxide will be given to specific people or companies, who may then trade these rights among others in a market.¹¹ So we now have the idea of “trading carbon,” and “carbon credits,” and “carbon budgets.”¹²

The metaphor here is about markets and business. The climate is something that can be managed like a business. The business frame is mapped to nature. NATURE IS A BUSINESS, or in this special case THE CLIMATE IS A BUSINESS. Society is the CEO. Countries and other political organizations are the middle managers. Carbon is either the product, the raw material, or even money. As we assume that company policies and rules can direct the functioning of company, we assume that society will be able to construct rules to control carbon emissions. At a more general level, climate change is simply understood as another constraint on markets, like taxes, or like interest rates. It is taken out of the scientific frame. And it is assumed that business people and politicians can make decisions about the optimal conditions of nature.

THE ATMOSPHERE AS A CONTAINER

Setting targets or proper concentrations of carbon in the atmosphere leads us to THE ATMOSPHERE IS A CONTAINER metaphor. We speak of “filling up the atmosphere,” “pumping carbon dioxide into the atmosphere,” and “running out of atmosphere.” The container is the atmosphere. The contents of the container are the gases. Emissions are the things that go into the container. We run out of atmosphere when there is not more room in the container for more carbon dioxide. It gives us the concept of limits and finite space. Physically, there is not a limit to how much carbon dioxide would “fit” in the atmosphere. But if we are trying to set a limit, to “cap” it, then the container has a fixed size. One of the difficult inferences here is that the container will limit our output. If we have a container of a fixed size, we will physically not be able to put more into it at a certain point. The atmosphere, however, is more like an infinitely expandable container. It is only our own self-restraint that limits our inputs.

CLIMATE CHANGE AS AN EXPERIMENT¹³

“Industrialized nations were using the Arctic as a guinea pig in an uncontrolled experiment on climate change.”

—Jennifer Morgan, director of the World Wildlife Fund’s global climate change campaign

Climate change is often portrayed as an experiment, usually an “uncontrolled” experiment. Society is the conductor of the experiment and we are us. The experiment is putting carbon dioxide into the atmosphere. “Uncontrolled” refers to the scientific concept that if you change one variable, in this case carbon dioxide concentrations, you must also have a separate experiment where you hold that one constant in order to compare it. This means that it is hard to discern what specific effect is coming from the increase in carbon dioxide that wouldn’t be happening without it. We also know from an experiment that we don’t know what will happen. That is why we are conducting the experiment. By extension, we do not know what will happen because of climate change.

NATURE AS A HUMAN AGENT

Another reason we view the weather as something we don’t have control over is a metaphor of NATURE AS HUMAN AGENT. We use this metaphor in our everyday speech. “The wind blew the window open” is the classic example. In this metaphor, nature is a human agent. Natural causes are forces exerted by the human agent, and natural events are the effects of these forces. We have many inferences about humans. Human agents have intention. Human agents are aware. Human agents can communicate. All of these get mixed up in our understanding of climate change. So, for example, we say that nature is trying to tell us something with the recent hurricanes in Florida. Or, alternatively, we are looking for signals from nature that climate change is happening. But we also have the idea that nature is aware, which often leads to the idea that nature will self correct, will literally see there is a problem and adjust. We have the idea that we can “insult” nature, and we question how long nature will endure our insults, such as carbon dioxide emissions, before reacting.

SHIFTING THE FRAME

While people have a hard time conceptualizing the science that underlies climate change, there are opportunities and examples of shifting the frame in a way that conveys a sense of urgency. That is, it may be possible to understand that climate change is a major problem that needs attention, even if there is not a conceptual understanding of the underlying causation.

THE CLIMATE CRISIS

“I’m here to talk to you about the ‘Climate Crisis’”
—Al Gore at U.C. Berkeley, November 2004

Former Vice-President Al Gore opened a recent talk at UC Berkeley on climate change by referring to the “climate crisis.” The term is, in a way brilliant, because we understand a crisis as something that not only has potentially dire consequences, but also as something that demands immediate attention. A crisis is a special transitional moment. A crisis is one thing that overrides our normal activities. It puts global warming in the frame of human problems, rather than scientific problems. It also sets up the conversation with the problem presupposed. The burden shifts from proving there is a problem, to proving there is not a problem.

GLOBAL-WARMING OSTRICHES

“There are also more than 50 global-warming ostriches in the Senate.”
—*Boston Globe*, Editorial, December 27, 2004

This wonderful statement from *The Boston Globe* evokes the well known image of the ostrich, who when confronting danger puts its head in the ground. Our understanding of this image starts with the assumption that there is a problem. We know, of course, that this does not protect the ostrich, but the ostrich pretends there is no problem, since it can’t be seen anymore. The senators, as ostriches, of course, are the people who refuse to see the problem even when it is put in front of them. Their response to the problem is to avoid seeing it. We know from this frame that the response is not

adequate. And, furthermore, that those who don't see a problem are simply wrong.

WHAT IS MISSING?

There are many other important metaphors that are important to this exploration, which have not been addressed here. They include THE EARTH IS A BODY, THE EARTH IS A MACHINE, CLIMATE CHANGES IS MELTING, and a host of others.

Quite apart from the standard attempts to convey a conceptual understanding of the mechanisms behind climate change, there are also some missing metaphors. For example, there are no metaphors that really convey a picture of climate change with respect to geologic time. From a geologic time perspective, our fossil fuel emissions are not a slow but steady accumulation of carbon dioxide, but rather more of a massive burp of carbon (a great de-sequestration) into the atmosphere.

There are no common metaphors that convey the picture of changed stocks and flows with respect to energy. For most of earth's history the energy model for life has been an "abundant stock, limited flow" model. The sun provides a virtually infinite stock of energy, but the flow is limited by how much reaches the earth per unit of time. Since tapping fossil fuels, this has shifted to an abundant flow, limited stock model. The reserves of coal and oil are ultimately limited, but the flow rate we consume them is now more abundant. This is a fundamental and essential system condition change, for which there is little conceptual understanding, and no common metaphors that communicate it. Some analogies are possible—"drawing down on retained earnings." But the stock and flow conceptual understanding doesn't exist.

The role carbon plays in storing the sun's energy is also not generally understood.

The idea that the carbon we have been releasing took a long time to sequester, and that it is carbon that life uses to store energy is also absent. Perhaps we should say that we are "farting" all this carbon dioxide into the "room" that is the atmosphere

INVESTMENT AND DEBT

The idea of debt and investment is also missing. Did nature invest in fossil fuel? If so, do we owe a debt for raiding the vault? What is mankind's debt to nature now? Now that we have overseen the latest great extinction? And the overheating of the engine of life?

WHO WILL CRY FOR THE ICE?

While we discuss the conceptual understanding of climate change. The great glaciers of the world and the polar sea ice is melting, and the permafrost of the Arctic is thawing, quite unconcerned with our conceptual understanding. And when the ice is gone, who will weep for the aesthetic and spiritual loss? Hopefully, we will have developed our conceptual picture to see it for what it is, a deep, collective and profound tragedy.

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NOTES

¹ Apparently, according to Al Gore, when people see an photograph of the Earth from space, there's about a 90% chance that they are seeing one specific photograph taken during one of the Apollo moon missions.

² This does not mean that people—some people—don't use a fair amount of emotional energy trying to control the weather. The effort, of course, is futile.

³ Virtually all of which have carbon as one of their elements, which is why it is correct to speak of "carbon" generally instead of "carbon dioxide" more specifically.

⁴ "greenhouse gases" is also a blend. That is, it combines the domain of gases and the domain of greenhouses and binds them in one unit, so we see them together.

⁵ This is largely anecdotal, but I have found it to be a very common slip among people not deeply familiar with climate change, and, one presumes, not conditioned to the use of the term climate change.

⁶ Someone is dreaming about it, no doubt. And I would not want to be premature and say it is impossible. However, I am entirely *not* sure that such a degree of human control is a desirable state of affairs.

⁷ This particular inference might be disproved with careful research, but I will state it without proof with a reasonable degree of confidence.

⁸ The term “climate skeptics” is also interesting. If you are skeptical, then you are considering other possibilities, and the scientific debate frame is immediately evoked. In addition, a skeptic is often a positive term. Someone who is examining things more closely, who knows enough to not trust otherwise naïve conclusions.

⁹ While the “myth” term is used, this example is taken from a recent speech by Bill Moyers—“the administration’s friends at the international policy network, which is supported by Exxon Mobil and others of like mind, have issued a new report that climate change is “a myth, sea levels are not rising,” scientists who believe catastrophe is possible are “an embarrassment.” I was unable, however, to find this inference or the words myth or embarrassment in any of the reports on the International Policy Network website.

¹⁰ I am leaving aside the “race” part for the moment, but this is obviously worth exploring as well.

¹¹ This method was used successfully to reduce sulfur emissions from U.S. power plants.

¹² Kyoto also has other terms “joint implementation,” “hot air,” “clean development mechanisms,” which will not be taken up in this paper.

¹³ MSNBC website