

*Ulysses, the Sirens of Politics, and Climate Change:  
Binding the Present to Liberate the Future*

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*Odysseus and the Sirens* John William Waterhouse (1891)

*Therefore, pass these Sirens by, and stop your men's ears with wax that none of them may hear; but if you like you may listen yourself, for you may get the men to bind you as you stand upright on a cross-piece half way up the mast, and they must lash the rope's ends to the mast itself that you may have the pleasure of listening. If you beg and pray the men to unloose you, then they must bind you faster.*

Homer's The Odyssey

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\* © Richard J. Lazarus, 2007. Professor of Law, Georgetown University. I would like to thank Jennifer Locke Davitt of the Georgetown University Law Center Library, Erika Kranz and Julia Stein, both of the Georgetown University Law Center Class of 2009, and Elizabeth Black and Susannah Foster, both of the Georgetown University Law Center Class of 2008, for their outstanding research assistance in the preparation of this article. Professors Chris Schroeder, Katrina Wyman, and David Schoenbrod generously suffered through a four-page preliminary sketch of this article, which happily this draft little resembles. Their comments on that draft helped prompt the much-needed transformation.

## **I. Introduction**

We are about to have a “lawmaking moment” in the United States. After many years of delay, Congress will most likely pass during the first two years of the next Presidential Administration and the new President will sign into law significant climate change legislation. The new law will include a mix of regulatory programs and economic incentives crafted initially to reduce our nation’s increasing rate of emissions of greenhouse gases and ultimately the absolute amount of those emissions as well. The new law will also include programs that allow for the adaptation necessary to lessen the serious adverse public health and welfare effects of climate change that will unavoidably occur in the next few decades. There will be a celebratory White House signing ceremony with the President surrounded by those congressional leaders, environmentalists, and sympathetic captains of industry who joined together in championing the legislation’s passage. Thus, the logjam regarding the nation’s -- and world’s -- most pressing environmental problems will finally be broken.

The inherent problem with such lawmaking moments, however, is just that; they are “moments.” What Congress and the President do with much fanfare can quickly and quietly slip away in the ensuing years. Subsequent legislative amendments, limited budgets, appropriation riders, interpretive agency rulings, and simple nonenforcement are more than capable of converting a seemingly uncompromising legal mandate into nothing more than a symbolic aspirational statement. In short, what Congress and the President giveth, Congress and the President can taketh away. After all, isn’t that what a representative democracy is all about?

This essay’s thesis, however, is just the opposite. Making it easy for subsequent lawmakers to change existing law is not what representative democracy is about. Or at least representative democracy should not acquiesce in that proposition in the context of addressing the problem of greenhouse gas emissions and climate change. Representative democracy instead should be understood as being able to anticipate the dynamic nature of lawmaking and its related challenges, which do not always end with the formal enactment into law of much needed legislation. The same short term

impulses that have to be overcome in order to secure the enactment of certain kinds of laws, such as those relating to climate change, do not disappear upon their becoming law. They instead typically remain to seek the law's ultimate undoing. And representative democracy need not ignore, but can legitimately account for that possibility in the first instance.

The critical lesson for climate change legislation, accordingly, is that the pending lawmaking moment must include the enactment of provisions specifically designed to protect the legislation over the longer term from that happening. Climate change legislation is peculiarly vulnerable to being subsequently unraveled for a variety of reasons, but especially because of the extent to which it imposes costs on the short term for the realization of benefits many decades and sometimes centuries later. It is therefore not enough for Congress to enact a law that mandates tough, immediate controls on greenhouse gas emissions. Nor is it enough for Congress to build into the new law strong economic incentives that render more palatable the changes in behavior necessary for those mandates to be accomplished and promote overall economic efficiency.

Much more is needed. For climate change legislation to be successful, the new legal framework must simultaneously be flexible in certain respects and steadfast in others. Flexibility is necessary to allow for the modification of legal requirements over time in light of new information. Yet the basic legal framework and legal mandate must also be steadfast enough to be maintained over the long term notwithstanding an unrelenting barrage of short term economic interests that will inevitably seek that mandate's relaxation.

To that end, the law will need to include institutional design features that allow for such flexibility but insulate programmatic implementation from powerful political and economic interests propelled by short term concerns. Such design features will include precommitment strategies that deliberately make it hard (never impossible) to change the law in response to some kinds of concerns while providing avenues for change in response to other concerns that are in harmony with the law's central purpose.

The purpose of this essay is to explain why such institutional design

features are a critical and legitimate aspect of global climate change legislation here in the United States. The essay is divided into three parts. The first part highlights the distinct features of the lawmaking challenges presented by global climate change. These challenges include both those that derive exclusively from the underlying science of climate as well as those that derive more immediately from human nature and the nature of U.S. lawmaking institutions. The second part explains the central role that institutional design features play in responding to these very kinds of lawmaking challenges. This explanation is both historical and theoretical. It explains why such design features are necessary and legitimate, notwithstanding the constraints they place on future lawmaking, and how such features have been historically used in various settings to overcome certain kinds of lawmaking challenges. Finally, the third part of the essay offers a menu of possible institutional design features that might be appropriate in global climate change legislation.

## **II. The Challenges of Climate Change Legislation: The Science of Climate Change, Human Nature and the Nature of U.S. Lawmaking Institutions**

The purpose of this article is not to rehash the questions whether significant global climate change is happening, whether the activities of humankind are a significant contributing cause of that change, or whether the public health and welfare impacts of global climate change are sufficiently serious to warrant climate change legislation that results in major reduction of greenhouse gas emissions. In light of recent scientific studies, most notably the series of reports issued in 2007 by the Intergovernmental Panel on Climate Change (IPCC),<sup>1</sup> the answers to each of these questions should by now be obvious. But, in any event, I am a law professor, and no longer a student of chemistry,<sup>2</sup> and I will leave any

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<sup>1</sup> Intergovernmental Panel on Climate Change, Summary for Policymakers, in *Climate Change 2007: The Physical Science Basis, Contribution of Working Group I to the Fourth Assessment Report* (S. Solomon et al., eds. 2007); Intergovernmental Panel on Climate Change, Summary for Policymakers, in *Climate Change 2007: Climate Change Impacts, Adaptation and Vulnerability, Contribution of Working Group II to the Fourth Assessment Report* (M.L. Parry et al., eds. 2007).

<sup>2</sup> As a reminder that the issue of greenhouse gases and climate change is not new to

possible remaining scientific debates to others. This essay accordingly accepts as a given that the nation has decided that we need to achieve significant reduction in greenhouse gas emissions to limit future climate change and to provide relief to those who are going to suffer in the next few decades from now-unavoidable climate changes caused by our past greenhouse gas emissions.

For this reason, the ensuing discussion of the science of climate change, human nature, and the nature of U.S. lawmaking institutions is limited. It focuses only on those aspects relevant to the question addressed by this essay, which is the need for institutional design features within climate change legislation capable of ensuring its successful maintenance over the long term. The discussion highlights the obstacles presented by the science, human nature, and our nation's lawmaking institutions to the enactment of climate change legislation in the first instance and the related obstacles to its successful implementation over time.

#### **A. Science of Climate Change**

The science of climate change has several distinct features that render lawmaking especially difficult. As described below, these include the physics and chemistry underlying climate change as well as the resulting impacts of such change on humankind and the global ecosystem.

##### *1. The Greenhouse Effect:*

While ultimately riddled with complexities, the basic science of climate change for our purposes is fairly straightforward. As the concentration in the atmosphere of certain chemicals increases, the amount of heat from sunlight in the form of infrared radiation that would otherwise simply reflect off the earth's surface and radiate back into space is instead captured within our atmosphere. This process works like a "greenhouse," which is why it is popularly referred to as a "greenhouse effect" and why also those chemicals

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science, they were a principal topic of study in the environmental chemistry course I took at the University of Illinois in the fall of 1975 while pursuing a B.S. in chemistry. See Stanley E. Manahan, *Environmental Chemistry*, 300-303 (1974).

the higher concentrations of which capture the heat are known as “greenhouse gases.”<sup>3</sup>

Carbon dioxide (CO<sub>2</sub>) is one of several significant greenhouse gases and a CO<sub>2</sub> molecule’s potential to capture heat is actually far less than others by several orders of magnitude, such as methane.<sup>4</sup> The reason why CO<sub>2</sub> is nonetheless the primary subject of so much attention is because the natural concentrations in the atmosphere are relatively small compared to the volume of CO<sub>2</sub> emissions now being added by human activities.<sup>5</sup> Although the largest source of CO<sub>2</sub> emissions historically is volcanic activity, fossil fuel burning, alone, adds fifteen times that supplied by volcanos each year and that ratio is rapidly increasing.<sup>6</sup> The now famous graphs depicting the dramatic and accelerating rise in CO<sub>2</sub> atmospheric concentrations during the last 100 years and the corresponding rise in global temperatures illustrate the essential relationship between CO<sub>2</sub> and global warming as a matter of scientific cause and effect.<sup>7</sup>

Exacerbating the additions of CO<sub>2</sub> to the atmosphere from classic sources of pollution, especially powerplants and motor vehicles, are other human activities that are no less dramatically eliminating nature’s ability to take CO<sub>2</sub> out of the atmosphere. There are several natural *sinks* that can decrease greenhouse gas concentrations by taking those gases out of the

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<sup>3</sup> IPCC, Fourth Assessment Report – Historical Overview of Climate Change Science, 95, 103-105, 115 (2007); IPCC, Technical Summary of Working Group I, 21-24 (2007); IPCC, *The Physical Science Basis*, *supra* note \_\_, at 2-3, 105; R.T. Pierrehumbert, *Climate Change: A Catastrophe in Slow Motion*, 6 Chicago J. Int’l Law 573 (2006).

<sup>4</sup> Jennifer Woodward, *Turning Down the Heat: What United States Laws Can Do To Help Ease Global Warming*, 39 Am. U. L. Rev. 203, 210 (1989).

<sup>5</sup> Pierrehumbert, *Climate Change*, *supra* note \_\_, at 575; see also IPCC, *The Physical Science Basis*, *supra* note 2 at 108; IPCC, Technical Summary for Working Group I, *supra* note \_\_, at 23-27; NOAA, Global Warming: Frequently Asked Questions, <http://www.ncdc.noaa.gov/oa/climate/globalwarming.html#Q2> (last visited March 12, 2008).

<sup>6</sup> Pierrehumbert, *Climate Change*, *supra* note \_\_, at 576.

<sup>7</sup> IPCC, *The Physical Science Basis*, *supra* note \_\_, at 11; David P. Hodas, *State Law Responses to Global Warming: Is It Constitutional to Think Globally and Act Locally?*, 21 Pace Env’t. L. Rev. 53, 61 (2003).

atmosphere.<sup>8</sup> If those sinks were increasing in capacity while the sources were increasing their emissions, there would be no net greenhouse effect. But just the opposite is happening because the number and capacity of those natural sinks are decreasing.

For instance, plants are a major sink of CO<sub>2</sub>.<sup>9</sup> Plants absorb CO<sub>2</sub> and release oxygen in a biochemical process (photosynthesis) necessary to produce energy: the fascinating converse of the process by which animals breathe in oxygen and release CO<sub>2</sub>. Plant absorption of CO<sub>2</sub> has historically served as a significant means of keeping CO<sub>2</sub> concentrations in the atmosphere in check.<sup>10</sup> Because, however, development activities throughout the globe have literally cleared massive landscapes of vegetation, including some of the most dense in tropical rainforests, the ecosystem's ability to reduce atmospheric CO<sub>2</sub> concentrations has dramatically decreased at the very moment that it is most needed. Even worse, those same development activities emit huge volumes of CO<sub>2</sub> gas into the atmosphere by burning the vegetation, which releases the CO<sub>2</sub> otherwise absorbed within the vegetation's chemical makeup.<sup>11</sup>

Finally, the greenhouse effect is a global phenomenon, not one that occurs in some parts of the world, but not others. Atmospheric

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<sup>8</sup> Karen N. Scott, *Ocean CO<sub>2</sub> Sequestration and the Future of Climate Change*, 18 Geo. Int'l Env. L. Rev. 57, 58 (2005).

<sup>9</sup> *Id.* at 58, 63 (stating that over the past two decades, the CO<sub>2</sub> flux caused by land use changes has been dominated by tropical deforestation); United Nations Food & Agricultural Organization, *Roles of Forests in Climate Change*, [http://www.fao.org/forestry/site/climate\\_change/en/](http://www.fao.org/forestry/site/climate_change/en/) (last visited March 12, 2008).

<sup>10</sup> IPCC, *The Physical Science Basis*, *supra* note 2, at 116.

<sup>11</sup> FAO, *Roles of forests in Climate Change*, *supra* note \_\_; see also Tom Knudson, *Green Storage in Forests May Be Going Up in Smoke*, Sacramento Bee, March 12, 2008. Yadvinder Malhi, J. Timmons Roberts, Richard A. Betts, Timothy J. Killeen, Wenhong Li, & Carlos A. Nobre, *Climate Change, Deforestation, and the Fate of the Amazon*, 319 Science 169 (January 2008); IPCC, *Land Use, Land Use Change, and Forestry* (Cambridge University 2000); M. Santilli, P. Moutinho, P. Schwartzman, D. Nepstad, L. Curran, & C. Nobre, *Tropical Deforestation and the Kyoto Protocol*, 71 Climatic Change 267 (2005); IPCC, *Technical Summary for Working Group I*, *supra* note \_\_, at 27; IPCC, *Fourth Assessment Report, Changes in Atmospheric Constituents and Radiative Forcing*, *supra* note \_\_, at 185.

concentrations of greenhouse gases are uniform throughout the atmosphere. They do not differ over distinct parts of the globe. A molecule of carbon dioxide added by a source in New Zealand accordingly has the same effect on CO<sub>2</sub> concentrations as a molecule added by a source in Kansas, or Brazil, or Sweden.<sup>12</sup>

*What are the related lawmaking challenges?* The first is that both sources of greenhouse gases and potential sinks of greenhouse gases are relevant. Laws concerned with addressing the greenhouse effect need to be consider the possibility of reducing sources while also increasing the capacity of sinks. The second is that any effective climate change legislation must include, of course, domestic controls, but no domestic legislation is enough standing alone. Even if one or many nations decrease their emissions rates or their own destruction of carbon sinks, those efforts are susceptible to being overtaken by activities occurring within another nations' boundaries.

## 2. *Stock/Flow Nature of Atmospheric Chemistry*

One of the distinctive features of the science of climate change is the stock/flow nature of the physical and chemical processes underlying it. A stock/flow relationship is counterintuitive because it does not operate like the kind of simple short term, more linear relationship between cause and effect that most people (and lawmakers) assume is at work when they contemplate pollution and the regulatory options for its regulation. Unfortunately, climate change now cannot be avoided simply by reducing greenhouse gas emissions, much the same way that one could stop a tea kettle from boiling by just turning down the stove. The relevant atmospheric controls for temperature are not so straightforward.<sup>13</sup>

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<sup>12</sup> The impact of CO<sub>2</sub> emissions on climate change turns on atmospheric concentrations of CO<sub>2</sub> in the troposphere, which become uniform around the globe. See IPCC, Fourth Assessment Report, Changes in Atmospheric Constituents and Radiative Forcing, *supra* note \_\_, at 137-140.

<sup>13</sup> John D. Sterman & Linda Booth Sweeney, *Understanding Public Complacency About Climate Change: Adult's Mental Models of Climate Change Violate Conservation Matter*, 80 *Climate Change* 213, 214-215, 222-228 (2007).

The kind of stock/flow relationship that prompts climate change is instead very different. Climate change results from the build up over time, indeed over centuries, of greenhouse gases. Unlike most pollutants in most ecological contexts, once added to the atmosphere, greenhouse gases remain there for a very long time – not just decades, or even centuries, but thousands of years. They do not naturally dissipate in significant amounts. And so long as the amount of greenhouse gases being emitted into the atmosphere is greater than the amount that naturally falls out every year, greenhouse gas concentrations increase over time. Of course, that is exactly what has been happening, and at an accelerating rate.<sup>14</sup>

The most accessible description that I have encountered is to contemplate the atmosphere as the equivalent of a bathtub that has been filling with water over time because the pipe adding water into the tub is much larger than the drain coming out of the tub.<sup>15</sup> In the “tub” of the atmosphere, while the metaphorical emissions pipe coming in has gotten much larger, the drain has gotten much smaller for two distinct reasons. The first, as discussed, is the destruction of vegetation that would otherwise have absorbed some CO<sub>2</sub> from the atmosphere by way of photosynthesis. The second is the ocean, which also provides a natural sink in which some greenhouse gases like CO<sub>2</sub> can dissolve. As, however, the concentrations of greenhouse gases in the atmosphere have increased, the ocean’s capacity to dissolve greenhouse gases out of the atmosphere is diminishing because the ocean itself is filling up beyond its chemical capacity to dissolve more gases.

The practical implications of such a stock/flow are significant, particularly temporally. First, because the high concentrations of greenhouse gases in the atmosphere are the result of decades of buildup and natural drainage is very slow, those high concentrations cannot be easily or quickly reduced. It will require not just a decrease in the rate of emissions increases but in the absolute amount of emissions emitted each year. And, even more tellingly, even if annual emissions are reduced considerably, the

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<sup>14</sup> Pierrehumbert, *Climate Change*, *supra* note \_\_, at 577.

<sup>15</sup> Sterman & Sweeney, *Understanding Public Complacency about Climate Change*, *supra* note \_\_, at 235-236.

atmospheric concentrations will continue to increase until those annual increases are less than annual drainage. The bathtub may fill up more slowly but the water will still be rising.<sup>16</sup>

Finally, even if one manages to achieve annual emissions that are lower than the annual drainage, it will likely take many decades to lower the atmospheric greenhouse gas concentrations. And, until those concentrations are substantially lower, climate change will continue to occur. For example, for every kilogram of CO<sub>2</sub> added to the atmosphere today, one quarter of that amount will remain in the atmosphere for 500 to 1000 years, and approximately seven percent will persist in the atmosphere for hundreds of thousands of years.<sup>17</sup> That's a long time.

But even that stock/flow characteristic of atmospheric concentrations of greenhouse gas is only half of the time lag that renders redressing climate change problematic. A comparable stock/flow relationship exists in the atmosphere for the build up of radiative heat. Just as greenhouse gas concentrations build up over lengthy periods of time, so too does radiative heat.<sup>18</sup> For that reason, there is, in effect, not just one bathtub in the atmosphere, but two: one for greenhouse gases and one for radiative heat, with the former adding heat to the latter. And, here too, the heat builds up in the second bathtub so long as the amount of heat being added is greater than the heat draining out.<sup>19</sup>

The practical implication of adding yet one more stock/flow relationship to the global warming equation is stark. It means that even once, after decades, one achieves an absolute reduction of greenhouse gases, one will not see any resulting decrease of heat. The decrease will occur only after the amount of heat being added as a result of greenhouse gas concentrations gets so low that it is less than the heat being drained. A reduction in additional heat will otherwise only decrease the rate of global

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<sup>16</sup> *Id.* at 215-216.

<sup>17</sup> Pierrehumbert, *Climate Change*, *supra* note \_\_, at 577.

<sup>18</sup> See IPCC, *The Physical Science Basis*, *supra* note \_\_, at 13.

<sup>19</sup> Sterman & Sweeney, *Understanding Public Complacency*, *supra* note \_\_, at 214-215; IPCC, *The Physical Science Basis*, *supra* note \_\_, at 13.

warming increases, but not actually result in a temperature decrease.

*What are the related lawmaking challenges?* Here again there are several.

The first is that major reductions will clearly be necessary. It will not be enough to slow the rate of increases or even to decrease absolute annual emissions. Only if emissions are lower than drainage will greenhouse gas concentrations decrease and even then reduction in atmospheric heat will not occur until the net radiative heat being added by greenhouse gases is less than the amount draining out.

The second is that there will necessarily be a huge lag between the time reductions in greenhouse gas emissions occur and any positive effect on climate change. The time lag is at the very least longer than the lifetime of any adult. The upshot is that no one who is asked to curtail activities in order to reduce greenhouse gas concentrations will be likely to live long enough to enjoy the benefits of that curtailment.

The related lawmaking implication is that the only measures that can make a significant difference for current lives are adaption measures. Whatever climate change is going to occur in our lifetimes is now unavoidable. The table has been set. All that can done is to address the needs of those who will be most adversely affected and develop ways to adapt to climate change that will minimize its adverse effects and perhaps take advantage of some new opportunities presented by a changed climate.

A final lawmaking challenge that derives from the stock/flow nature of climate change is that lawmaking delays are costly. The longer one waits, the more dramatic the necessary reductions in emissions. The reason is simple. With every year of delay, greenhouse gas concentraions and radiative heat levels increase and, no less important, the economic interests in maintaining increasingly high rates of emissions get ever more deeply entrenched.

3. *Spatial Dimension of Climate Change: Global Cause vs. Global Effect*

Although atmospheric concentrations of greenhouse gas concentrations are uniform around the globe, the impacts of those concentrations are not similarly uniform. Hence, while the IPCC and other scientific bodies routinely refer to increases in average global temperature, that does not mean that every part of the globe will in fact experience the same temperature increase. That “average” instead masks substantial differences in temperature increases. For some parts of the world, the temperature increase will be much greater than for other parts.<sup>20</sup>

Even more important, temperature increases, alone, mask the much larger differences in resulting worldwide impacts. The public health, welfare, and environmental impacts of any given increase in temperature are highly dependent on location on the globe.<sup>21</sup> What might even be a potentially beneficial increase in one part of the world could be a completely devastating effect elsewhere.<sup>22</sup>

For instance, the impact of a given increase in temperatures turns on factors such as the ways the wind blows, water flows, and the Earth spins in its orbit around the sun. For those parts of the globe where water for drinking and basic agricultural subsistence may already be scarce, an increase in temperature can quickly result in severe droughts and famines, leading to mass migrations of hundreds of thousands, if not millions of people.<sup>23</sup> For those parts of the world where people live close to the ocean

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<sup>20</sup> IPCC, *The Physical Science*, *supra* note \_\_\_, at 11.

<sup>21</sup> *Id.* at 97.

<sup>22</sup> IPCC, Summary for Policymakers, in *Climate Change 2007: Climate Change Impacts, Adaptation and Vulnerability*, Contribution of Working Group II to the Fourth Assessment Report, 12 (M.L. Parry et al., eds. 2007); IPCC, *Fourth Assessment Report, Climate Change 2007 – Synthesis Report, Summary for Policymakers*, 8-13 (2007); J.J. McMichael, D. Campbell-Lendrum, R.S. Kovats, *Global Climate Change*, in *Comparative Quantification of Health Risks: Global and Regional Burden of Disease due to Selected Major Risk Factors* (World Health Organization 2004).

<sup>23</sup> *Id.*

in low lying elevations vulnerable to flooding, rising sea levels could literally wipe out entire island nations and coastal cities. And, for those parts of the world where, because of already existing higher temperatures, many of the world's diseases originate, even higher temperatures could both promote the development of new diseases and increase their ability to spread further around the globe.<sup>24</sup>

By contrast, in other parts of the world, increased temperatures might even seem to yield some benefits, at least in the short term.<sup>25</sup> In higher latitudes, an increase in temperature might lengthen the growing season and thereby offer a potential boost in agricultural productivity.<sup>26</sup> Some winemakers in France have made just that claim.<sup>27</sup> Similarly, although higher temperatures in the Arctic may sound the death knell for certain species, such as the polar bear, and for certain native villages, melting ice could open up new passageways for marine transportation and access to energy resources.<sup>28</sup>

There is also a reason why the problem is defined not as “global warming” per se but ultimately as global *climate change*. Changes in temperature are simply the first in a chain reaction of ecosystem changes. The changes in climate that result from changes in temperature are highly dependent on location. Some places get more rain; other places get less. Some places may get more damaging weather patterns; others will not. If, as some scientists suggest, changing temperatures can shift the ocean currents, such as the Gulf Stream, and melt polar ice, the variation in global impacts will be even more pronounced.<sup>29</sup>

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<sup>24</sup> IPCC, Fourth Assessment Report, *Climate Change 2007 – Synthesis Report, Summary for Policymakers*, 8-13 (2007); Pierrehumbert, *Climate Change*, *supra* note \_\_, at 578-579 (describing nonuniform impacts).

<sup>25</sup> IPCC, *Climate Change Impacts, Adaptation and Vulnerability*, *supra* note \_\_, at 12.

<sup>26</sup> *Id.* at 14.

<sup>27</sup> A. B. Tate, *Global Warming's Impact on Wine*, *Journal of Wine Research* 12, 95-109 (2001).

<sup>28</sup> IPCC, *Climate Change Impacts, Adaptation and Vulnerability*, *supra* note \_\_, at 15; World Health Organization, *Global Impact Model for Climate Change (2004)*; *Winners and Losers in a Changing Climate*, *New York Times* (April 2, 2007).

<sup>29</sup> IPCC, *Climate Change Impacts, Adaptation and Vulnerability*, *supra* note \_\_, at 17; Pierrehumbert, *Climate Change*, *supra* note \_\_, at 578-579 (describing nonuniform

*What are the related lawmaking challenges?* Here again, there are several and all are quite formidable.

The most significant challenge is that while all parts of the world can influence global climate change, not all parts of the world will suffer equally if such change occurs. Indeed, some parts of the world will suffer potentially catastrophic effects, even with just a rise of a few degrees centigrade while other parts of the world will suffer relatively little and may even believe that they are enjoying some short term economic benefits. Such distributional differences will make it much harder to achieve the international cooperation and coordination necessary to address the problem.

But what makes addressing the problem seemingly insurmountable is that the parts of the world that are most directly threatened are completely different from those that are the primary sources of greenhouse gases now in the atmosphere. Those parts of the globe most threatened, especially areas near the equator and of high elevation, are also some of the world's poorest and with the least developed governments.<sup>30</sup> Populations in these areas, such as parts of Africa and Asia, often lack basic shelter, health care facilities, a diversified economy and a government able to deliver basic social services in times of stress. Their ability to adapt to climate change is consequently minimal.<sup>31</sup>

In tragic contrast, the most highly industrialized nations that have emitted the vast majority of greenhouse gases over the past fifty years -- including the United States, Russia, and much of Western Europe -- are located almost exclusively in the higher latitudes in the northern

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impacts).

<sup>30</sup> IPCC, *Climate Change Impacts, Adaptation, and Vulnerability*, *supra* note \_\_, at 13; see also Paul Reiter, *Climate Change and Mosquito-Borne Disease*, 109 *Environmental Health Perspectives* 141, 142 (2001); Kathryn S. Brown, *Taking Global Warming to the People*, *Science Magazine* 1440-1441 (March 5, 1999); Michael Grubb, *Seeking Fair Weather: Ethics and the International Debate on Climate Change*, 71 *International Affairs* 463, 467 (1995).

<sup>31</sup> IPCC, *Climate Change Impacts, Adaptation, and Vulnerability*, *supra* note \_\_, at 12; Brown, *supra* note \_\_, at 1441.

hemisphere.<sup>32</sup> These are, somewhat perversely the areas that are likely to suffer the least in the short term and economic interests there may even believe they will enjoy some short term benefits.<sup>33</sup>

Such nations are not only the most responsible for the current problems, but they are also invariably some of the most politically and economically powerful nations on the globe. They are consequently not readily susceptible to less powerful nations' efforts to compel them to reduce their emissions. Because of their relative wealth, they are also more easily able to adopt adaptation measures and consequently suffer fewer immediate hardships.<sup>34</sup>

As a result, it will prove extremely difficult in the short run to persuade the powerful nations responsible for climate change to undertake the dramatic action now needed. They will not perceive the benefits for doing so in part because they will not in fact be the ones suffering the greatest and most immediate harm. And by the time longer term climate change begins to adversely affect even the more powerful nations -- because of political destabilization caused by massive migrations, the spread of infectious diseases, dramatic changes cause by shifts in the Gulf Stream, or melting glaciers -- it will be too late to take action to avoid such greater effects. As described above, the stock/flow nature of the atmosphere precludes the normal luxury of awaiting serious and immediate adversity before taking action.<sup>35</sup>

There was no scientific reason why such a geographic mismatch

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<sup>32</sup> World Resources Institute, *Earth Trends 2001*, \_\_ (2001).

<sup>33</sup> IPCC, *The Physical Science Basis*, supra note 2, at 782 (stating that precipitation would increase in northern Europe), ; IPCC, *Climate Change Impacts, Adaptation, and Vulnerability*, supra note \_\_, at 482, 554, 556, 623, 796; see also Pew Center on Global Climate Change, *Forests and Global Climate Change: Potential Impacts on U.S. Forest Resources*, [http://www.pewclimate.org/global-warming-in-depth/all\\_reports/forests\\_and\\_climate\\_change/conclusions.cfm](http://www.pewclimate.org/global-warming-in-depth/all_reports/forests_and_climate_change/conclusions.cfm) (last visited March 12, 2008) (stating that the United States will receive short term positive benefits from climate change in the sector of forest resources).

<sup>34</sup> IPCC, *Climate Change Impacts, Adaptation, and Vulnerability*, supra note \_\_, at \_\_.

<sup>35</sup> See note \_\_, supra and accompanying text.

between cause and effect had to exist. But it does. It is the result of an unwittingly perverse combination of the laws of physics and chemistry with patterns of economic industrialization around the globe. No matter how unwitting, however, the resulting obstacle to lawmaking is correspondingly huge.

Finally, there is yet one more distributional twist that makes meaningful lawmaking that much harder. Although it is the long-industrialized nations, such as the United States, Russia, and Western Europe, that have contributed disproportionately to greenhouse gas concentrations now in the atmosphere, there is a new set of developing nations with exploding economies that has or at least soon will surpass the developed nations in annual emissions.<sup>36</sup> China has become the single largest producer of greenhouse gases, beating projections of when it would overtake the United States.<sup>37</sup> India and Brazil are similarly increasing their emissions in accelerating rates.<sup>38</sup>

The related lawmaking problem is obvious. The developed nations, like the United States, are hard pressed to dictate to countries like China and India that they should not expand their economies by increasing greenhouse gas emissions. After all, why should China and India agree to do so when the United States is primarily responsible for existing greenhouse gas concentrations and has already enjoyed decades of economic prosperity and

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<sup>36</sup> Energy Information Administration, Emissions of Greenhouse Gases Report, <http://www.eia.doe.gov/oiaf/1605/ggrpt/index.html#developments> (last visited March 12, 2008).

<sup>37</sup> Joseph Kahn & Mark Landler, *China Grabs West's Smoke-Spewing Factories*, New York Times, at A1 (December 21, 2007); Andy Scott and Lucy Brady, *China, top producer of greenhouse gases, looks to tap potential resource*, China Briefing News, November 2, 2007, available at <http://www.china-briefing.com/news/2007/11/02/china-top-producer-of-greenhouse-gases-looks-to-tap-potential-resource.html>; see also *China overtakes U.S. in greenhouse gas emissions*, International Herald Tribune, June 20, 2007, available at <http://www.iht.com/articles/2007/06/20/business/emit.php>.

<sup>38</sup> U.S. General Accounting Office, Climate Change: Trends in Greenhouse Gas Emissions and Emissions Intensity in the United States and Other High-Emitting Nations GAO-04-146R, at 4 (October 28, 2003); see also Sheryl Gay Stolberg, *Bush Proposes Goals on Greenhouse Gas Emissions*, New York Times, June 1, 2007, available at <http://www.nytimes.com/2007/06/01/washington/01prexy.html> (listing China and India as other "top producers" of greenhouse gas emissions).

military superiority as a result of greenhouse gas-producing industries. At the same time, the developed nations like the United States are less likely to take unilateral action to reduce their emissions if they believe that if they do, the rapidly developing nations will simply surpass them in economic strength and simply replace U.S. greenhouse gas emissions with their own, thereby not reducing climate change at all.

### **B. Human Nature and Cognitive Psychology**

The science of climate change creates a series of forbidding lawmaking obstacles. But one reason that those obstacles are so potentially overwhelming is because they work in tandem with human nature. Whether as a result of hard- or soft-wiring, human beings as a species tend to think in certain ways. As described by the field of cognitive psychology, we tend to favor some outcomes over others, are able to grasp some kinds of concepts more readily than others, and use a series of mental shortcuts or “heuristics” in making decisions.<sup>39</sup>

Many of these human tendencies are directly relevant to both why climate change has occurred and, most important for current purposes, why lawmaking to address climate change has proven so hard to establish and will be even harder to maintain over time. Indeed, there is almost complete opposition between the kinds of judgments that need to be made to address climate change in a meaningful way and the kinds of judgments disfavored by our basic way of thinking. Several of the most prominent, discussed in more detail next, relate to the temporal dimension, spatial distribution, and sheer complexity of climate change.

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<sup>39</sup> Amos Tversky & Daniel Kahneman, *Judgment Under Uncertainty: Heuristics and Biases*, 185 *Science* 1124 (1974); Daniel Kahneman, Paul Slovic & Amos Tversky, eds. *Judgment Under Uncertainty: Heuristics and Biases* (New York: Cambridge Univ., 1982); Paul Slovic, Baruch Fischhoff, & Sarah Lichtenstein, *Cognitive Processes and Societal Risk Taking*, in *Cognition and Social Behavior* (John S. Carroll & John W. Payne, eds., 1976); Jeffrey J. Rachlinski & Cynthia R. Farina, *Symposium: Getting Beyond Cynicism: New Theories of the Regulatory State: Cognitive Psychology, and Optimal Government Design*, 87 *Cornell L. Rev.* 549 (2002).

1. *Myopia and Climate Change's Temporal Dimension*

As described above, the central feature of climate change is its temporal dimension. Cause and effect are spread out enormously over time. It is not just a matter of hours, days, weeks, years, or even mere decades. There is an immediate delay of many decades and then irreversible, unavoidable consequences that, once realized, can last literally for hundreds and sometimes thousands of years. Addressing climate change, accordingly, requires people to take action now to redress consequences that will not occur until far into the future. Unfortunately, this is precisely the kind of thinking and decisionmaking in which people do not naturally engage.

We are a species characterized by myopia.<sup>40</sup> We “think mostly in physiological time”<sup>41</sup> and “natural selection favors the forces of psychological denial.”<sup>42</sup> We discount future utility and put off long term investments in favor of short term return. We do that some within our own lives. But the tendency is orders of magnitude larger when the time periods extend beyond our own lives and, as with climate change, to temporally distant future generations.

There are many readily available bases for our deciding to ignore climate change. Many relate to the tremendous uncertainty that is inevitably injected into the decisionmaking process when cause and effect are marked by the kind of extraordinary temporal distance contemplated by climate change. Such uncertainty makes it that much easier to conclude, without any obvious selfishness, that it would be foolish to undertake significant restraints on activity now to avoid consequences in the distant future.

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<sup>40</sup> Chrisoula Andreou, *Environmental Preservation and Second-Order Procrastination*, 35 *Philosophy and Public Affairs* 237 (Summer 2007); Dustin J. Penn, *The Evolutionary Roots of Our Environmental Problems: Toward a Darwinian Ecology*, 78 *The Quarterly Review of Biology* 275 (Sept. 2003); Erik Lagerspetz, *Rationality and Politics in Long-Term Decisions*, 8 *Biodiversity & Conservation* 149, 150 (1999).

<sup>41</sup> Penn, *The Evolutionary Roots of Our Environmental Problems*, *supra* note \_\_, at 284, *quoting* E.O. Wilson, *Biophilia, The Human Bond with Other Species*, 120 (1984).

<sup>42</sup> *Id.* at 285 *quoting* Hardin, *The Tragedy of the Commons*, 162 *Science* 1243 1244 (1968).

For instance, how can one ever know what consequences will occur fifty, hundred, or a thousand years from now? Consider how much humankind has transformed in the last thousand years; what enormous arrogance for anyone today to claim to know what the world and human society will look like in the far-off future, let alone describe the environmental consequences then occurring.

Consider the extent to which future technology and scientific knowledge will change during the next hundreds of years. Consider how people's tastes will profoundly shift. How foolhardy for today's generations to try to anticipate what humankind and the world will look like then and purport to freeze the present in the guise of preserving the future. The wisdom of such a self-imposed seizure of human progress is certainly nowhere suggested by centuries of the history of human civilization.<sup>43</sup>

To the extent, moreover, that addressing climate change entails reducing resource consumption, that is particularly problematic. At least on an individual basis, natural selection has seemingly favored over- rather than underconsumption. Sometimes described as an expression of an innate human desire to attract mates and exercise dominion, most humans seek to distinguish themselves by pursuit not just of wealth in any absolute sense, but relative wealth. Consumption establishes wealth and social status, whether in the form of resplendent jewels, clothes, or other extravagant goods in modern society or the simple consumption of fats and sugars in earlier times.<sup>44</sup>

Procrastination not prescience is the most likely result. The necessary laws are not likely to be enacted and, even if they are, they are likely to be riddled with exceptions or ignored in their implementation by the overriding desire to further delay their effectiveness.<sup>45</sup> Even worse, just as in Garrett

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<sup>43</sup> Lagerspetz, *Rationality and Politics in Long Term Decisions*, *supra* note \_\_, at 153.

<sup>44</sup> Penn, *The Evolutionary Roots of Our Environmental Problems*, *supra* note \_\_, at 282-283.

<sup>45</sup> Andreou, *Environmental Preservation and Second-Order Procrastination*, *supra* note \_\_, at 237-243.

Hardin's *Tragedy of the Commons*,<sup>46</sup> consumption may actually increase in the short term as each consumer seeks to obtain their share before the common supply is exhausted. Otherwise, the only benefit of any one person's (or nation's) unilateral temperance is no more than another person's (or nation's) increased exploitation and the relative impoverishment of the former.

## 2. *The Availability Heuristic, Space, and Complexity*

The "availability heuristic" describes the human tendency to judge the likelihood of an occurrence based on the relative ability to imagine it's happening.<sup>47</sup> If one can readily imagine its occurrence – *i.e.*, the possibility is therefore more cognitively "available" – one is apt to believe that its occurrence is more likely than it in fact is. In the field of risk regulation, some commentators have invoked this heuristic as grounds for worrying that government may overregulate private conduct in order to avoid harms that, while easily imagined, are extremely unlikely ever to occur.<sup>48</sup>

It is, however, the mirror image of the availability heuristic that is seriously implicated by climate change for the simple explanation that there is no reason to suppose that this heuristic's only policy implication is the tendency to overregulate. Just as problems that can be easily imagined may in theory prompt overregulation, problems that *cannot* be easily imagined – and therefore presumably implicate an "unavailability heuristic" – may be plagued by underregulation. Climate change, of course, is just such a problem.

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<sup>46</sup> 162 *Science* 1243 (1968).

<sup>47</sup> Jeffrey J. Rachlinski & Cynthia R. Farina, *Symposium: Getting Beyond Cynicism: New Theories of the Regulatory State: Cognitive Psychology, and Optimal Government Design*, 87 *Cornell L. Rev.* 549, 556 (2002); Amos Tversky & Daniel Kahneman, *Availability: A Heuristic for Judging Frequency and Probability* *Cognitive Psychology* 5 (1973); Timur Kuran and Cass R. Sunstein, *Availability Cascades and Risk Regulation*, *Stanford Law Review* (1999); William N. Eskridge, Jr. & John Ferejohn, *Structuring Lawmaking to Reduce Cognitive Bias: A Critical View*, 87 *Cornell L. Rev.* 616, 621 & n. 13 (2002).

<sup>48</sup> See Timur Kuran and Cass R. Sunstein, *Availability Cascades and Risk Regulation*, *Stanford Law Review* (1999).

First, there is climate change's spatial dimension. Cause and effect underlying climate change are spread out over enormous space. Actions on one part of the globe have consequences for other parts of the globe. Just as they lack immediacy in time, they lack immediacy in space, which renders them more difficult to imagine. Spatial gaps, like temporal gaps, inject uncertainty about whether a particular action is truly having the alleged impact in a distant location.

The spatially diffuse impacts are especially elusive for the human imagination because they inevitably render the consequences effectively invisible and therefore more abstract. Where, moreover, the impacts of climate change closer to home may be dramatically different from those in distant locations on the globe, the abstraction is compounded. In the case of global climate change, of course, such a spatial disparity is not just a theoretical possibility; it is to be expected. Some parts of the world may actually perceive short term benefits to their economies of climate change, while other parts of the world may suffer devastating consequences of such change. Were those who were suffering the more immediate harsh consequences the same people who were best able to address the problem in the future, the discrepancy between the two would of course present no obstacle to lawmaking. Just the opposite. Some commentators would no doubt express worry that the availability heuristic would lead to overreaction to climate change. But, because, as we know, the greatest sources of the problem are located in nations that are likely to suffer the least in the short term, it is that heuristic's far more evil twin, the unavailability heuristic, that threatens lawmaking.

It is not, however, just climate change's spatial dimension that implicates the unavailability heuristic. The stock/flow nature of climate change, also discussed above,<sup>49</sup> does so as well. People have a weak, intuitive understanding of stock/flow relationships. In particular, people do not intuitively grasp how stock can increase even when flow is decreasing (*e.g.*, how the water level in the bathtub described above can continue to increase even when one turns the faucet down).<sup>50</sup>

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<sup>49</sup> See note \_\_, *supra* and accompanying text.

<sup>50</sup> See note \_\_, *supra* and accompanying text.

Indeed, studies have not only demonstrated that people do not intuitively understand stock/flow relationships in general, but they are unable to do so in the context of the science of climate change in particular. In one recent study of graduate students at an elite university, students were supplied with basic information about the science of climate change, including the stock/flow relationship, and then they were asked a series of questions to discern what kinds of steps would be necessary to reduce global warming. The students repeatedly failed to grasp how reduces in flow would not necessarily lead to stock reduction. Even for extremely bright students, the relationship was too complex for ready apprehension.<sup>51</sup>

3. *Representativeness Heuristic and Climate Change Cause and Effect*

A third tendency of human cognition is the “representativeness heuristic.” This heuristic provides that people can more readily discern cause and effect when the effect of a given action seems logically related to the assigned cause.<sup>52</sup> It is therefore easy to understand how striking a match can lead to destruction by fire, or how breaching a dam can cause damage by flood.

But for that same reason, climate change cause and effect elides normal human cognition. There is nothing logical or intuitive about the relationship. How can buying some extra furniture at a discount store lead to climate change? Or driving some additional miles in the family car, which happens to be a SUV? Or idling unnecessarily while waiting to pick up a child in the school parking lot? Or buying a state of the art high definition television? Or using power strips and any of a host of appliances that, for sake of consumer convenience are always “on” to a certain extent and therefore more immediately usable?

And, of course, it is not just discernment of the relationship between all

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<sup>51</sup> Sterman and Sweeney, *Understanding Public Complacency*, *supra* note \_\_\_, at 222-236.

<sup>52</sup> Amos Tversky & Daniel Kahneman, *Judgment Under Uncertainty: Heuristics and Biases*, SCIENCE 185 (1974).

of this ordinary consumer behavior and climate change that would be necessary. The harmful consequences of all of this excess consumer consumption in developed nations, such as the United States, is not climate change per se. They are the consequences of climate change; people literally starving for food and water in already impoverished areas of the world, especially Africa; the spreading of new and more virulent infectious diseases; flash floods in parts of Asia; mass migration of populations in search of food and water; increased civil unrest and even war as the demand for scarce resources intensifies in places such as the Middle East.

The undeniable fact is that well meaning people in developed nations, including our own, are engaging in extraordinarily wasteful and unnecessary consumption that is fueling climate change. None of these activities would be remotely acceptable were the consequences of these actions clear. It is partly because of the temporal and spatial distance they are not. But it is also simply because the complexity of the causal chains makes those consequences seemingly too different from the actions that contributed to their occurrence.

### **C. The Nature of U.S. Nation's Lawmaking Institutions**

The nature of U.S. nation's lawmaking institutions is the third ingredient that presents obstacles to the enactment of climate change legislation and its maintenance over time. Most simply put, the kind of law needed to address the kind of problem presented by climate change is precisely the kind of law that our lawmaking system seeks to prevent from being enacted in the first instance. The system deliberately provides multiple opportunities for second guessing over time. But, as discussed in Part III below, because the nature of our lawmaking institutions is the only one of the three major ingredients that is susceptible to ready revision, this final ingredient may well be the most significant for current lawmaking purposes.

#### *1. The Making of Environmental Law In General*

I have previously outlined why and how I believe environmental lawmaking is generally difficult to accomplish through U.S. nation's

lawmaking institutions. These reasons include the structure of our lawmaking institutions, especially the deliberate fragmentation of lawmaking authority between sovereigns, within sovereigns, and within branches of sovereigns. It also includes the political process for the election of members of the legislature and executive branch leaders, which are dominated by short-term election cycles and dependence on massive amounts of donations for election campaigning.<sup>53</sup>

The natural and deliberate effect of fragmenting authority between branches of government and between sovereign authorities is to make it more difficult to enact laws. Great effort is needed to secure the necessary congressional committee approvals; garner majority votes in both chambers; obtain presidential signature; gain agency implementation and enforcement; and, if necessary, defeat challenges in court to the law's validity.

There is, in short, a strong structural bias within our existing lawmaking institutions in favor of government acting more slowly and incrementally.<sup>54</sup> Whatever their ideological bent, sweeping law reforms in response to new information or values are very difficult to accomplish without institutional change, yet, those same institutions that need reform resist just that possibility.

The features of environmental protection law, moreover, make this an especially demanding undertaking. Because of environmental law's inherently redistributive thrust, there will almost always be those resisting the change who, under existing law, possess considerable resources they will work hard to avoid losing. They will also be able to base their opposition to statutory enactments on the substantial scientific uncertainty and sheer complexity surrounding ecological injury. The latter, in particular, will render the process of legislating detailed statutory provisions especially difficult.

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<sup>53</sup> The discussion in this subsection is derived in parts from the somewhat fuller analysis set forth in Richard Lazarus, *The Making of Environmental Law*, 29-42 (2004).

<sup>54</sup> Alan M. Jacobs, *The Politics of When: Redistribution, Investment, and Policymaking for the Long Term*, 38 *British J. Political Science* 193 (February 2008) (one way to make distributional tradeoffs harder to accomplish is to spread out lawmaking power, which makes it harder to enact laws and gives more leverage to potential losers; a veto, in effect).

Environmental law's inherently dynamic nature creates further obstacles because it means that multiple statutes, statutory amendments, and regulatory revisions are likely to be necessary over time. Securing passage of environmental law is not just a matter of exploiting one opportune moment in time. It requires multiple debates and lobbying efforts, with any one failed effort potentially leading to the aforementioned irreversible, catastrophic environmental harm. Environmental law must be flexible and responsive to new information regarding ecological cause and effect, available technology, and changing lifestyles. The essentially conservative, fragmented, and deliberately cumbersome process for lawmaking in the United States does not readily lend itself to such responsive, iterative lawmaking initiatives.

Fragmentation also makes it difficult to address issues in a comprehensive, holistic fashion. Ecological injury resists narrow redress—due to the highly interrelated nature of the ecosystem, it is almost always a mistake to suppose that one can isolate a single, discrete cause as the source of an environmental problem. A broader overview that accounts for the full spatial and temporal dimensions of the matter is needed. Failure to pursue such an overview is likely to result in an approach that is, at best, ineffective and, at worst, unwittingly destructive because of unanticipated consequences. When, however, governmental jurisdiction over the host of diverse activities affecting the ecosystem is divided between many entities, necessary coordination and overview are surprisingly difficult.

The institutional obstacle of fragmentation not only arises among the various branches, but also within them. Fragmentation of congressional committee jurisdiction over environmental issues is inevitable given the ways in which ecological cause and effect span so many diverse human activities. Environmental law will invariably implicate the interests not just of congressional committees concerned with environmental law *per se*, but also of most major committees concerned with various aspects of the economy and society potentially subject to environmental regulations—ecological injury's tremendous spatial and temporal dimensions guarantee it.

Because, moreover, of the separation of authorizing committees and

appropriations committees in both congressional chambers, there are likely to be powerful factions on appropriations committees particularly skeptical of the thrust of environmental protection laws. Members named to appropriations committees are, due to self-selection or their experience on other committees primarily concerned with budgetary limitations, likely to be especially sensitive to economic costs. For that reason, they are likely to be disproportionately concerned with the more immediate and known economic costs of environmental controls than they are responsive to the more speculative, uncertain, long-term benefits of those same controls. They are accordingly prone to placing appropriation riders that preclude the meaningful implementation of previously-enacted legislation that they dislike.

Nor is such a possibility merely a matter of theoretical speculation. Just such an appropriations-process-driven dynamic has literally overridden environmental lawmaking for almost twenty years in the federal arena. Congress essentially passes no sweeping, comprehensive lawmaking through its authorization committees, which is one reason why it has proven so hard to enact climate change legislation. The congressional committees that have been the most active in actual environmental lawmaking have been the appropriations committees and their subcommittees. Members of those committees have perfected to a high art the inclusion or appropriation riders in bills and earmarks in accompanying legislative reports that seek to micromanage environmental lawmaking in the executive branch on behalf of narrow, short term economic interests to which members of those committees tend to be especially responsive.<sup>55</sup>

A similar division of interests is evident within the executive branch. While certain agencies, primarily the Environmental Protection Agency, have defining missions that render them especially sensitive to environmental protection concerns, the same is not necessarily so for many other powerful forces within that branch. The Departments of the Interior, Agriculture (including the Forest Service), and Commerce (including the

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<sup>55</sup> I have written at great length on this shift in the dynamic of environmental lawmaking at Richard J. Lazarus, *Congressional Descent: The Demise of Deliberative Democracy in Environmental Law*, 94 *Geo. L. J.* 619 (2006).

National Oceanic and Atmospheric Administration) each have mixed missions—they both enforce certain restrictions and, because of their own resource management activities, are subject to others. Other very powerful cabinet agencies, such as the Departments of Transportation, Energy, and Defense, are mostly the target of environmental regulation and, therefore, are more likely to be skeptical of tough restrictions that cabin their discretionary authority to pursue their primary agendas.

The result is a disjunction of sorts within the executive branch. The federal executive branch is simultaneously the regulator and the regulated. Portions of the branch take an expansive, supportive view of environmental protection law, while other parts embrace a narrower, more skeptical outlook. As described before, the highly uncertain nature of ecological cause and effect and its complexity provide much fodder for disagreement, which both informs and slows down the lawmaking process.

The peculiar political systems that have developed around government in the United States, especially surrounding the election of the President, members of Congress, and many state and local officials, provide another source of obstacles for environmental law. No doubt the most obvious of these obstacles is the extent to which those running for office are dependent on campaign donations from those with considerable economic resources. Clearly, because of its inherently redistributive nature, environmental protection law tends to be most threatening to those who currently have many of the economic resources. Such persons and entities tend, notwithstanding some notable exceptions, to be understandably opposed to laws that would reduce their existing wealth and corresponding economic clout. As a result, those advocating environmental protection laws typically face well-funded challenges.

At the same time, those persons and entities favoring stronger environmental protection laws (i.e., environmentalists) are likely to face severe organizational barriers to their mounting effective political campaigns. To the extent that environmentalists are dominated by those currently “losing” under the existing system of laws, they are likely to have far fewer economic resources to enlist on their behalf. Furthermore, as environmentalist interests are not always economic in character, but are

instead often based on a different moral vision regarding the proper relationship between humankind and the natural environment, environmentalists are especially unlikely to be able to enlist allies from the business community to convert their vision into the campaign coffers needed for political success.

Moreover, the tremendous spatial and temporal dimensions associated with ecological injury create tremendous impediments to effective political organization in favor of environmental protection. The pool of those adversely affected is simply too spread out over space and time to effectively organize for collective action. Future victims do not yet know of the damage and might not yet even be born, and present victims are unlikely to understand the source of their harm given the extraordinary complexity of the natural environment and the associated scientific uncertainty. Present victims who are aware of the source of their harm may also take no action due to the perverse incentives generated by the prospects of “free riders,” who exploit the ecosystem commons to maximize their gains or minimize their losses by relying on others to make the necessary sacrifices.

Perhaps for these reasons, those seeking elected office tend to stress the importance of economic growth and promise short-term results: new businesses, new jobs, lower taxes, a broader tax base to support desired of government services.<sup>56</sup> These tend to be the catchwords and slogans of those seeking elected office in relatively short election year cycles (typically two to four years), especially at the state and local levels. A candidate seeking elected office based on an environmental agenda that is not premised on traditional notions of economic growth, but instead on the imposition of short-term limits with the prospect of widely dispersed gain in the distant future is substantially disadvantaged within the political system.<sup>57</sup> Whatever shortsightedness individual people have because of their basic morality, it is

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<sup>56</sup> See Hans Gersbach, *Competition of politicians for incentive contracts and elections*, 121 *Public Choice* 157 (2004) (really too mathematical and indirect an article)

<sup>57</sup> Alan M. Jacobs, *Democracy, Public Policy, and Timing, Toward A Theory of Intertemporal Policy Choice* (June 2004) (describing how for elected officials the “when” of the distribution of costs and benefits associated with a proposed public policy is crucial and they naturally favor proposals with quick positive returns).

far longer than the typical politician seeking reelection.<sup>58</sup>

Finally, our political system is inherently dependent on bargaining and the forging of compromises. The ability to compromise competing interests and thereby to eliminate conflict is often the calling card of a successful politician or government official. For environmental protection, however, compromise is not always a viable option. In some settings, undertaking a series of compromises simply delays the ultimate destruction of the resource of concern. Effective environmental protection might require long-term adherence to absolute limits, not provisional objectives to be inexorably bartered away over time. Yet the economic pressures on the environment are constant and unrelenting, and such nonnegotiable environmental regulation is rarely seen. Even a strong coalition of environmentalists can quickly be broken down by appeals to their differing interests over the longer term.<sup>59</sup>

## 2. *The Making of Climate Change Law In Particular*

Based on the preceding analysis, climate change law is no less than environmental lawmaking's worst nightmare. The combination of the science of climate change and human nature perversely triggers obstacle after obstacle. By fragmenting lawmaking authority and relying on short term election cycles, we make it almost impossible to form the political coalitions necessary to address long-term issues.<sup>60</sup>

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<sup>58</sup> Erik Lagerspetz, *Rationality and Politics in Long-Term Decisions*, 8 *Biodiversity & Conservation* 149, 160 (1999); William Leblanc, James M. Snyder, Jr., & Micky Tripathi, *Majority-Rule Bargaining and the Under Provision of Public Investment Goods*, 75 *J. Pub.Econ.* 21-47 (2000) (because individuals favor short term returns, politicians seeking to maximize votes do so even more, which leads to under investment in the future and overutilization of natural resources)..

<sup>59</sup> Alan M. Jacobs, *Ties that Bind: Institutions, Uncertainty, and Politics of Long-Term Constraint*, 10-11 (presented at Annual Meeting of the American Political Science Association) (describing shifting nature of political coalitions and how tend to be organized around short term concerns that are ineffective at maintaining longer term political agendas).

<sup>60</sup> Jacobs, *Ties that Bind, supra*, at 10-11 ("Institutional fragmentation renders potential long term commitment mechanisms largely inoperative"); R.T. Pierrehumbert, *Climate Change: A Catastrophe in Slow Motion*, 6 *Chicago J. Int'l Law* 573, 593 (2006) ("Solving the problem of global warming demands a long term focus that is not a natural match for

First, climate change's enormous temporal and distributional dimensions undermine any possible building of a political coalition capable of long term sustainability. Those most in immediate need of climate change law are not even at the lawmaking table here in the United States. They are the very poor in far removed parts of the globe and members of future generations so distant as to be essentially unimaginable as actual human lives. And, even those that are physically available and concerned enough about climate change to support legislative action will typically be bound together largely by short-term and narrowly-focused interests that serve as a tenuous basis for long-term advocacy.

By contrast, those skeptical, opposed, or even hostile to any such lawmaking will be extremely well represented and likely backed up by substantial political and economic power. They will include those powerful business interests that believe they have the most to lose, at least in the short term, from any significant restrictions on current economic activity for the purpose of reducing greenhouse gas concentrations in the atmosphere. They are economic interests that have settled investment-backed expectations in maintenance of the status quo and for which a long-term investment might have a five, ten, or perhaps even a twenty-year time horizon, but nothing approaching the temporal reach of climate change.

They will also include many elected officials. Their constituents are concerned mostly by short-term, not long-term factors. Shades of Bill Clinton's celebrated campaign slogan in 1992: "It's the economy, stupid." But even apart from the constituents who actually cast ballots, elected officials are responsive to the priorities of powerful economic interests who fund their political campaigns.

The potential for short-term benefits from climate change in nations like the United States will fuel other climate change lawmaking skeptics. Those who believe they have something to gain, whether from predictions of enhanced agricultural productivity or access to new energy resources, will be naturally reluctant to join a coalition favoring climate change legislation.

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the way political institutions operate.”).

It is not just the causes of climate change that are marked by distributional disparities; the same will be true for the costs of reducing greenhouse gas emissions. Some parts of the United States, some industries, and some activities will be more significantly affected than others. This is true whether the emissions abatement is achieved by emissions allowances, carbon taxes, or technology-based emission reduction requirements. Although “the net cost of achieving [significant] levels of GHG abatement could be quite low on a societal basis, issues of timing and allocation would likely lead various stakeholders to perceive the costs very differently – particularly during a transition to a lower carbon economy. Costs will tend to concentrate more in some sectors than others \* \* \*.”<sup>61</sup> Those who perceive they are on the losing end of these disparities will invariably be able to create obstacles to implementation by taking advantage of the multiple opportunities provided in our fragmented lawmaking system.<sup>62</sup>

Also joining the skeptics will be those concerned that developing nations, especially China, will outpace the United States economically, should we diminish our economic activity in order to reduce greenhouse gas emissions. Even worse, any possible positive environmental impact from our emissions reductions will quickly be overwhelmed by emissions increases by sources in those other nations. These skeptics will accordingly

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<sup>61</sup> See Jon Creyts, Anton Derkach, Scott Nyquist, Ken Ostrowski, & Jack Stephenson, *Reducing U.S. Greenhouse Gas Emissions: How Much at What Cost?*, ix (McKinsey & Co., December 2007) (prepared in association with DTE Energy, Environmental Defense Fund, Honeywell, NationalGrid, Natural Resources Defense Council, Pacific Gas & Electric, and Shell).

<sup>62</sup> Representative John Dingell’s effort on behalf of the auto industry to prevent passage of more demanding fuel efficiency standards is emblematic of the program of such factionalization and its paralyzing effect on meaningful climate change legislation. While Dingell generally professes support of climate change legislation, he has remained a huge stumbling block to efforts to include in such legislation tougher fuel efficiency standards that the auto industry in his congressional district oppose, notwithstanding the critical role such standards must play in reducing greenhouse gas emissions. See, *e.g.*, John M. Broder, *Hopes Dim for Measure to Conserve Energy*, *New York Times*, at A16 (Sept. 13, 2007) (“The mileage standard appears to be just in the Senate bill, having been squelched in the House by the opposition of Representative John D. Dingell, the powerful Democrat from Michigan.”).

be reluctant to agree to any significant emissions reduction absent enforceable commitments from nations like China to do the same.

Nor is it so easy to suppose that a grassroots movement can be maintained over the long term to overcome these powerful economic and political forces skeptical of climate change lawmaking. Instead, as explained above, human nature or, more specifically, limits on human cognition suggest just the opposite. People will generally not perceive the consequences of their actions today in distant lands and unimaginably distant times. The consequences of activities that promote greenhouse gas emissions today are too unavailable and too unrepresentative of those activities to allow for the sustainable political movement necessary for sustained climate change lawmaking.

### **III. Climate Change's Lawmaking Moment and the Propriety of Precommitment Strategies**

Of course, the premise of this paper is that, notwithstanding all the obstacles just described, there will nonetheless be a lawmaking moment for climate change legislation within the next few years. Indeed, that seems a virtual certainty in light of political pressures building within the United States and overseas. That the three major candidates now vying for the White House next November all support significant climate change legislation reflects where we are today.<sup>63</sup>

But it would be a mistake to assume from the fact that such a lawmaking moment is now before us that all those obstacles have been overcome. Quite the opposite. They will have simply been momentarily stayed for just that: a moment. And, because climate change law does not succeed by being maintained for merely a moment, but must be safeguarded for decades, it remains vulnerable to the onslaught of efforts that one can reliably predict will soon greet its implementation.

For this same reason, the real challenge we now face as a nation is to exploit the moment we will soon have to ensure the creation of a lawmaking

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<sup>63</sup> *The One Environmental Issue*, New York Times, at A16 (January 1, 2008).

scheme for addressing climate change that is not just momentary.<sup>64</sup> It has to be steadfast in some respects and flexible in others, which is no small feat. It must be sufficiently steadfast to resist over the longer term the daily pressures that seek to delay and relax its proscriptions. Precisely because its effectiveness depends on the longer term, it must admit of the possibility of change in light of new information and changing circumstances, yet without ever abandoning its central purpose. A delicate balance, to be sure.

In addressing, however, the question whether and how one can fashion a law to withstand such pressure, it is not the purpose of this article to enter directly the debate concerning the optimal mix of controls to achieve the necessary reductions and relief measures.

This is, of course, the issue that dominates almost all of the current policy and lawmaking debates. What sectors of the economy should be covered by the legislation: electric utilities, mining, transportation, major industry, and agriculture? Should the dominant regulatory tool be a carbon tax and, if so, how much? Or should it be a scheme for tradeable emissions akin to that utilized in the 1990 Clean Air Act Amendments for acid deposition? And, if so, how should such allowances be allocated? Based on past emissions? Or by auction? Or should the primary regulatory mechanism for achieving greenhouse gas emissions reduction be technology-based standards, as in the Clean Water Act? If so, to what extent should cost be considered in their determination and under what deadlines must they be promulgated and subject to enforcement? These are just a very few of hundreds of first order policy questions with which lawmakers will need to grapple and answer in crafting effective climate change legislation in the near future.

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<sup>64</sup> It can also sometimes prove easier, politically, to get lawmaking accomplished that changes lawmaking structure and processes rather than directly change substantive law, even though the former results in the latter. Substantive policy proposals are more transparent and, as a result, can be more quickly buried in debates between competing special interests and matters of institutional design can sometimes mask policy differences and cut across otherwise divergent interests. See Neal Kumar Katyal, *Internal Separation of Powers: Checking Today's Most Dangerous Branch from Within*, 115 Yale L. J. 2314, 2323 (2006).

These are clearly important questions, especially given that many address the short term distributional consequences upon which regulated industry most immediately focuses. The reason I am not addressing these questions directly, however, is not their lack of importance but because they are not lacking in attention. The value added of yet another academic contribution (at least from this particular academic) to the already-existing cacophony of scholarship on the proper mix of controls and incentives and their respective targets is limited at best.

But what is largely missing from existing scholarship is direct attention to the equally important question of how to ensure the maintenance of the necessary climate change legislation over time. To a certain extent, of course, this inquiry is not wholly unrelated to the question concerning the right mix of controls to be adopted in the first instance. Some types of controls are likely to have more staying power over time than others either because they are less economically disruptive or otherwise more politically palatable. It would clearly be wise to favor some types of controls over others for that reason. Yet consideration of that relevant secondary factor is no substitute for the exclusive focus of this endeavor, which is to anticipate the challenges that climate change law will face and seek to structure the entire program to allow for its long-term success.

What I am advocating is itself, however, far from uncontroversial in its own right. My thesis here is that the climate change law that the United States embraces in the next few years should, in effect, include mechanisms that make it deliberately hard for Congress or the executive branch subsequently to change its mind and conclude that stringent measures designed to reduce greenhouse gas emissions are not necessary. Three things right now seem essentially beyond dispute.

First, climate change is happening and its already unavoidable effects will be serious. Domestic legislation now must therefore include significant measures that reduce the severity of those effects by providing funds for climate change adaptation. What is also clear, however, is the temporal and spatial reach of the adverse effects of climate changes will be far more serious and far-reaching unless we achieve significant reduction in greenhouse gas emissions and atmospheric concentrations.

Second, those longer-term and far worse effects are still avoidable. The United States already possesses the technological capacity to curtail significantly our greenhouse gas emissions, without ruining our economy or making enormous lifestyle sacrifices.<sup>65</sup> We have the potential to achieve huge reductions in emissions because of now-promising technological innovation that will be developed only if the marketplace is persuaded that legal mandates for emissions reductions are in place and durable for the long term.<sup>66</sup> We also have the moral responsibility to embrace domestic legislative action preemptively in light of our disproportionate high contributions to existing atmospheric greenhouse gas concentrations. What is preventing us is not technological capacity but human will.

Third, absent precommitment strategies that restrain future lawmaking, we will not be able to achieve the kind of coordinated effort needed domestically to achieve those reductions at the lowest possible costs. Whatever legal mechanisms we put in place will either be undone formally by subsequent legislative or agency action or just quietly stalled informally. The resulting uncertainty about the nation's long-commit to reducing greenhouse gas emissions will quickly undermine the development of market incentives necessary for technological innovation. Moreover, once

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<sup>65</sup> The United States could reduce greenhouse gas emissions in 2030 by 3.0 to 4.5 gigatons of [carbon dioxide equivalent] using tested approaches and high potential emerging technologies. These reductions would involve pursuing a wide array of abatement options available at marginal costs less than \$50 per ton, with the average net cost to the economy being far lower if the nation can capture sizable gains from energy efficiency. Achieving these reductions at the lowest cost to the economy, however, will require strong, coordinated action that begins in the near future.

See Jon Creyts, Anton Derkach, Scott Nyquist, Ken Ostrowski, & Jack Stephenson, *Reducing U.S. Greenhouse Gas Emissions: How Much at What Cost?*, ix (McKinsey & Co., December 2007) (prepared in association with DTE Energy, Environmental Defense Fund, Honeywell, NationalGrid, Natural Resources Defense Council, Pacific Gas & Electric, and Shell).

<sup>66</sup> Fred Krupp & Miriam Horn, *Earth: The Sequel – The Race to Reinvent Energy and Stop Global Warming*, 9-13, 250-252 (2008) (“Only when legislators make it a regulatory certainty that global warming will be limited will U.S. companies invest seriously in solar, biofuels, wave energy, and clean cars.”).

other nations in the world perceive that U.S. commitment is lagging, they will likely forestall their own parallel efforts to reduce emissions.

For some, such a lawmaking restraint may seem inconsistent with representative democracy. But such a claim would be wrong. Representative democracy, including as practiced in the United States, has long accepted the propriety of such lawmaking restraints in responding to some kinds of especially challenging lawmaking problems. It is a well established feature of this nation's lawmaking history.

Climate change legislation, moreover, is more than just a permissible occasion for a restraint on future lawmaking. It would be irresponsible *not* to include such a restraint when the rare lawmaking moment for climate change legislation soon arises. The reason is simple: when applied to climate change, the very reasons proffered by those who generally question the legitimacy of such lawmaking restraints not only lose force, but join the chorus in favor of such restraints in this one context. After all, the primary contention of those who criticize the imposition by current lawmakers on future lawmakers is that it is not fair for the present to bind the future. But where, as in the case of climate change legislation, the very purpose of such legislation and the restraint is to prevent the present from denying future generations the very opportunity to control their own destiny, it would be wholly perverse to say that protection of the prerogatives of future generations is an obstacle to present generations' doing just that. It would certainly be a pyrrhic victory for future generations to have their lawmaking options fully intact, yet be faced as a result with devastating consequences from a changed climate: not much of a future.<sup>67</sup>

Political scientists, philosophers, and economists refer to such self-imposed restraints on future behavior as "precommitment" strategies.<sup>68</sup> As

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<sup>67</sup> See text accompanying notes \_\_ to \_\_, *infra*.

<sup>68</sup> Samuel Freedman, Reason and Agreement in Social Contract Views, 19 *Philosophy and Public Affairs* 122, 143 (Spring 1990); Thomas C. Shelling, Enforcing Rules on Oneself, 1 *J. L. Econ. & Org.* 357, 363-364 (1985); R.H. Stroz, Myopia and Inconsistency in Dynamic Utility Maximization, 23 *The Review of Economic Studies* 165, 165, 173 (1955-1956); Richard H. Thaler H.M. Shefrin, An Economic Theory of Self Control, 89 *The Journal of Political Economy* 392, 396-397 (April 1981).

a general category, they are techniques we all use in our day to day lives to reinforce certain behavior or even deliberately to limit our options: placing an alarm clock the night before on the other side of the room;<sup>69</sup> having a friend count our calories or cigarettes;<sup>70</sup> prepaying an annual health club membership;<sup>71</sup> holding a formal wedding ceremony to announce one's commitment in marriage before one's family and community;<sup>72</sup> or even, in warfare, literally burning the bridge behind one's troops to be assured that retreat is not an option.<sup>73</sup>

No doubt one of the most famous precommitment strategies was that of Ulysses in *The Odyssey*, excerpted at the outset of this article. Ulysses's challenge, of course, was to avoid the ill fate that befell those who succumbed to the seductive voices of the Sirens. The goddess Circe crafted, in effect, a precommitment strategy that would allow Ulysses to hear the Sirens yet not become their victim and fail in his journey. She instructed Ulysses to have the men on his ship to fill their ears with wax, tie Ulysses tightly to the mast, and then refuse to release him as he listened to the Sirens' song no matter how earnest his pleas to be unbound.<sup>74</sup>

Nor did the possible role of precommitment strategies escape the attention of eighteenth and nineteenth century political philosophers debating how best to craft a representative democracy. Many condemned the notion as fundamentally antidemocratic and foolish. Jean Jacques Rousseau proclaimed "*Il est absurde que la volonté se donne des chaînes pour l'avenir*" (It would be absurd to voluntarily place chains on the future). Adam Smith similarly proclaimed that "The earth and all its fullness of it belongs to every generation, and the preceding one can have no right to bind itself up from posterity." Thomas Jefferson warned that the "earth belongs

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<sup>69</sup> Stephen Holmes, Precommitment and the Paradox of Democracy in Constitutionalism and Democracy, 236 n.125 (Jon Elster & Rune Slagstad eds., 1988)

<sup>70</sup> *Id.*

<sup>71</sup> Thomas C. Shelling, Enforcing Rules on Oneself, 1 J. L. Econ. & Org. 357, 363-64 (1985).

<sup>72</sup> *Constitutionalism and Democracy, supra*, at 6.

<sup>73</sup> Jon Elster, *Don't Burn Your Bridges Before You Come To IT: Some Ambiguities and Complexities of Precommitment*, 81 Texas L. Rev. 1751 (2003).

<sup>74</sup> Homer's *The Odyssey*.

to the living and not to the dead” and “by the law of nature, one generation is to another as one independent nation to another.” The nineteenth century British political philosopher Thomas B. Macaulay challenged on similar grounds John Stuart Mill’s promotion of democracy as the superior form of government. Macaulay proclaimed that “[e]ven if we were to grant that [Mill] had found out the form of government which is best for the majority of people now living on the face of the earth, . . . [i]t would still be incumbent on Mr. Mill to prove that the interest of every generation is identical with the interest of all succeeding generations.”<sup>75</sup>

These same debates were reflected in the early discussions and still today surrounding the terms and proper role of our own federal Constitution.<sup>76</sup> “The basic function of the Constitution is to *remove* certain decisions from the democratic process, that is, to tie the community’s hands.”<sup>77</sup> The classic justification for such a restraint is that “constitutions are chains imposed by Peter when sober on Peter when drunk.”<sup>78</sup> The enactment of the constitution is, at least in theory, a moment of reason passing limits on anticipated moments of passion. Democracy depends on such constraints to survive or otherwise moments of majoritarian passion will backlash against and potentially even destroy democracy itself.<sup>79</sup> Constitutionalism is therefore depicted as an effective means of balancing man’s passions and temptations of power.<sup>80</sup>

Humankind’s cognitive limitations, especially the tendency toward myopia and susceptibility to having passion overcome reason are a dominant theme underlying the arguments of those favoring such constitutional self

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<sup>75</sup> Erik Lagerspetz, *Rationality and Politics in Long-Term Decisions*, 8 *Biodiversity & Conservation* 149, 159-160 (1999), citing T.B. Macaulay, *Mill on Government* (1829), in J. Mill, *Political Writings*, 271-303 (T. Ball, ed., Cambridge 1992).

<sup>76</sup> Holmes, *Precommitment and the Paradox of Democracy*, *supra* note \_\_, at 201-203.

<sup>77</sup> *Id.* at 196.

<sup>78</sup> Elster, *Don’t Burn Your Bridges*, *supra* note \_\_, at 65, citing Jed Rubenfeld, *Freedom and Time* 130 (2001).

<sup>79</sup> *Constitutionalism and Democracy*, *supra*, at 6.

<sup>80</sup> Francis Sejersted, *Democracy and the Rule of Law: Some Historical Experiences of Contradistinctions in the Striving for Good Government*, in *Constitutionalism and Democracy*, *supra* note –, at 133.

restraints for the stated purpose of safeguarding representative democracy. “A constitution is an institutionalized cure for this chronic myopia.”<sup>81</sup> The state must overcome the “short-sightedness of the individual citizen” and “adopt a long-term perspective and take the responsibility for those decisions that will produce benefits only in the long term.”<sup>82</sup> Cass Sunstein has analogously written how government may try to interfere with private preferences when they result from “motivational distortions that characterize addictions, habits, and myopia.”<sup>83</sup>

The lawmaking structure and laws of the United States are riddled with precommitment strategies, many of which are clearly intended to anticipate likely errors in human judgment that might otherwise lead to systematic errors in lawmaking.<sup>84</sup> The Framers of the U.S. Constitution sought for this very reason to limit majority lawmaking power in significant respects.<sup>85</sup> James Madison considered precommitment essential because the momentary circumstances then existing for altruistic lawmaking “created psychological conditions for trust and cooperation” that were “unlikely to endure” and Madison, accordingly, worried about instability over time.<sup>86</sup> Madison “expressly embraced the notion that what would separate his constitution from those that had gone before it would be a more realistic conception of human nature.”<sup>87</sup> As further observed by the political scientist Martin

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<sup>81</sup> Holmes, *Precommitment and the Paradox of Democracy*, in *Constitutionalism and Democracy*, *supra* note \_\_, at 196.

<sup>82</sup> Lagerspetz, *supra* note –, at 159.

<sup>83</sup> Cass Sunstein, *Legal Interferences with Private Preferences*, 53 U. Chi. L. Rev. 1129, 1139 (1986). Sunstein, however, cautioned against government too readily seeking to correct its perception of such “cognitive errors.” He contended that such governmental efforts can amount to huge intrusions on individual liberty, government action can itself be skewed by irrelevancies and rent seeking perversions of the political process. *Id.* at 1166. He also argues that the discounting by present generations of the needs of the future need not be considered irrational at all. *Id.* at 168-1169.

<sup>84</sup> Jeffrey J. Rachlinski & Cynthia R. Farina, *Symposium: Getting Beyond Cynicism: New Theories of the Regulatory State: Cognitive Psychology, and Optimal Government Design*, 87 Cornell L. Rev. 549, 554, 590 (2002).

<sup>85</sup> Elster, *Don't Burn Your Bridges*, *supra* note \_\_, at 58 n.21.

<sup>86</sup> Holmes, *Precommitment and the Paradox of Democracy*, *supra* note –, at 216-217.

<sup>87</sup> Jonathan R. Macey, *Competing Economic Views of the Constitution*, 56 Geo. Wash. L. Rev. 50, 55 (1987).

Drummond in commenting on the political science embraced by the Framers of our Constitution, “[a]ncient and medieval thought and practice were said to have failed disastrously by clinging to illusions regarding how men *ought* to be. Instead, the new science would take man as he actually *is*.”<sup>88</sup>

Our constitutional system deliberately makes lawmaking difficult for that very reason: to guard against the potential for overreaction to more immediate impulses of the moment.<sup>89</sup> Although, as previously described, fragmentation of lawmaking authority poses obstacles to climate change legislation, the reason for such fragmentation was, ironically, designed to prevent excessive lawmaking by present generations that would effectively bind the future.

Thus, lawmaking authority is dispersed between the legislative, executive, and judicial branches, and then further fragmented within each of those branches. The legislative branch is comprised of two chambers in order to reduce the potential for impulsive lawmaking;<sup>90</sup> that is also why representatives within each are elected for different terms and from differing jurisdictional boundaries.<sup>91</sup> The upper chamber’s longer and staggered terms “ameliorate the predictable operation of the availability and representative heuristics.”<sup>92</sup>

As a further guard, the President is entitled to veto legislation, which can be overcome only by a supermajority of legislators in both chambers.<sup>93</sup>

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<sup>88</sup> Jonathan R. Macey, *Cynicism and Trust in Politics and Constitutional Theory*, 87 Cornell L. Rev. 280, 296 (2002) (quoting Daniel Patrick Moynihan, *The “New Science of Politics” and the Old Art of Government*, 86 Pub. Int. 22, 23 (1987); see Richard J. Lazarus, *Environmental Law After Katrina: Reforming Environmental Law by Reforming Environmental Lawmaking*, 81 Tulane L. J. 1, 28 (2007).

<sup>89</sup> Macey, *supra* note X, at 296-98; see THE FEDERALIST Nos. 10, 15, 51. These protections can be seen as counteracting heuristics and other cognitive biases. William N. Eskridge, Jr. & John Ferejohn, Comment, *Structuring Lawmaking to Reduce Cognitive Bias: A Critical View*, 87 CORNELL L. REV. 616, 639 (2002).

<sup>90</sup> Macey, *supra* note X, at 298; U.S. CONST. art. I, § 1.

<sup>91</sup> U.S. CONST. art. I, §§ 2, 3.

<sup>92</sup> William N. Eskridge, Jr. & John Ferejohn, *Structuring Lawmaking to Reduce Cognitive Bias: A Critical View*, 87 Cornell L. Rev. 616, 639 (2002).

<sup>93</sup> U.S. CONST. art. 1, § 7.

Lawmaking is also generally separated from law execution, which also guards against legislative excesses.<sup>94</sup> The Constitution provides that a President cannot serve more than two Terms, partly in recognition of the tendency of voters to reelect incumbents rather than risk an unknown.<sup>95</sup> And, of course, the Constitution is likewise riddled with limitations on democratic lawmaking designed to guard against perceived human tendencies to rush to judgment against the criminally accused,<sup>96</sup> to silence unpopular speech,<sup>97</sup> to disrespect minority religions,<sup>98</sup> to impose cruel and unusual punishment against the despised,<sup>99</sup> and to diminish private property rights of the few in order to promote the interests of the many.<sup>100</sup>

Finally, the Constitution promotes an independent judiciary. While its members must originally be nominated by the President and confirmed by the Senate, the Chief Justice and Associate Justices have life tenure and are not subject to removal short of an impeachable offense.<sup>101</sup> Nor may the legislature diminish their pay.<sup>102</sup> The constitutional message is clear: the Framers sought to remove the interpreters of the law, including the Constitution, as much as possible from the hurly burly and short-term political pressures and infighting often found in the other two branches. The Supreme Court does not weigh public opinion when deciding difficult constitutional cases such as whether there is First Amendment right not to be subject to criminal punishment for burning an American Flag.<sup>103</sup>

Early Supreme Court precedent directly commented upon the Framers' intent in the Constitution to guard against the tendency of human nature toward myopia. In *Fletcher v. Peck*, Chief Justice Marshall writing for the Court in 1810 emphasized "that the framers of the constitution viewed, with

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<sup>94</sup> Eskridge & Ferejohn, *supra* note –, at 640.

<sup>95</sup> U.S. CONST. amend. XXII, § 1.

<sup>96</sup> U.S. CONST. amends. V & VI.

<sup>97</sup> U.S. CONST. amend. I.

<sup>98</sup> U.S. CONST. amend. I.

<sup>99</sup> U.S. CONST. amend. VIII.

<sup>100</sup> U.S. CONST. amend. V.

<sup>101</sup> U.S. Const. art. 2, cl. 2, § 2; art 3, cl. 1.

<sup>102</sup> U.S. Const., art. 3, cl. 1.

<sup>103</sup> *Texas v. Johnson*, 491 U.S. 397 (1989).

some apprehension, the violent acts which might grow out of the feelings of the moment.”<sup>104</sup> The Constitution, accordingly, sought to guard against or at least limit the harm that could be caused by such moments of passion: “the people of the United States, in adopting that instrument, have manifested a determination to shield themselves and their property from the effects of those sudden and strong passions to which men are exposed.”<sup>105</sup>

For analogous reasons, Congress has sometimes sought by statute to limit its own lawmaking authority to guard against majoritarian and narrow-minded impulses that would satisfy short term needs at the expense of the longer term. In the House of Representatives, a bill can be subjected to a “closed rule” meaning that no amendments may be introduced on the floor.<sup>106</sup> In that manner, Congress can decide to prevent ahead of time the introduction of amendments, including those that members anticipate would in fact be approved were there to be a formal up or down vote on their passage. It is likely no happenstance that such rules are considered more necessary in the House than the Senate, given that representatives are elected for extremely short terms and from much smaller districts.

Congress is also known to delegate lawmaking authority to executive branch agencies for many reasons. One frequent reason for such delegation is to remove members of Congress from especially difficult, political controversial decisions that might upset their constituents.<sup>107</sup> Such delegation allows Congress, in effect, to insulate itself from what might be a politically unpopular decision that needs to be made.<sup>108</sup> For example, in the Health Insurance Portability and Accountability Act of 1996 (HIPAA),<sup>109</sup>

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<sup>104</sup> 10 U.S. (6 Cranch) 87, 137-38 (1810).

<sup>105</sup> *Id.* at 138.

<sup>106</sup> See HOUSE RULE XVIII, cl. 2., CONGRESSIONAL RESEARCH SERVICE, SPECIAL RULES AND OPTIONS FOR REGULATING THE AMENDING PROCESS 2 (2004), available at <http://www.rules.house.gov/archives/98-612.pdf>

<sup>107</sup> Cass R. Sunstein & Edna Ullmann-Margalit, *Second-Order Decisions*, 110 Ethics 5, 17 (Oct. 1999).

<sup>108</sup> Alan M. Jacobs, *Ties that Bind: Institutions, Uncertainty, and Politics of Long-Term Constraint*, 13 (2005) (paper presented at the Annual Meeting of the American Political Science Association, Washington D.C., September 1, 2005), citing McNollgast, *The Political Origins of the Administrative Procedure Act*, 15 J. L. Econ. & Org. 218 (1999).

<sup>109</sup> Pub. L. No. 104-191, 110 Stat. 1396 (1996).

Congress sought to achieve detailed laws governing the privacy of individual health records in electronic form. After years of legislative stalemate, Congress determined that it did not want to allow the legislature's longstanding inability to answer the difficult policy questions to continue to preclude the promulgation of necessary privacy rules. In deliberate anticipation of its own continued inability to act, Congress created a two step procedure that would ensure the establishment of the needed rule. Congress passed a law that provided for the Department of Health and Human Services to submit proposed regulations to Congress for its consideration but, if Congress failed to act within a specified period of time, mandated that the Department make those regulations final.<sup>110</sup>

The same policy concerns have prompted Congress to include safeguards in the organization of executive branch agencies, to restrain certain lawmaking options, favor others, and generally insulate the agencies from short-sightedness and other likely cognitive errors in judgment.<sup>111</sup> The Defense Base Closure and Realignment Act of 1990 is a contemporary example.<sup>112</sup> The Act's stated purpose is "to provide a fair process that will result in the timely closure and realignment of military installations inside the United States."<sup>113</sup> The impetus for this special legislation was congressional realization that the spatially and temporally limited interests of individual representatives were precluding any kind of rational decisionmaking process.<sup>114</sup> The adverse economic consequences to areas

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<sup>110</sup> *Id.* § 264(c)(1), 110 Stat. 2033 ("If legislation governing standards with respect to the privacy of individually identifiable health information transmitted in connection with the transactions described \* \* \* is not enacted by [August 21, 1999,] the Secretary of Health and Human Services shall promulgate final regulations containing such standards not later than [February 21, 2000]). The Fourth Circuit rejected a nondelegation doctrine challenge to this novel statutory scheme. See *South Carolina Medical Ass'n v. Thompson*, 327 F.3d 346 (4<sup>th</sup> Cir. 2003).

<sup>111</sup> Alan M. Jacobs, *Democracy, Public Policy, and Timing, Toward A Theory of Intertemporal Policy Choice*, 29 (June 2004).

<sup>112</sup> Pub. L. No. 101-510, div. B, tit. XXIX, pt. A, 104 Stat. 1808 (1990). I have previously about this statute at Lazarus, *Environmental Law After Katrina*, *supra* note \_\_\_, at 31-32 and this discussion is derived from that earlier description.

<sup>113</sup> Pub. L. No. 101-510 div. B, tit. XXIX, pt. A, § 2902.

<sup>114</sup> Kenneth R. Mayer, *Closing Military Bases (Finally): Solving Collective Dilemmas through Delegation*, 20 LEGIS. STUD. Q. 393, 396 (1995).

with a military base of its closure were so serious, immediate, and focused that the political processes precluded necessary closure decisions from being made.<sup>115</sup> The resulting patchwork of military bases around the nation both wasted limited federal dollars and undermined effective and efficient military operations.<sup>116</sup> Only by creating an artificially rigid and encumbered decisionmaking process that allowed for broader spatial and temporal considerations (both budgetary- and defense-related) to dominate could a more rational decision be made.<sup>117</sup>

To that end, the Act establishes a commission charged with making recommendations regarding the identity of military bases that should be closed or realigned.<sup>118</sup> The Act next creates a carefully calibrated procedure to provide elected officials with the necessary political cover and essential deniability. The procedure includes initial recommendations to the Commission from the Secretary of Defense,<sup>119</sup> Commission recommendations for Presidential review<sup>120</sup> the President's approval in whole or in part of the Commission recommendations,<sup>121</sup> the possibility of a revised Commission recommendations upon Presidential disapproval,<sup>122</sup> and finally allowance for congressional disapproval by joint resolution of both chambers.<sup>123</sup> The Act, however, specifically imposes significant limitations on the timing of such congressional consideration, limiting the ability of individual members to hold lengthy hearings and debates, and introduce amendments.<sup>124</sup> The legislation identifies which congressional committees have initial jurisdiction,<sup>125</sup> how much time they have to consider the recommendations,<sup>126</sup> when consideration on each chamber's floor is in

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<sup>115</sup> *Id.* at 396.

<sup>116</sup> *Id.* at 396.

<sup>117</sup> *Id.* at 396-98.

<sup>118</sup> Pub. L. No. 101-510 § 2902(a)

<sup>119</sup> *Id.* § 2903(c)

<sup>120</sup> *Id.* § 2903(d)

<sup>121</sup> *Id.* § 2903(e)

<sup>122</sup> *Id.* § 2903(e)(3)

<sup>123</sup> *Id.* § 2904(b)

<sup>124</sup> *Id.* §§ 2903(b), 2908

<sup>125</sup> *Id.* § 2908(b)

<sup>126</sup> *Id.* § 2908(c)

order,<sup>127</sup> how much time (two hours) for floor debate,<sup>128</sup> and that any amendments are barred.<sup>129</sup> The joint resolution is a straight up or down vote on the Commission recommendations as a whole.<sup>130</sup> While the Act necessarily does not bar Congress from changing those self-imposed limitations, it makes it deliberately harder for Congress to do so. It is a restraint that Congress plainly welcomes because it is deliberately designed to limit its own perceived accountability for what may be decisions that are greatly unpopular in the short term.<sup>131</sup>

No doubt one of the most ambitious and strikingly innovative exercises of such lawmaking authority was the creation of the Federal Reserve Board by the President and Congress in the early twentieth century. With rapid technological growth, technological invention, and economic expansion, the nation needed a reliable, stable system of national banking. Several banking crises, including the Panic of 1907, made clear the urgency of federal governmental intervention. Yet, national leaders struggled between reliance on private banks responsive exclusively to short term profit maximization forces and a national, public bank susceptible of being captured by political leaders promoting their own, competing short term goals.<sup>132</sup>

The Federal Reserve System was born out of this often quite heated debate upon congressional enactment of the Federal Reserve Act in 1913. It was the result of a remarkable collaborative effort spearheaded by newly-elected President Woodrow Wilson, formerly a political science professor, Wilson's Secretary of Treasury, William Jennings Bryan, congressional leaders, and academics.<sup>133</sup> Today, such independent central banks are

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<sup>127</sup> *Id.* § 2908(d)(1)

<sup>128</sup> *Id.* § 2908(d)(2)

<sup>129</sup> *Id.* § 2908(d)(2)

<sup>130</sup> *Id.* § 2908(d)

<sup>131</sup> Mayer, *supra* note X, at 397-98, 405-06.

<sup>132</sup> Roger T. Johnson, Historical Beginnings ... The Federal Reserve, 16-30 (1999).

<sup>133</sup> Federal Reserve Education, History of the Federal Reserve, [http://www.federalreserveeducation.org/FED101.HTML/faq/Dsp\\_itempopupUFAQKansasCity.cmf?ID=D8CB7791-099C-46BD-934B-63517BBC2B51](http://www.federalreserveeducation.org/FED101.HTML/faq/Dsp_itempopupUFAQKansasCity.cmf?ID=D8CB7791-099C-46BD-934B-63517BBC2B51); Roger T. Johnson, Historical Beginnings ... The Federal Reserve (Federal Reserve Bank of Boston).

routinely considered to be classic instances of a precommitment strategy.<sup>134</sup>

The Federal Reserve Board of Governors, Federal Open Market Committee, and twelve regional banks together wield tremendous power over the nation's economy. The Board controls the size of the money supply, by buying and selling federal government securities, regulating the amount of money that member banks must keep in reserve, and adjusting the interest rates charged banks that seek to borrow money from the Federal Reserve System. The regional banks each serve as fiscal agents for the U.S. Treasury, but they are not themselves agencies of the federal government. They are each run by a nine-member board of directors.<sup>135</sup>

To insulate Board members from shorter term political influences, the President appoints them to fourteen year terms, which necessarily cut across administrations; the Chair and Vice Chair have four year terms, subject to possible reappointment. The Board also has one distinctive advantage over ordinary executive branch agencies and even independent ones: it is not subject to the congressional appropriations process. The Board is self-financed by its own financial transactions. So, while the Board remains subject to congressional oversight and Congress may, of course, amend the Federal Reserve Act at any time (combined with either the President's signature or veto override), the Board enjoys a virtually unparalleled insulation from budgetary limitations, appropriation riders, and other techniques that members of Congress routinely utilize to micromanage the work of federal agencies on behalf of narrow congressional constituencies.<sup>136</sup>

Today, almost a century after the creation of the Federal Reserve System, addressing the pressing problem of climate change requires the

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<sup>134</sup> Jon Elster, *Ulysses and the Sirens – Studies in Rationality and Irrationality*, 90 (1979); Sunstein & Ullmann-Margalit, *supra* note \_\_, at 13.

<sup>135</sup> See 12 U.S.C. § 248; *The Structure of the Federal Reserve System: The Board of Governors of the Federal Reserve System*, <http://www.federalreserve.gov/pubs/frseries/frseri.htm>. *The Federal Reserve*, 10 Cong Quart. Researcher 673 (2000); William J. Carson, *Structure and Powers of the Federal Reserve System in Evolution*, 171 *Annals of the American Academy of Political and Social Science* 83-93 (Jan. 1934).

<sup>136</sup> *Id.*

development of a similarly ambitious and creative lawmaking system that includes precommitment strategies. Climate change and the money supply are clearly not close cousins in the arena of public policymaking. But the case for precommitment strategies as far-reaching as those embraced by the nation for controlling the money supply is plainly no less pressing or necessary.<sup>137</sup>

There is no viable option other than reformation of the design of lawmaking institutions related to climate change. As described above, there are three ingredients that have led to the current logjam precluding effective climate change legislation. Those same three ingredients will continue to impede the long-term implementation of such legislation once it is finally enacted. These ingredients are the science of climate change, human nature, and the nature of our lawmaking institutions. In combination, they are a recipe not just for disaster, but potentially for no less than an ecological catastrophe.

Of the three, moreover, only one is susceptible to meaningful change in the first instance, and that is the institutional design of the lawmaking institutions. The science of climate change is a fixed factor. It cannot be redefined away. To be sure, as testified to by recent events, some politicians may seek to fictionalize or even literally to rewrite the science to match their preferred policy views by pretending that the evidence of climate change is less equivocal than the scientific consensus now accepts.<sup>138</sup> Ignoring actual science, however, is not a basis for addressing climate change, but just for further procrastination.

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<sup>137</sup> Although the wisdom of this proposal is plainly beyond the purview of this article, it is interesting to note that former Senate Majority Leader Tom Daschle recently proposed that an agency akin to the Federal Reserve System be utilized to address the nation's health care system, which he contends needs to be similarly removed from the normal political process. See Tom Daschle, Jeanne M. Lambrow, Scott S. Greenberger, *Critical – What We Can Do About the Health Care Crisis* (2008).

<sup>138</sup> See Robert F. Rich & Kelly R. Merrick, *Use and Misuse of Science: Global Climate Change and the Bush Administration*, 14 *Va. J. Soc. Policy & L.* 223 (2007); Andrew Revkin, *Climate Change Testimony Was Edited By White House*, *New York Times*, A16 (October 25, 2007); Daniel Smith, *Political Science*, *New York Times Mag.* 37 (Sept. 4, 2005).

Nor can we safely rely on human nature transforming on its own. Here too, we are who we are, including our limited time horizons, consumptive biases and our susceptibility to certain cognitive errors in judgment. As the Framers understood in crafting the Constitution, it is foolhardy to enact laws based on assumptions of who we ought to be rather than who we in fact are.<sup>139</sup> Of course, utility curves may shift and different societies can embrace very different cultural attitudes toward resource consumption and shared communities. And, perhaps over the longer term, even societies like our own here in the United States may change and embrace lifestyles far less focused on the here and now and more sensitive to the needs of future generations. Private preferences are not exclusively static and can change significantly over time.

But these kinds of changes in private preferences are most likely to be driven by law rather than the converse. And, while significant funds for public education will certainly be an important component of climate change legislation designed to promote just such a shift in public preferences and lifestyle choices, the time frame for action required by the science of climate change does not provide us with the freedom to rely on public education to achieve the significant changes more immediately necessary. The cost of further delay in greenhouse gas emissions reduction is too great.

Legislation relating to seat belts is illustrative. Mandatory seatbelt legislation is a classic precommitment strategy,<sup>140</sup> and a seatbelt itself epitomizes an anticipatory restraint. Individuals lacked the judgment necessary to use seatbelts. Mandatory seatbelt use overcame that obstacle and eventually caused such a major shift in human behavior that for most people any notion that they are being burdened or their liberty being constrained by a legal mandate has long since dissipated. Private preferences have shifted in response to the legal mandate.<sup>141</sup>

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<sup>139</sup> See text accompanying note \_\_; see also Paul L. Joffe, *The Dwindling Margin for Error: The Realist Perspective on Global Governance and Global Warming*, 5 Rutgers J. L. & Pub. Policy 89, 97 (2007) (“To improve the world, one must work with human nature as it is and not assume it away.”).

<sup>140</sup> Holmes, *Precommitment and the Paradox of Democracy*, *supra* note \_\_, at 236 n.125.

<sup>141</sup> Cass Sunstein, *Legal Interferences with Private Preferences*, 53 U. Chi. L. Rev. 1129,

Similarly low-hanging fruit exists for shifting private preferences and lifestyles in ways that can significantly reduce greenhouse gas emissions with little or no impact on human enjoyment. As has been well documented,<sup>142</sup> there is much energy inefficiency in current U.S. lifestyles, ranging from household appliances, motor vehicles, and resource consumption, that can be curtailed with little, if any, sacrifice. Much of the demand is simply the product of commercial advertisement that, for the purpose of short-term profit maximization, promotes unnecessarily wasteful consumption of natural resources. And, while some may feel initially constrained by laws that require or at least limit options in order to discourage such activities, much as with mandatory seatbelt legislation and local recycling laws, private preferences and lifestyles will eventually adjust so as generally to diminish that sense of individual restraint. But here again, to achieve that end, we will first need laws that can be maintained not just for the brief moment when they are passed, but over time in the face of the barrage of efforts that will soon be launched for their relaxation.

To exploit the lawmaking moment we will soon have for climate change fully, the legislation that passes must include a series of precommitment strategies that deliberately make it extremely hard to unravel measures calling for significant reductions in greenhouse gas emissions. Absent precommitment provisions that fundamentally alter the institutional design of lawmaking related to climate change, whatever legislation we enact now to reduce greenhouse gas emissions is doomed to fail. The statutory requirements will be eroded in small and large increments by the daily economic and political pressures that cannot long countenance imposing immediate costs in return for benefits so removed temporally and spatially from the here and now. The erosion will be quiet,

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1137 (1986).

<sup>142</sup> There are legions of studies and reports documenting the opportunities presented within the United States for significant curtailment. One recent example of one such study was prepared by McKinsey & Co, in association with seven leading global institutions, including DTE Energy, Environmental Defense Fund, Honeywell, NationalGrid, Natural Resources Defense Council, Pacific Gas & Electric, and Shell. See Jon Creyts, Anton Derkach, Scott Nyquist, Ken Ostrowski, & Jack Stephenson, *Reducing U.S. Greenhouse Gas Emissions: How Much at What Cost?* (McKinsey & Co., December 2007).

yet far-reaching in effect. It will happen in the chambers of Congress, in the form of compliance extensions, budgetary shortfalls, appropriation riders, and earmarks, and it will happen in the vast hallways of the federal bureaucracy, in the form of delays in the promulgation of regulations, agency interpretations of statutory mandates as nonmandatory, generous agency settlements, and simple nonenforcement of the law.

Ironically, however, the most compelling argument in favor of precommitment strategies can be found in the arguments of those who have famously argued against their legitimacy. The principal argument against precommitment strategies is that the present should not be able to bind the future.<sup>143</sup> Where, as here, however, the very purpose of the precommitment strategy is to *preclude the present from binding the future* the force of the opposition to precommitment strategies should quickly fall on deaf ears.

In debating the relative merits of precommitment strategies in terms of their consistency with representative democracies and the political prerogatives of future generations, it is essential not to lose sight of the policy context at hand. The purpose of climate legislation is not to protect the present at the expense of the future. Precisely the opposite. Climate change legislation seeks primarily to protect the future at the expense of the *present*.

As the example of climate change legislation forcefully underscores, precommitment rules can actually serve to liberate rather than restrain the future. They can effectively expand future options and not contract them.<sup>144</sup> Here, the most serious threat that the present poses to the future is not climate change legislation, including legislation with precommitment strategies that make such legislation hard later to unravel. The far greater threat to the future is the potential devastation and global destabilization that can occur in the *absence* of such legislation and such precommitment strategies. It would be tragic, indeed, under these circumstance to say that protection of the political prerogatives of the future precludes the present

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<sup>143</sup> See text accompanying notes \_\_\_ to \_\_\_, *supra*.

<sup>144</sup> Holmes, *Precommitment and the Paradox of Democracy*, *supra* note \_\_\_, at 227 (“Limits do not necessarily weaken; they can also strengthen”).

generations from adopting the necessary precommitment strategies now.

#### **IV. A Menu of Precommitment Strategic Options**

Institutional design for lawmaking matters.<sup>145</sup> By structuring the “mechanisms of democracy” within our lawmaking processes, we can and routinely do influence not only how decisions are made, but the issues and judgments that are reached.<sup>146</sup> We can promote their soundness as well as their fairness, which sometimes requires that we embrace institutional designs for lawmaking in anticipation of our own human nature.<sup>147</sup>

For lawmaking to address climate change, the institutional design should include a wide variety of precommitment strategies. It is not the purpose of this article, however, either to suggest precisely which strategies should be selected or even to purport to describe exhaustively all the possibilities. My purpose is instead simply to make the case for their categorical inclusion (Part II) and then here in Part III begin to lay out in an illustrative way a menu of possibilities for potential selection. My hope in doing so is that others, especially scholars of political science, can then pick up the beginning threads of this discussion and offer more fully developed and specific proposals.

A variety of options are, accordingly, described below. They roughly fall into three discrete categories; all designed to reduce the potential for short-term political impulses to derail the legislation’s ability to achieve the

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<sup>145</sup> Neal Kumar Katyal, *Internal Separation of Powers: Checking Today’s Most Dangerous Branch from Within*, 115 Yale L. J. 2314, 2324 (2006) (proposing series of internal checks within the executive branch to guard against excess use of power by executive branch leaders, including the President).

<sup>146</sup> Adrian Vermuele, *Mechanisms of Democracy – Institutional Design Writ Small*, 4 (Oxford 2007) (“mechanisms of democracy” are small scale rules “that structure the process by which laws are made”); see Adrian Vermuele, *Submajority Rules: Forcing Accountability Upon Majorities*, 13 J. Political Philosophy 74, 75-76 (2005) (describing variety of lawmaking institutions, including Congress and the Supreme Court, that use submajority voting in certain contexts to ensure minority interests have voice in setting agenda).

<sup>147</sup> Dustin J. Penn, *The Evolutionary Roots of Our Environmental Problems: Toward a Darwinian Ecology*, 78 The Quarterly Review of Biology 275, 294-95 (Sept. 2003).

significant, long-term reductions in greenhouse gas emissions now necessary. The three categories are (1) measures designed to promote the autonomy of agency officials by insulating them from short-term political pressures; (2) measures designed to structure the lawmaking process to ensure that the interests of future generations are safeguarded; and (3) measures designed to accelerate and maintain the process of implementation of climate change law in anticipation of efforts to slow it down. Each category is discussed below.

**A. Promoting Agency Political Autonomy**

There are many measures that can be used to try to insulate the administration of climate change law from political pressures, especially those likely to derive from short term economic concerns. Several relate to the terms, qualifications, and retention of those appointed to positions of authority.

1. First, *staggered terms of appointment* that cut across Presidential Administrations can promote political autonomy. The staggered term, alone, sends a strong message both to the President and to the Senate, responsible for the confirmation process, that the person to be chosen is not your standard political appointee for whom the President is owed heightened political deference. The individual's qualifications are instead intended to transcend political loyalty to the current Administration and reflect an expertise grounded more directly in the statutory responsibilities and fiduciary responsibilities of the agency position under consideration.

There is already plenty of precedent for such an approach to appointment of agency officials. The Federal Reserve Board, previously discussed, is an obvious example. Under the Federal Reserve Act, the President, with the advice and consent of the Senate, appoints Members of the Board generally to 14 year terms, which extends far beyond the Term of any President, even assuming reelection to a second Term.<sup>148</sup> From those on the Board, the President can pick a Chair and Vice Chair who, again upon Senate confirmation, serve for a four year term, which may well cross

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<sup>148</sup> 12 U.S.C. § 241.

Presidential Administrations.<sup>149</sup>

The Director of the Federal Bureau of Investigation is another example. By statute, the President appoints the Director to a term of 10 years, with Senate confirmation.<sup>150</sup> There are many others. The commissioners of the Securities and Exchange Commission, Federal Communications Commission, and Federal Election Commission each have fixed terms by statutes. FEC commissioners serve for single six-year terms that are deliberately staggered by three two-year intervals.<sup>151</sup> SEC commissioners serve for five-year terms.<sup>152</sup> FCC Commissioners also have five-year terms.<sup>153</sup>

2. The *length of the appointment* is also an important, related design feature for promoting agency autonomy. The government official will potentially feel more insulated from political pressures surrounding the implementation of the law for which she is responsible the longer the time period of the appointment. It takes no great imagination to appreciate that someone with a two year term will feel more accountable to political pressures than someone with a fourteen year appointment, as in the case of the Federal Reserve Board. That is precisely why members of Congress are elected every two years – so they will feel that constant accountability – and members of the Federal Reserve Board generally have fourteen year-terms – so they will not. The same rationale underlies the Constitution’s provision that members of the Supreme Court have life tenure.

For the purposes of implementing climate change law, in particular, longer agency official terms are quite important. What is needed are agency officials who can resist heavy pressure from shorter-term political forces and who can keep the interests of the long term and future generations firmly in focus. The longer the official’s own tenure, the easier both should be to accomplish.<sup>154</sup>

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<sup>149</sup> *Id.* § 242.

<sup>150</sup> 28 U.S.C. § 352.

<sup>151</sup> 2 U.S.C. § 437c.

<sup>152</sup> 15 U.S.C. § 78d.

<sup>153</sup> 47 U.S.C. § 154(c).

<sup>154</sup> See Amihai Glazer & Vesa Kanninen, *Short-Term Leaders Should Make Long-Term*

There is also one more potentially significant advantage of a longer - term appointment. Not only does the length of time, standing alone, send a strong a strong message to Congress that this is not a standard political appointment, but it also makes the Senate take its confirmation role far more seriously. The Senate is likely to be far more searching in its scrutiny and demanding of the expert qualifications of the nominee for the position.<sup>155</sup>

3. The *grounds for agency official removal* are another essential design feature. For instance, the President can remove members of the Federal Reserve Board from their position, but only for “cause.”<sup>156</sup> This sharply limits the President’s authority and leverage over the agency decisionmaker. For the FEC, FCC, and SEC, however, none of three federal governing statutes expressly provide the grounds, if any, for Presidential removal of a commissioner.<sup>157</sup> The courts, however, have generally accepted the notion that a federal statute may, even when silent on the grounds for Presidential removal of an agency official, be fairly read, in light of the purpose and structure of the commissions, to allow for removal only for cause.<sup>158</sup>

The example of the Director of the FBI offers persuasive evidence of how political autonomy can be conferred on an agency official simply by a

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*Appointments*, 14 Intl Tax Public Finance 55, 56-57 (2007).

<sup>155</sup> *Id.*

<sup>156</sup> 12 U.S.C. § 242..

<sup>157</sup> 2 U.S.C. § 437c; 15 U.S.C. § 78d; 47 U.S.C. § 154(c).

<sup>158</sup> See *Wiener v. United States*, 357 U.S. 349, 354-55 (1958) (War Claims Commission) (tenure protection may be inferred from statutory silence); *Federal Election Commission v. NRA Political Victory Fund*, 6 F.3d 821, 826 (D.C. Cir. 1993) (The FEC was “likely correct “ that “the President can remove the commissioners only for good cause, which limitation is implied by the Commission’s structure and mission as well as the commissioners’ terms.”); *SEC v. Blinder, Robinson, & Co.*, 855 F.2d 677, 681 (10<sup>th</sup> Cir. 1988) (“for purposes of this case, we accept appellants’ assertion in their brief, that it is commonly understood that the President may remove a commissioner [of the SEC] only for ‘inefficiency, neglect of duty, or malfeasance in office’”); see also *Lebron v. National Railroad Passenger Corp.*, 513 U.S. 374, (1995) (suggesting by direct negative comparison that “commissioners of independent regulatory agencies \* \* \* are “removable by the President for cause” although incorrectly suggesting that such removal for cause is set forth “in the explicit terms of the statute” for the SEC and FCC).

statutorily-established presumptive term, even without formally limiting the President's ability to remove an individual for "cause." The relevant federal statute nowhere provides that the President must find "cause" to remove the FBI Director and the President is legally free to remove the FBI Director at any time. The mere fact that the federal statute, however, creates a presumptive term of 10-years serves as a significant political constraint on the President's doing so. As one member of Congress explained at the time of its adoption of the ten-year tenure, "the settling of a ten-year term of office by Congress would, as a practical matter, preclude – or at least inhibit a President from arbitrarily dismissing an FBI Director for political reasons, since a successor would have to be confirmed by the Senate."<sup>159</sup> President Bill Clinton's ongoing dispute with FBI Director Louis Freeh, who openly criticized the President and pointedly did not resign from office until after President Bush became President, illustrates the political limits on the President's authority to control the Director's position.<sup>160</sup>

For implementation of legislation addressing climate change, we should seriously consider allowing only very narrow grounds for removal of agency officials, once confirmed. They most certainly should not be removable at the will of the President. Heightened independence will be necessary for agency officials to withstand the enormous pressure that they will face from those opposed to measures necessary to reduce greenhouse gas emissions. There will be initially be substantial opposition to government efforts that push for the kind of longer term technological innovation and lifestyles shifts that are in fact, with such a push, well within grasp.

Even a simple for "cause" standard may be too open-ended under the circumstances. There is no judicially-established and settled constitutional requirement that the agency official be subject to Presidential removal at all. There are, accordingly, myriad ways that this design feature could be crafted to narrow the grounds for removal, while maintaining the safety valve that allows for removal in case of an extreme circumstance of dereliction of duty or judgment. A statute might, for instance, describe the removal grounds in

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<sup>159</sup> 122 Cong. Rec. 23809 (1976) (remarks of Senator Robert C. Byrd).

<sup>160</sup> *The Federal Bureau of Independence*, New York Times, at A26:1 (December 18, 1997); *Mr Freeh Retires*, New York Times, at A24:1 (May 4, 2001).

some detail to make it clear that the grounds are not entirely open-ended. One could also go further and create a procedure for considering a claim that grounds for removal were present and provide for a board to review the merits of that claim. The board members themselves could represent a cross-section of relevant perspectives, including those more likely to be sensitive to longer term concerns. A simple majority might not even be enough to sustain the claim that removal is warranted.

Again, the purpose here is not to dictate or even strongly suggest whether such a design feature is appropriate in these circumstances. I leave that to the next generation of inquiries. My purpose is simply to stir the imagination in making clear the tremendous array of possible design features related to removal and to prompt their consideration in light of the very real obstacles to implementation of climate change requirements that can be fairly anticipated.

4. A statutory provision setting forth express *qualifications and disqualifications for the agency official position* is also a potentially effective design feature. Such express qualification and disqualification can help ensure that the best qualified individual in terms of relevant expertise and background receives the appointment. The qualifications (and disqualifications) serve to limit significantly those who can be brought to the President's intention as possible nominees, empowers the Senate to take more seriously its role in confirmation, and provides Senators with a stated touchstone for evaluating credentials.

There are plenty of examples of this design feature in existing law. The Solicitor General of the United States, for instance, is supposed to be "learned in the law."<sup>161</sup> The Director of the Park Service must "have

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<sup>161</sup> Act of June 22, 1870 ("There shall be in the Department of Justice an officer learned in the law, to assist the Attorney General in the performance of his duties to be called the Solicitor General."). Of historical interest, before Congress added the position of Solicitor General, the Attorney General was required to be "learned in the law." Judiciary Act of 1789, ch. 20, sec. 35, 1 Stat. 73, 92-93 (1789) ("And there shall be appointed in each district a meet person learned in the law to act as attorney for the United States in such district . . ."). The same law, however, that created the position of Solicitor General apparently eliminated that requirement for Attorney General. See \_\_\_\_.

substantial experience and demonstrated competence in land management and natural or cultural resource conservation.”<sup>162</sup> Members of the FEC are to be selected based upon their “experience, integrity, impartiality, and good judgment.”<sup>163</sup> The entire institutional design of the Foreign Service within the State Department is intended to promote the establishment of a bureaucracy of elite federal employees proud of their substantive expertise, autonomy, and independent judgment in service of the long-term interests of the nation in foreign affairs.<sup>164</sup>

Congress also frequently announces qualifications and disqualifications intended to promote bipartisanship. Members of the FCC, FEC, and SEC must, accordingly, represent different political parties. And the relevant statutory provisions try to promote such bipartisanship in varied ways. No more than three of the five members of the SEC “shall be members of the same political party” and “in making appointments members of different political parties shall be appointed alternatively as nearly as may be practicable.”<sup>165</sup> The FEC similarly includes a three out of five member ceiling for the same political party, but also expressly provides for staggered terms for pairs of appointees from two different political parties.<sup>166</sup> The applicable provision for the FCC provides only that “[t]he maximum number of commissioners who may be members of the same political party shall be a number equal to at least the number of commissioners which constitutes a majority of the full membership of the Commission.”<sup>167</sup>

There can also be disqualifications intended to guard against certain personal and financial interests interfering with the exercise of an agency official’s judgment. Federal law lists a series of such disqualifications based on financial interests for FCC Commissioners,<sup>168</sup> includes just a general prohibition for SEC Commissioners,<sup>169</sup> and includes an extensive

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<sup>162</sup> 16 U.S.C. § 1.

<sup>163</sup> 2 U.S.C. § 437c(a)(3).

<sup>164</sup> Katyal, *Internal Separation of Powers*, *supra* note \_\_\_, at 2328-2331.

<sup>165</sup> 15 U.S.C. § 78d.

<sup>166</sup> 2 U.S.C. § 437c(a)(1)&(2).

<sup>167</sup> 47 U.S.C. § 154(b)(5).

<sup>168</sup> *Id.* § 154(b)(2).

<sup>169</sup> 15 U.S.C. § 78d(a).

prohibition on any employment by the executive, legislative, or judicial branches of the federal government for the FEC.<sup>170</sup>

One could develop a series of affirmative qualifications and disqualifications for agency officials charged with administering climate change law. The qualifications could be aimed at promoting, depending on the particular position at issue, certain relevant areas of expertise in science, economics, or law, or even stress specific credentials and experiences more closely associated with independent judgment and integrity. Disqualifications could be aimed at reducing the potential for agency decisionmaking to be unduly swayed from the inside by short term political ends and narrow interest group politics.

**B. Structuring the Lawmaking Process to Enhance or Diminish the Influence of Certain Interests**

A second category of institutional design features pertains to techniques for ensuring that certain kinds of factors are given due consideration and that others not given undue weight in the lawmaking process that necessarily continues in the executive branch after the legislation's enactment. These techniques can be used to promote accountability, deliberativeness, impartiality, and transparency in general.<sup>171</sup> Alternatively, they can be shaped to ensure that certain specific factors that might otherwise be anticipated to be undervalued instead receive their due.

1. Statutory provisions that require *interagency consultation* are one standard mechanism for ensuring a full consideration of relevant factors. Where, for instance, there is reason for concern that the agency taking a certain action may fail to provide adequate weight to the requirements of a particular federal statute to which they are subject, it has become fairly routine to require that action agency to consult formally with another agency that shares the same primary mission of the federal statute. Not only does that formal consultation provide the action agency with relevant information

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<sup>170</sup> 2 U.S.C. § 437c(a)(3).

<sup>171</sup> Adrian Vermuele, *Mechanisms of Democracy – Institutional Design* Writ Small, 4-5, 183 (Oxford 2007).

that may prompt the agency to reach a different decision, but it places the consultant agency's views in the administrative record. As a result, should the action agency ignore the consultant agency's counsel, it may very quickly find itself vulnerable to a successful lawsuit brought by those disappointed by the agency's decision.

Just such interagency consultation requirements are a regular feature in environmental statutes. For instance, the Endangered Species Act (ESA) requires that federal agencies subject to Section 7 of that Act consult with the Secretary of the Interior (for terrestrial wildlife or plants) or Secretary of Commerce (for marine life) whenever they have reason to believe that an endangered or threatened species may be adversely affected by a contemplated agency action.<sup>172</sup> The consultation results in a formal "biological opinion" by the Fish and Wildlife Service (for the Secretary of the Interior) or National Marine Fisheries Service (for the Secretary of Commerce). The biological opinion considers the potential for such an adverse effect to occur and whether there are reasonable, prudent alternatives for its avoidance.<sup>173</sup> Those opinions are powerful evidence within an administrative record against an agency that chooses to fail to heed the advice of the Fish and Wildlife Service or National Marine Fisheries Service. Failure to allow for the consulting required by the ESA is an independent ground for invalidation of an agency action.<sup>174</sup>

Another example of an existing, effective interagency consultation requirement is Section 309 of the Clean Air Act, which requires federal agencies preparing environmental impact statements pursuant to the National Environmental Policy Act to provide EPA with an opportunity to review their draft impact statements.<sup>175</sup> The Council on Environmental

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<sup>172</sup> 7 U.S.C. § 1536(a)(1).

<sup>173</sup> *Id.* § 1536(b)(3)&(4).

<sup>174</sup> See, e.g., *American Bird Conservancy v. FCC*, 2008 U.S. App. Lexis. 3437, slip op. 18 (D.C. Cir., February 19, 2008) (striking down FCC categorical exclusion of communication towers from NEPA analysis for failing to provide for required consultation with Fish and Wildlife Service).

<sup>175</sup> 42 U.S.C. § 7609 ("The Administrator shall review and comment in writing on the environmental impact statement of any matter relating to duties and responsibilities granted pursuant to this Act or other provisions of the authority of the Administrator.").

Quality regulations similarly require consultation with other offices in other agencies of the federal government with relevant expertise.<sup>176</sup> Here too, the practical effect of this consultation requirement is to place within the action agency's administrative record the comments of another federal agency more sensitive to environmental concerns. And, as with the ESA, federal agencies that act in disregard of that advice often find themselves on the losing side of subsequent litigation.<sup>177</sup>

One of the more extreme examples of a statutory provision calling for interagency consultation is the so-called "God Squad" created by the ESA for the purpose of determining when the strict requirements of that Act may be lifted (and a species allowed to go extinct) in order to achieve other, more important national policies.<sup>178</sup> Congress assigned the heads of specific federal agencies, ranging from the Departments of Agriculture, Army, Interior, National Oceanic and Atmospheric Administration, EPA, Council of Economic Advisors, and representatives of affected States, to make the final decision.<sup>179</sup>

Interagency consultation might well be appropriate for executive branch implementation of climate change legislation. No doubt its implementation would affect the work of many interested federal agencies with expertise worthy of consultation. Such an interagency consultation requirement could also be used to make it difficult to create exceptions or

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<sup>176</sup> 40 C.F.R. §1502.19(a) ("Agencies shall circulate the entire draft [to] Any federal agency which has jurisdiction or special expertise with respect to any environmental impact involved. \* \* \*").

<sup>177</sup> See, e.g., *Sierra Club v. U.S. Army Corps of Engineers*, 701 F.2d 1011, 1019-1024 (2d Cir. 1983) (relying on negative comments in administrative record supplied by EPA, National Marine Fisheries Service, and Fish and Wildlife Service on U.S. Army Corps of Engineers' proposal to grant permit for development in wetlands associated with construction of major highway); *NRDC v. Winter*, 2008 U.S. App. Lexis 4504, slip op. 17, 18 & n. 12, 23, 31, 33 & n. 23, 93 & n. 50, 94 n.53 (9<sup>th</sup> Cir., February 29, 2008) (relying, *inter alia*, on portions of administrative record supplied by National Marine Fisheries Service in concluding that Navy had violated NEPA in failing to prepare environmental impact statement on detrimental effects on whales of Navy use of sonar in training exercises).

<sup>178</sup> 16 U.S.C. § 1536(e),(g) & (h).

<sup>179</sup> *Id.*

otherwise modify the law's requirements. For instance, it could provide a strict process for any such relaxation. In short, the purpose of this statutorily-created body would, in some respects, be the opposite of the ESA's God Squad: to make it harder to create an exemption, rather than easier. As described next, moreover, one could also allow for the creation of new voices within the government for the specific purposes of ensuring that the interests of future generations were not given short shrift during statutory implementation.

2. A complementary design feature is to create within the government an *office with a specific mandate* to ensure that certain interests are given their due weight during agency implementation of climate change legislation. Such an office could be given the right to consult and comment on proposals or affirmative authority to oversee the statute's implementation.

A prominent example of such an office with heightened authority that currently exists within most executive branch agencies is the Office of Inspector General. Congress created the positions of Inspector General to serve as watchdogs to guard against anticipated abuse neglect of agency statutory duties and authorities.<sup>180</sup> Each inspector general is deliberately insulated from the politics of the Administration and has control over her own professional staff.<sup>181</sup> An Inspector General report can be highly influential because it can expose wrongdoing within an agency that the agency cannot easily ignore.<sup>182</sup>

For climate change, there could even be an office assigned the responsibility of safeguarding the interests of future generations. It could be provided mere reporting authority, formal consultation rights, or even actual

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<sup>180</sup> See Inspector General Act of 1978, Pub. L. No. 95-452, 92 Stat. 1101; see Paul C. Light, *Monitoring Government: Inspectors General and the Search for Accountability* (1993).

<sup>181</sup> Katyal, *Internal Separation of Powers*, *supra* note \_\_\_, at 2347.

<sup>182</sup> See, e.g. Philip Shenon, *Inspection Notes Errors in Terror List*, *New York Times*, at A24 (September 7, 2007); David Stout, *F.B.I. Head Admits Mistake In Use of Security Act*, *New York Times*, at A1 (March 10, 2007); David Johnston & Erik Lipton, *Gonzalez Met with Advisors on Dismissals*, *New York Times*, at A1 (March 24, 2007).

veto authority over certain kinds of decisions. No obvious analogue currently exists, although the Council on Environmental Quality within the Executive Office of the President is certainly expected to provide a voice within that Office for environmental concerns in general. There have, however, been general proposals in the past for the establishment of formal ombudsmen to represent the interests of future generations in current lawmaking fora.<sup>183</sup> The Office of Ombudsman could perform monitoring and oversight, intervene in proceedings, or even have formal positive or negative decisionmaking authority.<sup>184</sup>

3. Another possibility is to ensure that decisions are based on the views of scientists removed from the political process by assigning a *committee of scientists* with a heightened role in the lawmaking process. This can be particularly important when, as is often true for environmental protection laws, formal statutory triggers may depend on a scientific judgment. For instance, a political appointee of the Fish and Wildlife Service apparently rewrote scientific reports prepared by agency scientists.<sup>185</sup> And as described above, political appointees have already done the same in seeking to change the conclusions of climate scientists.<sup>186</sup>

While these were both scientists employed by the government, another possible design feature is to assign a formal role to a group of

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<sup>183</sup> Edith Brown Weiss, *In Fairness to Future Generations*, 32 *Env't* 7, 10-11 (April 1990).

<sup>184</sup> *Id.* In Germany, there is apparently an advocate within the government whose focus is on long term policies and protection of the interests of future generations. Gunter Kings, *Linking Policies and Implementation: Making SD Strategies a Case for Parliamentary Activities*, European Sustainability Berlin: Linking Policies, Implementation, and Civil Society Action (June 3-5, 2007), [http://www.eeac-net.org/workgroups/pdf/ESB07/ESB07U\\_Dinner\\_speech\\_Krings\\_07-06-03.pdf](http://www.eeac-net.org/workgroups/pdf/ESB07/ESB07U_Dinner_speech_Krings_07-06-03.pdf). In Sweden, there is an "Institute of Future Studies," responsible for producing reports with a long term focus for the purpose of ensuring its general consideration in governmental lawmaking. See Sandrine Paillard, *Futures Studies and Public Decision Making in Sweden*, 8 *Foresight: J. Futures Stud., Strategic Thinking & Policy* 56, 57-58 (2006).

<sup>185</sup> Felicity Barringer, *Report Says Agency Official Overrode Work of Scientists*, *New York Times*, at A19 (March 29, 2007) ("A top ranking official overseeing the Fish and Wildlife Service rode roughshod over agency scientists \* \* \*").

<sup>186</sup> See note \_\_, *supra* and accompanying text.

nongovernmental scientists. A statute might assign the group of scientists a role to make formal recommendations that, once they become part of the decisionmaking record, are hard for the governmental official to reject because of the natural weight a reviewing court is likely to assign to the scientists's conclusions.

For instance, under the Clean Air Act, the EPA Administrator is instructed to appoint "an independent scientific review committee" to review the science and make recommendations concerning the establishment of national ambient quality standards.<sup>187</sup> The statute describes some of the membership qualifications, including at least one physician and a member from the National Academy of Science.<sup>188</sup> The statute requires the committee to make formal recommendations to the Administration on several matters, including "new national ambient quality standards, revisions of existing criteria and standards as may be appropriate \* \* \*."<sup>189</sup> An EPA Administrator who ignores the scientist committee recommendation will likely face significant adverse publicity and risks defeat in court in a legal challenge to the Administrator's decision.<sup>190</sup>

A "committee of scientists" likewise plays a significant role in the implementation of the National Forest Management Act by the Forest Service.<sup>191</sup> Congress there too sought to ensure that decisions were driven by science, no doubt understanding the great pressures to which the Forest Service would be subject to maximize short term timber production at the expense of the long term health of the forest ecosystem.<sup>192</sup> By statute, the scientists may not be "officers or employees of the Forest Service."<sup>193</sup> The committee is charged with the responsibility of providing the Forest Service "with technical and scientific advice on proposed guidelines and procedures

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<sup>187</sup> 42 U.S.C. § 7409(d)(2)(A).

<sup>188</sup> *Id.*

<sup>189</sup> *Id.* § 7409(d)(2)(B).

<sup>190</sup> Juliet Eilperin, *EPA Tightens Pollution Standards – But Agency Ignored Advisers' Guidance*, Wash. Post, at A1 (March 13, 2008).

<sup>191</sup> See 16 U.S.C. § 1604(h)(1).

<sup>192</sup> George Hoberg, *Science, Politics, and U.S. Forest Service Law: The Battle of the Forest Service Planning Rule*, 44 Nat. Res. J. 1 (Winter 2004).

<sup>193</sup> *Id.*

\* \* \*.”<sup>194</sup> A recent court decision invalidating a Bush Administration effort to adopt sweeping reforms of national forest management planning, which environmentalists complained eliminated important protections, relied in part on the work of the Committee of Scientists.<sup>195</sup>

Climate change legislation might well include a design feature, in anticipation of efforts to politicize the relevant science, that both insulates a group of scientists from political interference and provides their findings with a formal role in the lawmaking process. That role could be nothing more than a formal report combined with inclusion in the lawmaking record subject to judicial review. But one could, at least in theory, decide to give the committee of scientists a more formal role. Their findings could even serve as a formal statutory trigger of a pre-established set of requirements. How a committee of scientists might be combined with such statutory triggers is developed further below.<sup>196</sup>

4. A final design feature is to create a mechanism for *participatory rights for selected stakeholders*, which provides them with a formal voice in the implementation process. There is statutory precedent of many types for such a feature. Some are in the form of federal advisory committees and provide for an advisory function with varying degrees of actual influence.<sup>197</sup> Others possess formal authority within the statutorily-prescribed lawmaking process, such as the scientific committees just described. Under the Clean Air Act, there are “interstate transport commissions” made up of representatives of state governments and EPA with authority to make recommendations for strategies to address interstate air pollution.<sup>198</sup> Under the Taylor Grazing Act, as supplemented by the Federal Land Policy and Management Act, resource advisory councils consisting of “representatives of the various major citizens’ interests concerning the problems related to land use planning or management of the public lands,” are provided certain

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<sup>194</sup> *Id.*

<sup>195</sup> See *Citizens for a Better Forestry v. U.S. Dept. of Agriculture*, 481 F.Supp. 2d 1059, 1065 (N.D. Cal. 2007).

<sup>196</sup> See note \_\_, *supra*, and accompanying text.

<sup>197</sup> See Federal Advisory Committee Act, 5 U.S.C. App. 1.

<sup>198</sup> 42 U.S.C. § 7506a.

formal advisory responsibilities,<sup>199</sup> as are “grazing advisory boards” concerning the development of allotment management plans and the distribution of rangeland-betterment funds.<sup>200</sup>

One of the more intriguing examples of this design feature, however, is supplied by the Magnuson-Stevens Act, under which eight regional fishery management councils play a critical role in the Act’s administration.<sup>201</sup> These councils have the primary responsibility for both proposing and then initially allocating individual tradeable rights in most fisheries, known as individual tradeable quotas.<sup>202</sup> Their recommendations become law upon review and approval by the Secretary of Commerce.<sup>203</sup> There are a specified number of voting and non-voting members for each council,<sup>204</sup> and the statute sets forth in some detail the general qualifications. In addition to the Regional Director of the National Marine Fisheries Service for the relevant geographic area,<sup>205</sup> the Secretary appoints to the Council “individuals who by reason of their occupational or other experience, scientific expertise, or training, are knowledgeable regarding the conservation and management, or the commercial or recreational harvest, of the fishery resource of the geographical area concerned.”<sup>206</sup> The Secretary of Commerce is further required to ensure, to the extent practicable, “a fair and balanced apportionment \* \* \* of the active participants (or their representatives \* \* \* in the commercial and recreational fisheries under the jurisdiction of the Council.”<sup>207</sup>

Experience with the Magnuson-Stevens Act also provides useful information for some of the pitfalls as well as the opportunities of this kind of design feature and how it might be modified to be more effective. The regional councils of the Magnuson-Stevens Act were plainly designed to

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<sup>199</sup> 43 U.S.C. § 1739(a).

<sup>200</sup> *Id.* § 1753.

<sup>201</sup> 16 U.S.C. § 1852.

<sup>202</sup> *Id.* § 1854(c)(3)

<sup>203</sup> *Id.* § 1854(a).

<sup>204</sup> *Id.* § 1852(a)&(b).

<sup>205</sup> *Id.* § 1852(b)(1)(B).

<sup>206</sup> *Id.* § 1852(b)(2)(A).

<sup>207</sup> *Id.* § 1852(b)(2)(B).

promote the fishing industry's acceptance of what was expected to be a controversial regulatory scheme, especially transferable fishing rights, by promising commercial interests a powerful seat at the lawmaking table. Industry would not be limited to commenting on proposed rules, but rather was provided a formal role in the crafting of the substance of those rules in the first place.

The unsurprising upshot has been a highly encumbered lawmaking process that has been inefficient and slow in making recommendations. It has proven very hard for the different commercial interests, in what can often be a zero-sum game to forge agreements. Apparently, one reason that the councils are not even slower in reaching agreement is that they are dominated by the larger, more economically powerful sectors of the fishing industry.<sup>208</sup>

The particular structure of the Magnuson-Stevens Act's operation also invites a series of potential vetoes that place further lawmaking obstacles in practice. The Secretary of Commerce retains formal power of approval, disgruntled interests can seek judicial review of approved measures, and, most significantly to date, special interest groups can prompt individual Senators to block Regional Council recommendations by appropriation riders and other narrowly-focused legislative enactments.<sup>209</sup> A handful of Senators in the 1990s successfully imposed a moratorium for four years on transferable quota programs approved by both the Secretary's National Marine Fisheries Service and Regional Councils.<sup>210</sup>

As applied to climate change legislation, however, this kind of design feature would need to be structured quite differently to be effective. The basic notion of ensuring that certain stakeholder interests were heard during the implementation over the longer term is sound and could be maintained. But what would likely need to be wholly transformed for climate change legislation are the nature of those interests needing inclusion and the precise

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<sup>208</sup> Katrina Miriam Wyman, *From Fur to Fish: Reconsidering the Evolution of Private Property*, 80 N.Y.U. L. Rev. 117, 177-181 (2005).

<sup>209</sup> *Id.* at 182-185.

<sup>210</sup> *Id.* at 184-188.

role they played.

The regional councils contemplated by the Magnuson-Stevens Act were designed to ensure that the short-term economic interests would not have their voices lost in any effort to achieve long term protection of the fisheries. There have been essentially no environmentalists or scientists serving on the regional councils, as voting or even nonvoting members.<sup>211</sup> The concern for climate change legislation, however, should be just the opposite (as perhaps it should have been for the Magnuson-Stevens Act): not that long-term interests will trump short term, but that long term interests will get bargained away over time by a steady barrage of short term pressures.

For this same reason, the kind of stakeholders that would warrant a heightened role in the lawmaking process for climate change would be those that give voice to long-term interests of future generations,<sup>212</sup> not representatives of industry, who otherwise do not lack influence in lawmaking fora. These voices could, as described above, be given a formal office within the government. Or they could instead be included as nongovernmental employees on councils more like those contemplated by the Magnuson-Stevens Act, albeit with a quite different policy focus. It is not hard to imagine what the qualifications of these individuals might be. Heads of philanthropic foundations, nonprofit organizations, university departments, schools, or colleges, or former governmental leaders could, by dint of their professional outlook and past experience, be anticipated to have the essential broader, longer-term focus and perspective. These, of course, are the kind of seasoned veterans, no longer pre-occupied by personal ambition, to whose judgment the nation frequently turns in times of crisis.<sup>213</sup> But here again, my purpose is only to begin the conversation of possibilities, not end it.

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<sup>211</sup> Andre Verani, *Community-Based Management of Atlantic Cod by the Georges Bank Hook Sector: Is It A Model Fishery?*, 20 Tul. Env't L. J. 359, 366 (2007).

<sup>212</sup> Alan M. Jacobs, *The Politics of When: Redistribution, Investment, and Policymaking for the Long Term*, 38 British J. Political Science 193 (February 2008) (commenting on how organized interest groups can “represent one of the few mechanisms forcing government to take long-run outcomes seriously”) (slip pre-pub. page 34).

<sup>213</sup> The 911 Commission and the Iraq Study Group are two obvious recent examples, although they lacked authority beyond making public recommendations and issuing reports.

Finally, the role of such councils in the implementation of climate change law could also be substantially modified. In the Magnuson-Stevens Act, the role of the regional councils is to initiate the lawmaking process by making recommendations on certain policies. That is, of course, not the only possible role of a stakeholder council. It might, for instance, be designed to ensure that statutory implementation stays on track, *i.e.*, to provide the oversight necessary to make sure it is not derailed. It could also be designed to make sure that if new scientific information becomes available that makes it clear that even tougher measures are required, the statute's implementation would be modified accordingly.

Of course, this is similar to the kind of role that an internal (to the government) or external committee of scientists might serve. The only difference is the precise makeup of the council or committee. Given the nature of some of the decisions to be made, however, there is reason to believe that a science-driven group may lack the necessary breadth of perspective that other stakeholder leaders might supply, which is why this is a further design worthy of consideration.

### **C. Maintaining and, if Necessary, Accelerating the Implementation Process**

A third category of design features are those that anticipate the many roadblocks that will occur during the process of statutory implementation, especially over the long term, and deliberately build into the statutory scheme mechanisms that directly limit the effectiveness of the roadblock. These features accomplish that end sometimes by creating lawmaking shortcuts that circumvent the roadblock and other times simply by eliminating the roadblock altogether.

1. One classic example of a precommitment strategy designed to circumvent a roadblock by creating a lawmaking shortcut that allows for *lawmaking by agency regulation in the absence of congressional action within a specified time period* is the Defense Base Closure and Realignment

Act,<sup>214</sup> discussed above.<sup>215</sup> Congress may well believe that the policy is one that it should address in the first instance, but still recognize both that it may not have the will to do so and needs to ensure some lawmaking occurs in a timely manner. In anticipation of just that scenario, Congress chose in the Defense Base Closure and Realignment Act to create a Military Base Commission, more removed from politics, whose recommendations would effectively become law absent some formal intervention by Congress. This feature combines some of the aspects of an independent commission with a lawmaking shortcut.

The President appoints eight members to the Commission, with the advice and consent of the Senate.<sup>216</sup> The Act sets out how many members the President should appoint based on separate consultation with different congressional leaders, including from both the majority and minority.<sup>217</sup> The Act not only limits the number of military personnel who can be detailed to work for the Commission, but also specifically proscribes any member of the Armed Forces or Defense Department employee from preparing, reviewing, approving or disapproving any report concerning the effectiveness, fitness, or efficiency of the work of the Commission's staff.<sup>218</sup>

The shortcut supplied by the Act allows for both some insulation by the President from the inherently politically controversial decisions concerning what military bases should be closed and the opportunity for a complete abdication by Congress. The President has to approve or disapprove the Commission's recommendations,<sup>219</sup> but once approved those recommendations become legal mandates to be implemented by the Secretary of Defense unless Congress affirmatively acts to pass a joint resolution within a relatively short statutorily-prescribed time period.<sup>220</sup>

Another example of a lawmaking shortcut that similarly allows law to

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<sup>214</sup> Pub. L. No. 101-510, div. B, tit. XXIX, pt. A, 104 Stat. 1808 (1990).

<sup>215</sup> See notes \_\_, *supra*, and accompanying text.

<sup>216</sup> Pub. L. No. 101-510, § 2902(c)(1)(A).

<sup>217</sup> *Id.* § 2902(c)(2).

<sup>218</sup> *Id.* § 2902(I).

<sup>219</sup> *Id.* § 2903(e).

<sup>220</sup> *Id.* § 2904(b).

be made in anticipation of Congress's failure to act is supplied by the Health Insurance Portability and Accountability Act of 1996 (HIPAA).<sup>221</sup> Faced by its own inability to pass legislation, Congress provided for proposed regulations regarding privacy of individual health records of the Department of Health and Human Services to become law if Congress failed to enact its own rules.<sup>222</sup> Congress sought, in effect, to remove itself as a roadblock in recognition of its own weaknesses as an institution.

2. Another related design feature is to create a lawmaking shortcut that allows *lawmaking to be made in the absence of executive branch action within a specified time period*. This can occur when Congress would actually prefer executive branch lawmaking but anticipates that roadblocks may prevent the agency from acting in a sufficiently expeditious manner. Both to encourage the agency to do so, and to ensure that law is made without undue delay, Congress can create a lawmaking scheme that is triggered by default in the event that the agency fails to act by the statutorily-specified deadline. If, moreover, the congressional scheme that is triggered by default is especially demanding, that provides powerful economic interests that might normally have been seeking to delay agency lawmaking efforts with every incentive to ensure that the agency meets its deadline.

Such a design feature is what Congress embraced in the Hazardous and Solid Waste Act Amendments of 1984,<sup>223</sup> which amended the Resource Conservation and Recovery Act.<sup>224</sup> Under Section 3004, Congress required EPA to promulgate pretreatment standards for a series of categories of hazardous wastes prior to their disposal on land. But Congress was also aware that EPA had violated similar deadlines in environmental statutes in the past, sometimes because of agency intransigence but just as likely because of regulated industry lawsuits.<sup>225</sup> The result was years of regulatory delay and an undesirable vacuum of environmental protection standards.

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<sup>221</sup> Pub. L. No. 104-191, 110 Stat. 1396 (1996).

<sup>222</sup> *Id.* § 264(c)(1), 110 Stat. 2033. See note \_\_, *supra*, and accompanying text.

<sup>223</sup> Pub. L. No. 98-616, 98 Stat. 3221 (1984).

<sup>224</sup> 42 U.S.C. §§ 6901 *et seq.*

<sup>225</sup> See Richard J. Lazarus, *The Tragedy of Distrust in the Implementation of Federal Environmental Law*, 54 *Law & Contemp. Probs.* 311, 323-325 (1991).

To avoid that happening again, Congress in 1984 added what have been euphemistically referred to as “soft” and “hard” “hammers” that call for automatic imposition of extraordinarily harsh pretreatment standards in the event that EPA misses the statutorily-prescribed deadlines for promulgation of pretreatment standards.<sup>226</sup> The soft hammer, triggered by a miss of an initial deadline, is a very tough standard set forth by the statute. The hard hammer, triggered by a miss of a final deadline, is an absolute prohibition of the disposal of the waste in question on land.<sup>227</sup>

Congress’s establishment of a default standard completely changed the lawmaking dynamic. Not only did EPA have an overriding incentive to meet the deadlines, but regulated industry also had an incentive to ensure the Agency’s compliance. Industry could not, accordingly, risk legal challenges or other action that might prompt the Agency to meet the deadlines. Not surprisingly, EPA met essentially all of the applicable deadlines.<sup>228</sup>

Drafters of climate change legislation might well want to consider including such lawmaking shortcuts that precommit to certain lawmaking standards in the absence of the necessary subsequent action taken by either the legislative or executive branch actions. The potential for those resistant to climate change laws to seek to impose as many roadblocks as possible is considerable. By anticipating that potential and precommitting to certain legal standards in the event of delays, legislation can effectively both reduce the incentive for such obstructionist efforts and ensure that a lengthy legal vacuum does not result.

3. A third design feature that constitutes a lawmaking shortcut is a *prescribed statutory standard triggered by a subsequent finding*. This kind of shortcut allows for Congress to dictate what the regulatory requirements or other regulatory measures must be to address different degrees of environmental hazards, but then leave to another entity the responsibility

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<sup>226</sup> 42 U.S.C. § 6904; see James Florio, *Congress as Reluctant Regulator: Hazardous Waste Policy in the 1980s*, 3 Yale J. Reg. 351 (1986).

<sup>227</sup> *Id.* § 6904(d), (e) & (g).

<sup>228</sup> Lazarus, *The Making of Environmental Law*, *supra* note \_\_\_, at 194.

(and potential political heat) of making the finding that triggers the standard. Congress, in effect, precommits to a series of lawmaking standards that someone else the triggers.

The nonattainment provisions of the Clean Air Act Amendments of 1990 illustrate this possibility. Here again, Congress sought to take away EPA's discretion to decide what regulatory measures were necessary to address varying degrees of nonattainment of national ambient air quality standards. Congress, accordingly, set forth in exhaustive detail programs that became increasingly prescriptive on sources of air pollution as an area of country went from just barely out of compliance to extremely out of compliance. The specific statutory designations were "marginal," "moderate," "serious," "severe," and "extreme" nonattainment.<sup>229</sup> Congress did not, however, want to be responsible for deciding which parts of the country warranted which designation, both because Congress could avoid the related political pressures (which also allowed it to prescribe the corresponding requirements) and because such designations plainly needed to be made on a dynamic basis over time. Congress is insufficiently nimble for such dynamic involvement. Under the Act, EPA was responsible for designating whether an area in nonattainment was marginal, moderate, serious, severe, or extreme.<sup>230</sup>

Climate change legislation could also utilize this kind of precommitment device. Congress could precommit to increasingly stringent standards depending, for instance, on the degree of greenhouse gas emissions reductions deemed necessary. This would allow Congress to make the critical policy determination regarding which kinds and combinations of regulatory measures and economic incentives would be best to achieve different levels of emissions reduction. But, at the same time, Congress could leave to a more detached, politically insulated decisionmaking body the decision regarding how serious the climate change problem truly is, how much temperature may rise, and therefore how much emissions reduction is in fact necessary. Such a scheme has the added benefit of allowing for both steadfastness in overall policy objective, a

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<sup>229</sup> 42 U.S.C. §§ 7511-7512.

<sup>230</sup> *Id.* § 7407(d).

legislative decision regarding the distribution of compliance costs, and still some flexibility for change in light of the latest scientific information about climate change.

In addition, while Congress delegated the determination of the relative seriousness of the problem to EPA in the Clean Air Act Amendments of 1990, Congress might decide to delegate the relevant fact-finding trigger in climate change legislation to a more politically autonomous body. As described above, such a decisionmaking body could take any of a variety of forms, including a committee of governmental or nongovernmental scientists or a specially-crafted commission or committee dominated by individuals appointed based on their ability to maintain the necessary longer term perspective.<sup>231</sup> Congress could make such a more politically autonomous body responsible for any of a host of findings that could in turn trigger a wave of statutory requirements, or even relax them: (1) current greenhouse gas emissions; (2) current atmospheric concentrations of greenhouse gas emissions; (3) current forecasts of temperature increases; or even (4) current percentage emissions reductions necessary to achieve prescribed goal of atmospheric concentrations or temperature change.

4. Finally, design features can include those that seek to anticipate and precommit for the removal of anticipated roadblocks to statutory implementation. Especially because of the extent to which lawmaking is fragmented in the United States, these roadblocks may arise in a variety of settings. As illustrated by the experience of the Magnuson-Stevens Act, described above,<sup>232</sup> any one of the three branches of government has the potential to encumber the implementation process at the behest of special interest groups. They may enlist the congressional appropriations process and the imposition of appropriation riders, judicial review and the issuance of injunctive relief, or oversight authorities within the executive branch to slow the decisionmaking process. Each, however, is susceptible to a precommitment strategy that removes their potential to slow the lawmaking process in appropriate circumstances.

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<sup>231</sup> See notes \_\_\_ to \_\_\_, *supra*, and accompanying text.

<sup>232</sup> See notes \_\_\_ to \_\_\_, *supra*, and accompanying text.

For instance, Congress chose to *remove from the congressional appropriations process* the Federal Reserve Board by allowing the Board to raise its own revenue through its financial transactions.<sup>233</sup> The same could be done with climate change legislation, if deemed necessary. The sale of tradeable emissions allowances or a carbon tax will, in one form or another, be a significant part of federal climate change legislation, which will be a source of billions of dollars in revenue.<sup>234</sup> Some of that revenue could, in theory, be diverted to insulate the implementation of climate change legislation from the congressional appropriations process.

Congress can also *limit judicial review or judicial remedies* over certain kinds of implementation decisions that it wants to ensure are not blocked by lawsuits. For instance, the Anti-Injunction Act forbids a federal court from issuing an injunction to stay state court proceedings in the absence of express congressional authority.<sup>235</sup> The Tax Anti-Injunction Act limits the authority of courts to enjoin the imposition of federal taxes.<sup>236</sup> In the Norris-LaGuardia Act of 1932, Congress sought to limit the authority of federal courts to enjoin labor strikes.<sup>237</sup> More recently, in the Comprehensive Environmental Response, Compensation, and Liability Act, Congress sought to limit judicial review of administrative agency orders and remedies to clean up hazardous waste sites in order to prevent lawsuits from slowing the cleanup process.<sup>238</sup> There may well be aspects of the implementation of climate change legislation that are at least as urgent and for which Congress may want to ensure implementation is not delayed as a result of lawsuits brought by certain kinds of aggrieved plaintiffs.

Or, conversely, Congress may decide that judicial review is precisely

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<sup>233</sup> See notes \_\_ to \_\_, *supra*, and accompanying text.

<sup>234</sup> Chris Dodd, The Dodd Energy Plan, at [http://chrisdodd.com/issues/energy\\_independence/](http://chrisdodd.com/issues/energy_independence/) ("the revenues of a corporate carbon tax—estimated at over \$50 billion annually—will be placed into a Corporate Carbon Tax Trust Fund . . . ."); Peter Crampton & Suzi Kerr, Tradable Carbon Permit Auctions, 30 Energy Policy 333 (2002) ("an efficient auction could raise \$125 billion annually").

<sup>235</sup> 28 U.S.C. § 2283.

<sup>236</sup> 26 U.S.C. § 7421(a).

<sup>237</sup> Norris-LaGuardia Act of 1932, ch. 90, 47 Stat. 70 (codified at 29 U.S.C. § 101 *et seq.*).

<sup>238</sup> 42 U.S.C. § 9613(h).

what is necessary to eliminate roadblocks to statutory implementation, including agency enforcement, that Congress anticipates will arise within the executive branch. To that end, Congress can authorize certain kinds of plaintiffs with certain kinds of claims to bring *citizen suits* seeking a court order that the agency comply with statutory mandates or judicial relief against a source of greenhouse gas emissions in violation of federal requirements. Of course, such citizen suit provisions are already one of modern environmental law's hallmark achievements. Congress included citizen suit provisions in most every modern pollution control statute in anticipation of federal agency recalcitrance to implement or enforce in full pollution control requirements in the face of powerful political and economic resistance. And the resulting citizen lawsuits have filled what would otherwise have been a significant gap in compliance.<sup>239</sup> Citizen suit provisions will, accordingly, be an important part of climate change legislation to guard against anticipated executive branch hesitance.<sup>240</sup>

### **Conclusion**

Lawmaking moments do not happen very often, at least for environmental law. The last major environmental lawmaking moment was almost twenty years ago when Congress passed the Clean Air Act Amendments of 1990,<sup>241</sup> after a thirteen-year legislative logjam arising out of the distributional battles surrounding acid rain. Soon, however, the nation is likely to have an exceedingly important lawmaking moment with the passage of long overdue domestic climate change legislation. All the political ingredients seem well in place for that moment, sometime during the first two years of the next Presidential Administration.

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<sup>239</sup> Lazarus, *The Making of Environmental Law*, *supra*, at 190-191.

<sup>240</sup> The climate change context no doubt creates heightened concerns about citizen suit plaintiff Article III standing in light of the often enormous spatial and temporal dimensions of climate change cause and effect. The Supreme Court, however, has already established that Article III standing requirements do not preclude a citizen suit based on climate change, see *Massachusetts v. EPA*, 127 S. Ct. 1438 (2007), and there are otherwise innovative ways for Congress, in effect, to provide a category of plaintiffs with the requisite interest for Article III standing. See Cass Sunstein, *What's Standing After Lujan? Of Citizen Suits, "Injuries," and Article III*, 91 Mich. 163, 229-235 (1992).

<sup>241</sup> Pub. L. 101-549, 104 Stat. 2399 (1990).

The ultimate success of that legislation, however, depends on advance recognition by Congress that lawmaking moments are only that – “moments” – and the corresponding need to include institutional design features, including precommitment strategies, within climate change legislation that deliberately make it hard for powerful, short term political and economic pressures to undo that legislation. Institutional design of lawmaking processes always matters, but it matters most when, as is true for climate change law, long-term implementation is essential to the law’s success.

In application to climate change legislation, moreover, any *per se* objection to precommitment strategies based on concerns about representative democracy should go unheeded. Such precommitment strategies are a well-established design feature of our lawmaking processes embraced both by the Framers of our Constitution and by prior Congresses. They are embedded within the traditions of our form of government and in no manner represent an anathema. Where, as here, the impact on future generations of present generations’ failing to address climate change is so potentially devastating, the greater threat by far to representational democracy would be the failure of present generations to bind themselves as necessary to safeguard the future. Like Ulysses, we must tie ourselves to the mast.