

Environmental Law After Katrina: Reforming Environmental Law by Reforming Environmental Lawmaking

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Katrina's overriding lesson for environmental law is no less than our environmental lawmaking institutions require fundamental reformation. Otherwise, the nation's tragic failure not only to enact laws that anticipate the obvious risks presented to the Gulf Region by hurricanes, but perversely to increase those risks by destroying the ecosystem's natural protections, will inevitably be repeated with even more devastating results.

I. MOTHER NATURE AND THE NATURE OF ENVIRONMENTAL LAW	3
II. HUMAN NATURE AND THE NATURE OF OUR LAWMAKING INSTITUTIONS	23
III. KNOWING THY ENEMY	35

How do you deal with an enemy that has no government, no money trail and no qualms about killing women and children?

The enemy is Mother Nature. And on August 29, 2005, in the form of Hurricane Katrina, she killed 1,836 people, devastated a land area larger than Great Britain and caused over 100 billion dollars worth of destruction. Even when her wrath isn't as grand, she is still accountable every year for almost 500 American deaths and 14 billion dollars worth of damage.

It's time we started fighting back.¹

The above political advertisement originally appeared on a full page of the *New York Times* on August 29, 2006, the first anniversary of Hurricane Katrina's landfall on the Gulf Coast of the United States.²

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1. ProtectingAmerica.org, Advertisement, N.Y. TIMES, Aug. 29, 2006, at A11 (emphasis added).

2. See *id.*

It has since reappeared in a host of major newspapers and national magazines. The advertisement's sponsor is an Internet-based organization with the inviting name "ProtectingAmerica.org," which additional research quickly reveals was created by the nation's largest insurance company, Allstate Insurance Company.³ The purpose of the political advertisement was to generate public attention and support for legislation pending in Congress that would create a federal reinsurance program for national catastrophes based on the premise that private and state insurance programs cannot possibly compensate victims of such catastrophes for the enormous losses they suffer.⁴

The purpose of this Article is to explore the meaning of environmental law in Katrina's aftermath by explaining why the advertisement's premise is fundamentally misconceived and its policy prescription is misdirected. Mother Nature is not our enemy, and ever-greater insurance coverage is not the solution to avoiding catastrophes such as Katrina. Indeed, the whole notion is so misguided that it would hardly be worth a response were it not for the fact that the advertisement reflects the very kind of misdirected thinking that propagated, in the first instance, the tragedies witnessed during Katrina and its aftermath. That such claims can still now be seriously maintained is most unsettling because it suggests that not even the catastrophic human and environmental harm caused by Katrina is capable of promoting the wholesale rethinking of humankind's relationship to our natural environment and our related lawmaking institutions that Katrina should have made plain is now necessary.

This Article is divided into three parts. Part I explores, in theoretical terms, the lessons that Katrina presents for environmental law. This discussion describes, in particular, a better way to think of the relationship between Mother Nature, the laws of nature, and the laws of humankind, including environmental law. Part II looks forward, seeking to describe the kind of environmental law reform that seems necessary to avoid a never-ending and tragically destructive cycle of human and environmental catastrophes in New Orleans. A central conclusion is that Katrina underscores the need for lawmaking institutions that are better able to overcome the human tendency to fail to apprehend the full spatial and temporal scope of the environmental risks generated by modern technology. Finally, Part III of the Article returns briefly to the political advertisement in the *New York Times*.

3. Rebecca Mowbray, *Conflict Brews over Crisis Funds*, TIMES-PICAYUNE (New Orleans), Nov. 20, 2006, at A-1.

4. See H.R. 4366, 109th Cong. § 2 (2005).

I. MOTHER NATURE AND THE NATURE OF ENVIRONMENTAL LAW

“The enemy is Mother Nature.”⁵

Mother Nature is not humankind’s enemy. Nor is Mother Nature invariably our friend. Like the laws of nature that define our physical universe, Mother Nature simply “is.” It makes no more sense to say that Mother Nature is our enemy than to posit that either gravitational or electromagnetic forces are our enemy, or the speed of light or sound, or the first or second laws of thermodynamics.

Indeed, that is modern environmental protection law’s central tenet. The laws we choose to govern ourselves must account for the laws of nature and work within them, both respecting the limits they define and taking advantage of the bounty of opportunities they offer. But our laws cannot defy the laws of nature. Or, more to the point, the laws of humankind cannot define the laws of nature away the same way that a law can define and redefine what constitutes a “corporation,” “contract,” or “burglary.” The latter are all inventions of the law itself and, therefore, entirely susceptible to modification by legal amendment at any time. But our laws cannot modify gravitational or electromagnetic forces, the speed of light or sound, or the laws of thermodynamics. They cannot change the periodic table of chemical elements by asserting that hydrogen or any other element has a different atomic weight, electron configuration, boiling or melting point, solubility, or reactivity than it in fact has. They cannot modify the “ideal gas law,” “Avogadro’s number,” the process of photosynthesis in plants, or the workings of the metabolic pathways critical to respiration in living cells.

Effective environmental law accepts the laws of nature as a given, fashioning legal rules that regulate human activity as necessary to achieve environmental protection and resource conservation objectives. The Clean Air Act must account for the chemical reactions in the combustion process of fossil fuels both by considering the pollutants that may therein be generated and by enlisting some of those same chemical reactive properties in devising regulatory methods to reduce the pollution.⁶ The Act must similarly account for the workings of the atmosphere, including the potential for short and longer range transport under different climatic and seasonal conditions.⁷ To achieve

5. ProtectingAmerica.org, *supra* note 1.

6. See Clean Air Act, 42 U.S.C. § 7411 (2000) (stating some of the regulatory methods that a state must implement in order to be in compliance with the Clean Air Act).

7. See 42 U.S.C. §§ 7403(c)(1), (e)(3), (f)(2), 7506a, 7511c; Clean Air Interstate Rule, 40 C.F.R. pts. 51, 72-78, 96 (2006).

its water quality goals, the Clean Water Act of 1977 cannot ignore the impact of wetlands development on traditional navigable water bodies;⁸ the ways in which hydroelectric facilities can change water quality without the formal introduction of pollutants from outside the water body;⁹ or the potential for certain kinds of water pollutants to pass through untreated or to interfere with the operation of publicly owned treatment works.¹⁰ So, too, the United States Environmental Protection Agency (EPA), in implementing the Resource Conservation and Recovery Act of 1976, takes care to define the meaning of “solid waste” in a manner that reflects the ability of virtually any chemical compound to serve a beneficial purpose based on its mass, adhesive quality, or combustibility.¹¹ Accordingly, the EPA’s hazardous waste management program does not automatically exclude from regulation hazardous materials generated as by-products from industrial or manufacturing processes just because those materials could be used as “ballast” on boats or as “fill” in building materials, spread on roads for “dust suppression,” or burned as “fuel.”¹²

Environmental law eschews such fictions because of the truly tragic and catastrophic consequences that can otherwise result. The ozone layer in the upper atmosphere can be destroyed if environmental law ignores how emissions of certain chemical compounds interact with others to break apart, in effect, the three oxygen atoms that combine to form the ozone molecule, which provides a protective layer in the stratosphere shielding the earth’s surface from excessive ultraviolet rays from the sun.¹³ Certain pollutants discharged from industrial facilities can literally blow up when introduced into sewage systems and publicly owned treatment works.¹⁴ Dams can effectively destroy entire aquatic ecosystems by capturing the energy flow value of a water body and turning a flowing waterway into a still body of

8. See Clean Water Act of 1977, 33 U.S.C. § 1344(a) (2000); *Rapanos v. United States*, 126 S. Ct. 2208, 2226-27 (2006).

9. See 33 U.S.C. §§ 1341, 1362(16); *S.D. Warren Co. v. Me. Bd. of Env’tl. Prot.*, 126 S. Ct. 1843, 1852-53 (2006).

10. See 33 U.S.C. § 1317(b).

11. See 40 C.F.R. §§ 261.1-4 (2006); see also Resource Conservation and Recovery Act of 1976, Pub. L. No. 94-580, 90 Stat. 2795.

12. See 40 C.F.R. §§ 260-266.

13. See ROBERT V. PERCIVAL ET AL., ENVIRONMENTAL REGULATION: LAW, SCIENCE, AND POLICY 1046-49 (4th ed. 2003).

14. See Winston Williams, *Louisville’s Cleanup Begins in Wake of Sewer Explosion*, N.Y. TIMES, Feb. 18, 1981, (Special), at A12.

water.¹⁵ And, if dioxin-contaminated oil by-product of industrial processes escapes federal hazardous waste management by being spread on a town's roads for "dust suppression," and therefore is not considered the discarding of "waste" subject to regulation, it can effectively destroy and force the evacuation of the entire town.¹⁶

Hurricane Katrina provides, however, the most chilling testimony to what happens when the laws of nature are fictionalized in the laws of humankind. In Louisiana alone, at least 1464 people are known to have died as a result of the storm and another 135 are still missing more than a year later.¹⁷ These individuals are not some isolated data points. They were people with passions and aspirations, with loved ones, children, parents, siblings, and personal and professional communities. Each death caused waves of sorrow, despair, and misery for the many with whom the deceased was close and great sadness even among those who were complete strangers to the victim, yet witnesses, through the media, to their suffering.

The loss of life resulting from Katrina, which was heavily concentrated in Louisiana, and in New Orleans in particular, is the most tragic of what Michael Chertoff, Homeland Security Secretary, described as "probably the worst catastrophe or set of catastrophes" in the nation's history.¹⁸ Katrina resulted in serious physical and mental injuries to tens of thousands of persons.¹⁹ Millions became refugees from their homes for not days or weeks, but at least months and, for many, as a practical matter, permanently.²⁰ The total estimated damage is more than eighty billion dollars.²¹ This number is likely a small fraction of the true total human and environmental cost of the overwhelming destruction and disruption of lives and ecosystems.²²

15. See JOGINDER BHUTANI, U.S. ENVTL. PROT. AGENCY, IMPACT OF HYDROLOGIC MODIFICATIONS ON WATER QUALITY 41-43 (1975); U.S. ENVTL. PROT. AGENCY, REPORT TO CONGRESS: DAM WATER QUALITY STUDY 2-9 (1989).

16. See Robert Reinhold, *U.S. Offers To Buy All Homes in Town Tainted by Dioxin*, N.Y. TIMES, Feb. 23, 1983, (Special), at A1.

17. See LA. FAMILY ASSISTANCE CTR., REUNITING THE FAMILIES OF KATRINA AND RITA 4-5 (2006), available at <http://www.dhh.louisiana.gov/offices/publications/pubs-303/Full%20Report.pdf>.

18. Press Conference, Michael Chertoff, Homeland Sec. Sec'y (Sept. 3, 2005).

19. See Gary Younge, *Gone with the Wind*, GUARDIAN (London), July 29, 2006, (Weekend), at 18.

20. See MANUEL PASTOR ET AL., IN THE WAKE OF THE STORM: ENVIRONMENT, DISASTER, AND RACE AFTER KATRINA 4 (2006).

21. Kenneth Chang, *In Study, A History Lesson on the Costs of Hurricanes*, N.Y. TIMES, Dec. 11, 2005, § 1, at 52.

22. Younge, *supra* note 19, at 19 (describing the physical and cultural devastation of the City of New Orleans, including the halving of its population and the dramatic increases in mental illness in general and depression and suicide in particular).

As levee after levee in New Orleans breached, 80% of the city flooded.²³ Hundreds of thousands lost their homes and their livelihoods, communities, daily life, and peace of mind. Almost 40,000 sought refuge in the Louisiana Superdome and Convention Center, which was supposed to be a sanctuary, but where instead thirty-four died, and none had adequate food, water, power, or sanitation.²⁴ Day after day after day, the nation witnessed their wrenching misery on national television. The public reeled from the inexplicable absence of any meaningful governmental effort to alleviate the enormous ongoing suffering, occurring in real time not in some far away part of the globe, but here in the United States in one of the nation's major cities and at the precise location where they had been told to go for relief.²⁵

The environmental consequences were likewise devastating. The force of the floodwaters ripped through neighborhoods, commercial and industrial areas, and environmentally fragile lands and waters. The waters invariably picked up and spread toxic contaminants

23. Trymaine Lee, *Disaster Practice Takes to the Water*, TIMES-PICAYUNE (New Orleans), Sept. 21, 2006, at A-1.

24. See Erin Ryan, *Federalism and the Tug of War Within: Seeking Checks and Balance in the Interjurisdictional Gray Area*, 66 MD. L. REV. (forthcoming Apr. 2007) (manuscript at 17). Despite knowing the likelihood of a hurricane and subsequent flooding, local, state, and federal governments did little to plan for New Orleans' evacuation. For example, New Orleans' buses remained in their parking lots, flooded after the hurricane, because, according to New Orleans' Mayor, Ray Nagin, the city did not have enough drivers. See IVOR VAN HEERDEN & MIKE BRYAN, *THE STORM* 61-62 (2006). In Jefferson Parish, the Emergency Preparedness Director publicly acknowledged before the hurricane that, even with shelters of last resort in place, five to ten percent of individuals who did not evacuate would die. See MEMBER SCHOLARS FOR THE CTR. FOR PROGRESSIVE REFORM, *AN UNNATURAL DISASTER: THE AFTERMATH OF HURRICANE KATRINA EXECUTIVE SUMMARY* 24-25 (2005) (quoting Bruce Nolan, *In Storm, N.O. Wants No One Left Behind*, TIMES-PICAYUNE (New Orleans), July 24, 2005, at B-1). The state government fared no better. The State Department of Transportation and Development Secretary, Johnny Bradberry, was chastised at a Senate committee hearing in February 2006 because his agency had been tasked in April 2005 to develop evacuation plans for at-risk populations, but it had failed to do so. See VAN HEERDEN & BRYAN, *supra*, at 62-63. The Federal Emergency Management Agency (FEMA), too, knew of the inadequacy of evacuation plans, and, after President Bush declared a national emergency on Saturday, August 27, invoking the Stafford Act, the evacuation became a federal responsibility. See *id.* at 64-65. A *New York Times* study, however, contests the proposition that hurricane victims were unable to escape New Orleans because of a lack of transportation. Shaila Dewan & Janet Roberts, *Louisiana's Deadly Storm Took Strong as Well as the Helpless*, N.Y. TIMES, Dec. 18, 2005, at A1.

25. Some commentators have suggested that the failure of an adequate response is due, at least in part, to federalism concerns. Professor Erin Ryan suggests that a rigid view of federalism paralyzed the hurricane response by requiring that state authorities make specific requests for hurricane assistance, which led to an "operating system crash." Ryan, *supra* note 24, at 11.

throughout their reach.²⁶ Katrina created approximately twenty-two million tons of debris, half of which remains in Orleans Parish, and forty-two thousand tons of hazardous waste.²⁷ The sediment contains significant concentrations of arsenic, lead, and chemical carcinogens such as diesel fuel.²⁸ Hundreds of thousands of homes will need to be destroyed in the cleanup effort.²⁹

Katrina's wind and waters also significantly altered ecosystems. Barrier islands off the coast of Louisiana serve as natural buffers from hurricanes and storm surges and provide a significant habitat for wildlife, including sea turtles, marine mammals, and fish.³⁰ Just in Breton Sound, off Louisiana, Katrina converted approximately thirty square miles of marsh to open water.³¹ Sixteen wildlife refuges closed due to damage.³² Floodwaters contaminated with raw sewage, pesticides, heavy metal, and toxic pollutants were pumped into Lake Pontchartrain, near New Orleans, to relieve flooding, causing great damage to that water body and to the plant and wildlife dependent upon it.³³ The precise long- and short-term environmental consequences are not clear, but their enormous significance is not disputed.

Putting to one side, for the moment, the extraordinary breakdown of government relief efforts in Katrina's aftermath, none of these environmental consequences was unforeseeable or even unforeseen. Yet the government consciously ignored basic laws of nature. The City of New Orleans is centered in a natural bowl—graphically described as a fragile saucer floating in a pool of water—into which water will naturally flow and is in fact constantly flowing.³⁴ The city lies just off the Gulf Coast, falling in the natural pathway for severe storms, including a predictable number of severe hurricanes. The geography is not complicated, nor is the related movement of water.

26. See MEMBER SCHOLARS FOR THE CTR. FOR PROGRESSIVE REFORM, *supra* note 24, at 17-18.

27. See PASTOR ET AL., *supra* note 20, at 29.

28. See GINA M. SOLOMON & MIRIAM ROTKIN-ELLMAN, NATURAL RES. DEF. COUNCIL, CONTAMINANTS IN NEW ORLEANS SEDIMENT 3 (2006), available at <http://www.nrdc.org/health/effects/katrinadata/sedimentepa.pdf>.

29. See PASTOR ET AL., *supra* note 20, at 29.

30. See PERVAZE A. SHEIKH, THE IMPACT OF HURRICANE KATRINA ON BIOLOGICAL RESOURCES 2 (2005), available at http://www.openers.com/rpts/RL33117_20051018.pdf.

31. See *id.* at 2-3.

32. *Id.* at 3.

33. See *id.* at 5-6; Andrew Gumbel & Rupert Cornwell, *The Toxic Timebomb*, INDEPENDENT (London), Sept. 7, 2005, at 1.

34. DOUGLAS BRINKLEY, THE GREAT DELUGE 13 (2006).

The potential for catastrophe has long been a given. As one commentator aptly put it, the laws of nature are akin to a physical equation, a complex equation to be sure, but the result it yields is fairly predictable.³⁵ Just plug in the numbers and it is clear where the water will flow. This is not quantum mechanics, requiring a leap of theoretical faith to sustain a prediction of cause and effect. This is plain old-fashioned Newtonian mechanics that well explains the causes and effects underlying physical phenomena visible in our daily lives.

Yet, laws regulating the settlement of the metropolitan area and its modern development have ignored the clear import of the laws of nature in their application to the Gulf Coast, including New Orleans. They have exacerbated, rather than embraced, any serious effort to minimize that catastrophic potential.³⁶ The ability of the natural ecosystem to serve as a buffer or shield to reduce the hazards has been inexorably undermined rather than preserved, let alone reinforced.

Historically, the Mississippi River delivered as much as 400 million tons of sediment to the Mississippi Delta, sediment that naturally slowed the encroachment of the ocean on the coast.³⁷ This sediment creates new land as it is deposited onto Louisiana's coast.³⁸ Man-made barriers cut off that supply by 70%.³⁹ In its absence, the remaining land mass has literally been sinking.⁴⁰ But that is just the beginning of the ecologically perverse behavior. Thousands of miles of canals and pipelines were constructed, increasing erosion and promoting destructive saltwater intrusion into marshlands.⁴¹ Wetlands

35. Bill McKibben, *Year One of the Next Earth*, in IN KATRINA'S WAKE: PORTRAITS OF LOSS FROM AN UNNATURAL DISASTER 9, 9 (2006).

36. See generally Raymond J. Burby, *Hurricane Katrina and the Paradoxes of Government Disaster Policy: Bringing About Wise Governmental Decisions for Hazardous Areas*, 604 ANNALS AM. ACAD. POL. & SOC. SCI. 171 (2006) (discussing the repercussions of short-sighted governmental disaster policy).

37. See BRINKLEY, *supra* note 34, at 9; Oliver Houck, *Can We Save New Orleans?*, 19 TUL. ENVTL. L.J. 1, 58-59 (2006).

38. See VAN HEERDEN & BRYAN, *supra* note 24, at 160; Erin Ryan, *New Orleans, the Chesapeake, and the Future of Environmental Assessment: Overcoming the Natural Resources Law of Unintended Consequences*, 40 U. RICH. L. REV. 981, 992 (2005).

39. See VAN HEERDEN & BRYAN, *supra* note 24, at 281-82. The Flood Control Act of 1928, 33 U.S.C. § 702a-m (2000), authorized numerous flood control projects that have cumulatively resulted in the boxing in of the Mississippi River. Oliver A. Houck, *Land Loss in Coastal Louisiana: Causes, Consequences, and Remedies*, 58 TUL. L. REV. 3, 19 & n.60 (1983). Construction of many of the levees on the river was primarily motivated by commercial, not flood-control, purposes. *Id.* at 19.

40. See Houck, *supra* note 37, at 4.

41. *Id.* at 18; Ryan, *supra* note 38, at 995 & n.70. Development by the oil and gas industry is also cited as a primary cause of wetlands loss. VAN HEERDEN & BRYAN, *supra* note 24, at 164; Houck, *supra* note 37, at 18. Coastal Louisiana has "10 major navigation

behind the levees became prime targets for economic development, rather than for use as natural floodways.⁴²

In southern Louisiana alone, one million acres of wetlands reportedly disappeared between 1930 and 2005, and when Katrina struck, the state's rate of wetland loss had reached the size of a football field every thirty-eight minutes.⁴³ The steady and consistent sinking of the remaining land mass further deepens the potential for flooding and both human and environmental devastation.⁴⁴ With the loss, moreover, of the ability of wetlands and natural floodways to absorb floodwaters, more and more water is being squeezed into less and less space.⁴⁵ Here too, the physical equation generated by the laws of nature and the limits of human engineering makes plain the inevitable result: powerful, concentrated floodwaters capable of breaking down levees.

Not only have the most flood-threatened areas seen development, rather than preservation, but this development has promised to increase dramatically the harm likely to result. Little or no effort has been made to have land uses more compatible or less threatened by the flood potential. Instead, threatened areas have become the sites of chemical and petroleum industries, thereby ensuring that, when flooded, the waters will be contaminated by pollutants.⁴⁶ Other threatened areas have experienced residential development, often as homes for the poor, the elderly, and racial minorities who lack the economic, physical, and political resources necessary for effective evacuation when catastrophe hits.⁴⁷

Here too, Katrina confirms the worst. Areas damaged by the hurricane were 45.8% African American, while undamaged areas were

canals and 14,973 km (9,300 mi) of pipelines . . . servicing approximately 50,000 oil and gas production facilities." NAT'L RESEARCH COUNCIL, DRAWING LOUISIANA'S NEW MAP: ADDRESSING LAND LOSS IN COASTAL LOUISIANA 36 (2006). Oil and gas activities have caused at least 50%, and in some areas up to 90%, of the land loss in Louisiana. Houck, *supra* note 37, at 18.

42. See Burby, *supra* note 36, at 175-76; Houck, *supra* note 37, at 45.

43. See BRINKLEY, *supra* note 34, at 9. Much of this loss directly resulted from human development. The Mississippi River Gulf Outlet (MR-GO), a shipping canal from New Orleans to the Gulf of Mexico, is a prime example. The canal is now three to four times wider than its initial size because of erosion, and this has damaged and ruined contiguous marshlands. VAN HEERDEN & BRYAN, *supra* note 24, at 79.

44. See BRINKLEY, *supra* note 34, at 12-13; Ryan, *supra* note 38, at 994.

45. See Houck, *supra* note 37, at 9-11.

46. See PASTOR ET AL., *supra* note 20, at 29.

47. See THE BROOKINGS INST., NEW ORLEANS AFTER THE STORM: LESSONS FROM THE PAST, A PLAN FOR THE FUTURE 13-14 (2005), available at http://www.brookings.edu/metro/pubs/20051012_NewOrleans.pdf. The federal government has encouraged this development by adopting the National Flood Insurance Act of 1968, 42 U.S.C. §§ 4001-4127 (2000). See Burby, *supra* note 36, at 175. Likewise, federal housing policy has led to concentrated poverty in the most vulnerable areas of New Orleans. THE BROOKINGS INST., *supra*, at 21.

26.4% African American.⁴⁸ The poor were likewise disproportionately affected; 20.9% of households in damaged areas had income below the poverty line, while only 15.3% of households in undamaged areas were below the poverty line.⁴⁹ And, 45.7% of households in damaged areas had residents who were renters, compared to 30.9% in communities that were relatively undamaged.⁵⁰ The effect is magnified within New Orleans, where damaged areas were 75% African American and undamaged areas were 46.2% African American.⁵¹ In the western United States, water is typically said to flow *to* money.⁵² When it comes to flooding in the Gulf Coast and New Orleans, by contrast, water is more accurately described as flowing “*away* from money.”⁵³ African Americans and poor residents tend to live in hydrologically lower areas of New Orleans, while wealthier white residents live in higher elevations that experience less flooding.⁵⁴ Katrina forced the closing of all of the public housing in New Orleans, which is primarily inhabited by minorities and the poor.⁵⁵

Katrina did not spare all people who do not belong to a racial minority or who are not poor. While many of the poorest neighborhoods are among the most threatened by floods, the aesthetic lure of proximity to water in places like suburban New Orleans led to the destruction of some of the most expensive homes.⁵⁶ In the

48. See JOHN R. LOGAN, *THE IMPACT OF KATRINA: RACE AND CLASS IN STORM-DAMAGED NEIGHBORHOODS* 7 (2006), available at <http://www.s4.brown.edu/Katrina/report.pdf>. Aside from Katrina's disparate statistical impact, particularly telling of the racial divide exposed by Katrina, a recent study indicates that Katrina victims' view of hurricane response corresponds strongly to race. Cedric Herring, *Hurricane Katrina and the Racial Gulf*, 3 *DU BOIS REV.* 129, 129-44 (2006). African-American victims (75%) are more likely than white victims (24%) to believe that the government's response to the disaster would have been faster had most victims been white. *Id.* at 136. African-American victims (79%) are also more likely than white victims (48%) to believe that Katrina unearthed existing inequalities. *Id.*

49. See LOGAN, *supra* note 48, at 7.

50. *Id.*

51. *Id.*

52. Jason DeParle, *What Happens to a Race Deferred*, *N.Y. TIMES*, Sept. 4, 2005, § 4, at 1.

53. *Id.* (quoting Craig E. Colten, Louisiana State University geologist (emphasis added)).

54. THE BROOKINGS INST., *supra* note 47, at 13.

55. LOGAN, *supra* note 48, at 14-15. Louisiana Congressman Richard Baker was quoted in the *Wall Street Journal* as saying, “We finally cleaned up public housing in New Orleans. We couldn't do it, but God did.” VAN HEERDEN & BRYAN, *supra* note 24, at 131 (quoting John Harwood, *Washington Wire: Louisiana Lawmakers Aim To Cope with Political Fallout*, *WALL ST. J.*, Sept. 9, 2005, at A4). Congressman Baker responded to the news article by asserting he was misquoted. *Id.*

56. LOGAN, *supra* note 48, at 8.

suburbs, damaged areas were 9.1% African American and undamaged areas were 25.2% African American.⁵⁷

Race also played less of a role in New Orleans for two additional reasons. Many of the newer developments and, frequently, more expensive developments, were located in lower-lying areas for the simple reason that those were the lands still left for development.⁵⁸ The higher areas were, naturally, the first to be developed. In addition, much of the most severe damage depended on the precise location of the breach of the levees. And the breaches occurred in the weakest part of the levees, often where the levee construction had been the poorest, with no apparent relationship to the socioeconomic character of the bordering neighborhood.⁵⁹ Similarly, in the Biloxi-Gulfport metropolitan region, damaged areas were 14.8% African American and undamaged areas were 20.4% African American.⁶⁰ The trends for poverty rates in damaged and undamaged areas in the suburbs were similar.⁶¹ The percentages differed outside the New Orleans region, in part, apparently because the most desirable and expensive property along the coast is near the coastline, which was most damaged by wind and storm surge.⁶²

Without a doubt, however, the sick and the elderly were among those who suffered the most, simply because of their sheer inability to rescue themselves in anticipation of the storm or in its immediate aftermath. While some dispute exists as to whether Katrina's death toll reveals a racial divide,⁶³ no one disputes that those who lost their lives were disproportionately elderly and poor.⁶⁴ Persons sixty years

57. *Id.* at 7.

58. THE BROOKINGS INST., *supra* note 47, at 10-11.

59. *See* LOGAN, *supra* note 48, at 1, 8.

60. *Id.* at 7.

61. *See id.*

62. *Id.* at 8; *see* DAVID M. BUSH ET AL., LIVING BY THE RULES OF THE SEA 4-5 (1996) (explaining population migration to dangerous coastal locations).

63. *See, e.g.*, Cathy Young, Op-Ed, *Katrina's Racial Paranoia*, BOSTON GLOBE, Jan. 16, 2006, at A13 (arguing that age was a more important factor than race in determining the likelihood of a person to fall victim to Katrina). Given the degree of suffering in the aftermath of Katrina, including in black communities, and the history of racism both in the area in general and related to flooding in particular, *see, for example*, JOHN M. BARRY, RISING TIDE: THE GREAT MISSISSIPPI FLOOD OF 1927 AND HOW IT CHANGED AMERICA 315-17, 328-30 (1997), the author's simple suggestion of "racial paranoia" is, at the very least, misplaced.

64. *See* Tim Wise, Op-Ed, "Erasing" Katrina: *Historical Revisionism and the Denial of the Obvious*, CIV. RTS. COALITION FOR 21ST CENTURY, July 25, 2006, http://www.civilrights.org/press_room/buzz_clips/op-ed-erasing-katrina-historical-revisionism-and-the-denial-of-the-obvious.html.

For a breakdown of storm-related deaths by age and race as of February 23, 2006, *see* LA. DEP'T OF HEALTH & HOSPS., VITAL STATISTICS OF ALL BODIES AT ST.

and older represented approximately 15% of the population of New Orleans, but almost three quarters of those who died.⁶⁵ The vast majority apparently died not during the height of the storm itself, but instead during the flooding and institutional chaos that followed on its heels, in many places literally for days afterwards. They drowned in attics during the flooding, died from illnesses that went untreated, and died sometimes moments before, and even after, rescue efforts finally reached them.⁶⁶

The laws of nature unleashed the hurricane level winds within Katrina, but the disaster did not result from Mother Nature alone. We must examine ourselves and herein lies Katrina's most unsettling aspect of all. As described above, there was nothing unanticipated about the human and environmental catastrophe that resulted from Katrina. Government officials, scientists, and environmentalists have predicted for years just such adverse consequences.⁶⁷ It has always been a question of precisely *when*, and never *whether*, a hurricane would wreak destruction upon New Orleans and the Gulf Coast under existing conditions. The degree of threat caused by wetlands destruction and the pattern of land development was undisputed and thoroughly documented.⁶⁸ No one who had ever conducted more than the most superficial examination of the potential problems thought that the levees could withstand a major hurricane. Katrina's only true surprise was that the levees were even more vulnerable than anticipated and, as a result, broke in the wake of lower winds and waters.⁶⁹

There have been legions of scientific and engineering studies describing the physical parameters of the threats and the weaknesses of existing approaches.⁷⁰ They described in detail and, in retrospect, fairly accurately, the extent and intensity of destruction likely to occur.⁷¹ Nor were any of the results of these studies hidden from public consumption, filed away in some academic's office or government bureaucrat's file; it had been widely disseminated in the

GABRIEL MORGUE (2006), available at http://www.dhh.louisiana.gov/offices/publications/pubs-192/Deceased%20Victims_2-23-2006_information.pdf.

65. See Young, *supra* note 63.

66. See Dewan & Roberts, *supra* note 24.

67. See VAN HEERDEN & BRYAN, *supra* note 24, at 1.

68. See Houck, *supra* note 37, at 9-11.

69. See Michael Grunwald, *Katrina: The Big One or Just a Warning Shot?*, WASH. POST, Mar. 26, 2006, at B1 (“[W]eather data suggest[s] that Katrina’s winds were no stronger than Category 2 when they hit New Orleans, and possibly just Category 1.”).

70. See VAN HEERDEN & BRYAN, *supra* note 24, at 205-09.

71. See *id.*

hallways of lawmakers and in the general news media.⁷² Newspaper and magazine stories in national and regional publications left no doubt about the stakes in terms of human health and welfare and the natural environment.⁷³ Television specials and news radio stories laid out, in detail, the threats that hurricanes posed to the Gulf Coast and New Orleans in particular.⁷⁴

Indeed, even the most cursory review of those scientific and government studies, environmental organization reports, and news media stories is chilling in light of what has happened. In summarizing scientific affidavits filed in support of standing allegations in *Massachusetts v. EPA*, no less than the United States Supreme Court itself characterized as “eerily prescient” the extent to which scientists in 2004 described both the possible impact of climate change on hurricane strength and the special threats posed to New Orleans because of the destruction of wetlands that could have otherwise served as a “shock absorber” for the city’s protection.⁷⁵

Disaster was well forecast with years of warning, yet little was done, in fact, to reduce its potential.⁷⁶ Even worse, public and private conduct not only failed to alleviate the associated risks, but instead increased them.⁷⁷ A disturbing cognitive dissonance, with obvious tragic consequences, persisted between what everyone knew to be the case, how government chose to govern, and how everyone chose to live their lives.⁷⁸

The depth of the breakdown is so deep, pervasive, and longstanding that it is both unfair and ultimately misleading to assign blame to any particular political party or government official. This was not a breakdown prompted by the chaos of the moment. No one

72. *See id.*

73. *See* BRINKLEY, *supra* note 34, at 14.

74. *See* Houck, *supra* note 37, at 2-3.

75. *Massachusetts v. EPA*, No. 05-1120, 2007 WL 957332, at *15 n.18 (April 2, 2007) (quoting the declaration of Michael MacCracken, Former Executive Dir., U.S. Global Change Research Program).

76. History and computer models made clear that the levees protecting New Orleans and surrounding areas would be insufficient to provide protection from a slow-moving major hurricane. *See* VAN HEERDEN & BRYAN, *supra* note 24, at 79.

77. One commentator suggests that the federal and state policies that exacerbated hurricane damage form part of a larger federal policy to make dangerous areas livable by subsidizing development. Burby, *supra* note 36, at 171, 173-78.

78. Cognitive psychology suggests that people are more likely to undervalue nontrivial risk associated with an ongoing, valued activity. *See* Roger G. Noll & James E. Krier, *Some Implications of Cognitive Psychology for Risk Regulation*, in *BEHAVIORAL LAW AND ECONOMICS* 325, 337 (Cass R. Sunstein ed., 2000). This may suggest why many Louisianans (at least political leaders) were content with their way of life, even if it exposed them to potentially catastrophic risks.

government official, nor one political party, is responsible.⁷⁹ The forces that realized their catastrophic potential have long been in the making and clearly discernible.

Nor can one validly separate the failures of the government in addressing the plight of Katrina's victims from the failure of the government to take the actions necessary to reduce the risk of harm from hurricanes in the first instance. The federal, state, and local governments' dismal record in addressing the enormous needs of Katrina's victims immediately after the storm is simply one more expression of the far more malignant problem presented by the failure of the government, and the governed, to pay any meaningful heed to threats posed by hurricanes. In light of the complete absence of any effort to minimize that threat—by instead eliminating wetlands, building canals that promoted further land loss, and locating inappropriate industrial plants and residential developments in flood-prone areas—it can hardly seem surprising that government officials were not ready for the storm when it actually hit. Any government with the capacity to develop a plan for victims would have had the capacity to reduce the threat in the first instance. And, conversely, any government with the incapacity to reduce the threat in the first instance would likewise be expected to lack the capacity to attend to the victims.

No doubt it would be perversely reassuring to conclude that just a few discrete individuals or organizations were the source of government's failing to plan for Katrina and, once it happened, to attend to its victims in an efficient and expeditious manner. The solution would then be easy: just personnel changes would be required, not wholesale rethinking of existing approaches.

The problem, however, is far more endemic and far more intractable than mere personality. Literally generations of federal, state, and local officials, as well as business leaders, have pursued policies seemingly doomed to fail in light of the physical realities of the region.⁸⁰ What Katrina therefore strongly suggests is that, especially in light of modern technological innovation, humankind's physical reach simply exceeds its ready mental grasp or political planning potential.

How else can one explain the nation's lemming-like approach to the kind of environmental catastrophe just witnessed in Katrina, which

79. See generally BRINKLEY, *supra* note 34.

80. The levees-only policy, which supports the systematic closing of the Mississippi River's natural outlets and thereby increases the pressure on the levees, has been the government's dominant policy for decades. See BARRY, *supra* note 63, at 156-60.

is simply the latest iteration of a more-than-century old story of de jure ignorance of the Mississippi Delta's ecology? Just as it was before the Flood of 1927, the information was available concerning the risks presented.⁸¹ There was little mystery about the hydrology of the Mississippi Delta and its surrounding area, including New Orleans. Nor was there any mystery about the implications of that hydrology when combined with the kinds of hurricanes that routinely present themselves in that part of the world. Katrina was not the equivalent of a meteor hitting the earth's surface, an event whose precise location eludes our predictive abilities. This was a hurricane landing precisely where it was expected to land. The precise timing may not be known years in advance, but the odds against its happening at a precise location over a relatively discrete period of time are not great. With existing patterns of land development, New Orleans has long been living on borrowed time. Our own contributions to global warming have apparently shortened that time horizon.

Yet, we did worse than nothing in the face of specific and growing notice and past tragedies. We exacerbated the already-present circumstances by not just ignoring nature's limits, but also by eradicating the protections and opportunities that nature supplied. We have systematically wiped out, rather than bolstered, the area's natural abilities to face down or at least lessen the forces of a storm. Levees are technologically limited in their ability to face a wall of rushing water, which invariably finds a point of vulnerability. Miles of wetlands and coastal marsh, however, can simply absorb the impact.⁸² We nonetheless took a house of bricks supplied by nature and replaced it with a house of straw built by humankind. And we placed within that house some of our most vulnerable: the poor, elderly, and politically powerless.

Nor can we lay claim to some overriding essential purpose. No compelling governmental or societal interest justified this conduct. No "Sophie's Choice" required a tragic choice between two competing evils. At its best, the cause was blind indifference prompted by a desire to better our lives in the short term. Or at its worst, the driving force was a knowing and reckless disregard of the risks to others, a willingness to plunder the lives of fellow citizens, and the aspirations of future generations, other species, and the natural environment, all

81. *See id.*

82. *See* LA. COASTAL WETLANDS CONSERVATION & RESTORATION TASK FORCE & WETLANDS CONSERVATION & RESTORATION AUTH., COAST 2050: TOWARD A SUSTAINABLE COASTAL LOUISIANA 55-56 (1998), available at http://www.lca.gov/net_prod_download/public/lca_net_pub_products/doc/2050report.pdf.

motivated by a simple desire to maximize economic profits in the short term.

Nor was government a mere passive observer. The current absence of meaningful effort to address the threat of global climate change can be characterized fairly as inaction, even as it becomes increasingly clear how misguided such inaction is. But, with regard to the threats presented in the Delta, government was instead, for the most part, a willing participant and promoter. Largely at the direct and indirect behest of powerful economic interests, the government itself planned and constructed the levees and canals that destroyed the then-existing ecosystem's ability to reduce the hazards created by storms and created a dangerous illusion of protection.⁸³ The government permitted the filling-in of wetlands to allow for development where nature supplied wetlands and coastal marshes: for-profit construction of industry, shopping centers, and residential housing.⁸⁴

Whether dubbed conscious, outrageous conduct or blind, subconscious indifference, human nature proved itself incapable of an effective response. Responding to threats like Katrina (or global climate change) requires short-term sacrifice for the possibility of long-term gain or lack of injury.⁸⁵ Once humankind is capable, as it now is, of possessing the technological ability to transform existing ecosystems, it needs also to possess the wisdom and judgment to stay its hand, notwithstanding the enormous economic pressures that favor the former over the latter. The here and now must take what appears to be an immediate economic hit, in other words, for the benefit of the there and then.

Katrina is strong testimony, however, that one cannot blithely rely on human nature to do this. The laws of nature, in short, may make clear that such short-term action is required in order to redress long-term catastrophic consequences that will otherwise occur, but human nature will undercut rather than promote that necessary action. Nature works within one time and spatial framework, while human nature works within an entirely different, far less reaching one.

Human beings naturally discount the temporally and physically distant because of the apparent lack of direct relevancy to their own lives.⁸⁶ With regard to time, cognitive psychology describes this

83. See Houck, *supra* note 37, at 12-17.

84. See *id.* at 14-17.

85. See *id.* at 28.

86. See RICHARD A. POSNER, CATASTROPHE: RISK AND RESPONSE 118-19 (2004). Behavioral research is not a new phenomenon, but it was, until recently, largely ignored by the legal community. See Donald C. Langevoort, *Behavioral Theories of Judgment and*

phenomenon as an “intertemporal” or “presentist” bias that prompts a tendency to discount future risks and rewards more heavily than is rationally warranted.⁸⁷ Accordingly, people disproportionately favor present consumption over deferred gratification.⁸⁸ Cognitive studies of human psychology suggest that humans similarly exhibit a discounting bias against consequences that are more physically distant.⁸⁹ Neurological studies even suggest that physical remoteness influences the way we think, and therefore the moral intuitions we develop, concerning the duty to rescue.⁹⁰ The resulting differences in moral intuition can explain in part why people will commit enormous personal resources to save a drowning child that is a complete stranger or even a sympathetic animal nearby, but not commit a fraction of those resources to save literally thousands of children in a seemingly far away land.⁹¹

Cognitive psychology traces these tendencies, or biases, to the notion that the human brain necessarily has a limited capacity to process information.⁹² The brain responds by designing certain mental shortcuts (heuristics) that allow for quick processing of information and decisions.⁹³ The brain also develops its own organizing principles (schema) for distinguishing between information that is more, rather than less, relevant.⁹⁴ While such shortcuts and principles allow people to sort through massive amounts of information quickly and make equally quick decisions, cognitive psychologists also contend that they can promote systematic errors by skewing judgment unduly in favor of some outcomes at the expense of other, arguably more rational, outcomes.⁹⁵

Decision Making in Legal Scholarship: A Literature Review, 51 VAND. L. REV. 1499, 1506-07 (1998).

87. See Langevoort, *supra* note 86, at 1505.

88. See *id.*

89. See J.D. Trout, *Paternalism and Cognitive Bias*, 24 LAW & PHIL. 393, 393-95 (2005).

90. See Joshua Greene, *The Secret Joke of Kant's Soul*, in 3 MORAL PSYCHOLOGY: THE NEUROSCIENCE OF MORALITY: EMOTION, BRAIN DISORDERS, AND DEVELOPMENT 16-17 (Walter Sinnott-Armstrong ed., forthcoming Jan. 2008).

91. See *id.*

92. See Jeffrey J. Rachlinski & Cynthia R. Farina, *Cognitive Psychology and Optimal Government Design*, 87 CORNELL L. REV. 549, 555 (2002).

93. See *id.*; Noll & Krier, *supra* note 78, at 327. One particularly relevant heuristic is the “availability heuristic,” which posits that humans take risks more seriously if the risks are “available”—that is, if the risks are familiar, vivid, and recent. Cass R. Sunstein, *Precautions Against What? The Availability Heuristic and Cross-Cultural Risk Perception*, 57 ALA. L. REV. 75, 87-88 (2005).

94. See Rachlinski & Farina, *supra* note 92, at 555-56.

95. See *id.* at 556-58.

Four decades ago, the celebrated economist Kenneth Boulding worried about the implications of such human tendencies for environmental protection, if not planetary survival. In his 1966 essay, *The Economics of the Coming Spaceship Earth*, Boulding posited that humankind was “very far from having made the moral, political, and psychological adjustments which are implied in [a] transition from [conceiving of the earth’s ecosystem as an] illimitable plane to the closed sphere.”⁹⁶ As Boulding presciently explained, “‘*Après nous, le déluge*’ has been the motto of not insignificant numbers of human societies” and “so let us eat, drink, spend, extract and pollute, and be as merry as we can” and let “the problems of the future . . . be left to the future.”⁹⁷ After all, “[w]hat has posterity ever done for me?”⁹⁸

Before Katrina, what needed to be done and just as importantly, what needed *not* to be done, stared us in the face. Yet we did little. After Katrina, incredibly, the same appears likely to occur. No longer does it require any leap of faith to imagine the consequences of failing to address the human and environmental consequences of a hurricane landing in the Gulf Coast. We have already seen it, and, as shattering as it seemed, neither the storm nor the flooding was as destructive as they easily could have been with just a modicum of increased bad luck. Yet, once again, memories are quickly fading and no radical shifts in private or governmental conduct seem likely.⁹⁹ While in the near term, the human outpouring of assistance to the victims of Katrina was certainly welcome and stirring, such short-term concern shows little potential for translation into longer-term, effective, and sustained action.¹⁰⁰

There is instead more reason to assume that past mistakes will now be repeated and the problem will worsen rather than improve with

96. Kenneth E. Boulding, *The Economics of the Coming Spaceship Earth*, in KENNETH E. BOULDING ET AL., ENVIRONMENTAL QUALITY IN A GROWING ECONOMY 3, 4 (Henry Jarrett ed., 1966).

97. *Id.* at 11-12.

98. *Id.* at 11.

99. Because of the “availability heuristic,” humans are more likely to be influenced by events that are fresh in their minds. See Noll & Krier, *supra* note 78, at 338. As time passes, Katrina’s impact on our thought processes will lessen. See *id.* Indeed, in Katrina’s aftermath, the Corps of Engineers in Mississippi is proposing to issue a “regional general permit” for projects that develop up to five acres of wetlands. Public Notice, Mobile Dist. Corps of Eng’rs, Regional General Permit SAM-20 (Oct. 10, 2006) (available at <http://www.sam.usace.army.mil/RD/reg/PN/October/SAM-2006-2181-JWS.pdf>).

100. See Noll & Krier, *supra* note 78, at 338. Research shows that in the aftermath of an earthquake, insurance for earthquakes initially rises but eventually declines as memories of the earthquake fade. Sunstein, *supra* note 93, at 88.

further development in the Gulf Coast.¹⁰¹ Rather than try to reduce the hazards simply by giving nature space, as Oliver Houck has long supported, we seem more likely to rely once again on levees destined to fail.¹⁰² We seem poised, perversely, to demonstrate our human spirit by rebuilding in flooded areas and our resolve by restoring the industrial, commercial, and residential activities ill-suited for those locations. As the war against terror transfigures into the war against Mother Nature and heeding the laws of nature becomes equated with surrender and cowardice, the cycle of destruction and human misery seems destined, no matter how unconscionably, to continue. City and state officials seem ready to succumb to the temptation, just as they did in the early twentieth century before, during, and immediately following the Flood of 1922, to dampen down any awareness of continuing risk and potential for further human tragedy because of the adverse impact of such awareness on the local economy.¹⁰³ They will opt for unconditional promises of safety to lure people and, at least as importantly, monied investors back to the community.¹⁰⁴

Environmental law is typically faulted for overreacting to the catastrophe of the moment. Economists and some legal scholars complain that environmentalists exaggerate the problem of the moment through the “availability” of recent events and by “cascade effects.”¹⁰⁵ The basic claim is that people react to problems based on immediate emotion rather than neutral economic analysis of costs and benefits.¹⁰⁶ They overreact to what just happened, whether it be an oil spill, toxic chemical spill, or the loss of a charismatic species.¹⁰⁷ The public is susceptible to a chemical-of-the-week phenomenon that misdirects societal resources. The public likewise reflexively opposes any activity that might have negative environmental impacts in their “own backyard.”¹⁰⁸ The upshot of such limited temporal and spatial

101. See Houck, *supra* note 37, at 5-8 (describing various special interest projects contained in the “Pelican Bill,” which was proposed, but not passed, in Katrina’s immediate aftermath).

102. See *id.* at 44-54.

103. BARRY, *supra* note 63, at 226-27, 239-40, 341.

104. Peter Whoriskey, *New Orleans Repeats Mistakes as It Rebuilds*, WASH. POST, Jan. 4, 2007, at A1.

105. See Sunstein, *supra* note 93, at 87-88, 94.

106. See POSNER, *supra* note 86, at 121-22; Sunstein, *supra* note 93, at 80-87. This phenomenon also prompts people to believe that a likely, but not recently experienced, event will not occur. See Robert J. Rhee, *Catastrophic Risk and Governance After Hurricane Katrina*, 38 ARIZ. ST. L.J. 581, 588-89 (2006); Noll & Krier, *supra* note 78, at 331.

107. See Cass R. Sunstein, *Cognition and Cost-Benefit Analysis*, 29 J. LEGAL STUD. 1059, 1060-61 (2000).

108. See POSNER, *supra* note 86, at 120.

horizons is excessive environmental protection regulation that imposes unduly burdensome costs on economically valuable activities.

Katrina soberly reminds us, however, that such overreaction is not environmental law's only or most significant problem. Environmental law's greatest challenge may instead be to bridge the significant gap between the laws of nature and human nature that promotes a tendency to *underreact* to consequences that seem temporally and physically distant rather than overreact to those that manifest themselves more immediately.¹⁰⁹ The impact of humankind's limited temporal and spatial horizons cuts both ways. While it may cause an overreaction to what is happening right at the moment in one's own backyard, the converse is also true. It is likely to result in an underreaction when cause and effect are neither temporally nor spatially immediate.¹¹⁰

There is good reason, moreover, to expect that the circumstances that generate the potential for underreaction are those that are increasingly present. As technology expands in scale, cause and effect in nature are invariably spread further out in both time and space. Humankind possesses the capacity to take actions that have adverse environmental consequences hundreds and indeed thousands of miles away. Humankind similarly has the technological capacity to take actions that have environmental consequences hundreds and indeed thousands of years from the present. Entire ecosystems can be destroyed, resources can be entirely exhausted, and species can be rendered extinct. Technology, in effect, allows for an exporting of the consequences of actions from now to distant locations or distant times.

Humankind's role in producing global climate change is the paradigmatic example. Technological developments have advanced to

109. See *id.* at 120-22. Humans are prone to undervalue catastrophic outcomes with nontrivial possibilities, but overvalue catastrophic possibilities with very low probabilities. Noll & Krier, *supra* note 78, at 334.

110. See Noll & Krier, *supra* note 78, at 331; Cass R. Sunstein, *Irreversible and Catastrophic*, 91 CORNELL L. REV. 841, 871 (2006); Jeffrey Kluger, *Why We Worry About the Things We Shouldn't . . . and Ignore the Things We Should*, TIME, Dec. 4, 2006, at 64-67 ("The problem with habituation is that it can also lead us to go to the other extreme, worrying not too much but too little. [September] 11 and Hurricane Katrina brought calls to build impregnable walls against such tragedies ever occurring again. But despite the vows, both New Orleans and the nation's security apparatus remain dangerously leaky."). Professor Cass Sunstein, a major proponent of environmental regulation's tendency to overreact to environmental risks, has recently acknowledged that certain kinds of environmental risks may be susceptible to being underregulated because they are effectively "offscreen." See Sunstein, *supra*, at 871. His mistake in this respect is appreciating only the tendency for that to occur for low-probability catastrophic risks and not the more general problem of such underreaction for physically and temporally distant consequences, even if the probability of their occurrence can no longer be fairly characterized as low probability.

the point where humankind's ability to combust fossil fuels is so great that it results in contributions to the atmosphere of carbon dioxide and other greenhouse gases massive enough to prompt climatic changes on a global scale.¹¹¹ Yet the truly dramatic nature of such a consequence is nonetheless effectively masked by its enormous spatial and temporal dimensions. No one activity at one location seems discretely responsible for particular consequences at another location. And, further muddling the picture, the time scales supplied by nature in the context of global climate change are such that changes in human activity now would apparently have no effect on climate for several decades at the earliest, long after those undertaking those changes had themselves died. The temporal distance undermines any strong sense of personal responsibility. It also invites the assumption that solutions to the problem may be developed long before those predicted consequences are to occur, and, therefore, they may not occur at all. In other words, why act now at great personal sacrifice when it is quite possible that further technological advances in the distant future may render such sacrifices wholly unnecessary? The problem, of course, is that there is no such guarantee, especially because the natural tendency to push the problem off to a future generation makes it that much less likely that the incentives necessary to promote such technology on a timely basis will ever be present.

The Katrina problem is not wholly unrelated to the issue of global climate change. Although hurricanes are themselves a classic "act of God" in legal jargon,¹¹² serious scientific studies now suggest that the degree and frequency of hurricanes in the Gulf of Mexico is linked to global climate change.¹¹³ The higher the temperature near the equator where hurricanes form, the greater the number and severity of the hurricanes spawned.¹¹⁴ And, the higher the temperature of the sea water over which those hurricanes travel, the greater still their severity.¹¹⁵ Hurricanes literally feed off of the energy value contained in heat captured in water.¹¹⁶ Indeed, Katrina's own severity appears to have resulted from such a natural phenomenon, because it picked up force after departing Florida and traveled over warmer water in the

111. See RALPH J. CICERONE, NAT'L COUNCIL FOR SCI. & THE ENV'T, FINDING CLIMATE CHANGE AND BEING USEFUL 14-16 (2006). Historically, through ice ages and warming periods, CO₂ concentrations have ranged from 180 to 280 parts per million; today, this concentration approaches 385 parts per million. *Id.* at 14.

112. BLACK'S LAW DICTIONARY 37 (8th ed. 2004).

113. CICERONE, *supra* note 111, at 11.

114. *Id.*

115. *Id.* at 12.

116. See Houck, *supra* note 37, at 28.

Gulf before striking Louisiana and Alabama. This impact is only increased because climate change will likely cause sea levels to rise—not an appealing phenomenon in a region that is already below sea level.¹¹⁷

Wholly apart from any possible relationship between Katrina and global climate change, the private and public sectors' failure to reduce the threats each presents has similar theoretical origins. While technology of an unprecedented scale has driven the combustion engine underlying global climate change, unprecedented technological developments have similarly allowed humankind to destroy the wetlands and coastal marshes in the Mississippi Delta and beyond. The entire ecosystem has been wholly transformed.¹¹⁸ Massive federal water projects have, in effect, altered the great Mississippi River in substantial respects.¹¹⁹ These projects have even prevented the river from naturally altering its course in a manner that would have returned millions of tons of sediment to the land.¹²⁰ Technology has allowed for the construction of an illusion of an ever higher and stronger wall capable of defeating the laws of nature, thereby inviting even greater disaster when that wall invariably toppled. At the same time, because the precise timing and location of when a hurricane would strike remain necessarily uncertain, human nature tended to discount unduly the possibility.¹²¹ Market prices failed to reflect the scientific realities because human perceptions that form those prices persisted in their narrowly focused misapprehensions. Consequently, market prices unwittingly promoted further and further development, in the short term, of land and water that was, because of the laws of nature, necessary to protect public health and welfare, as well as private property values, over the long term.¹²²

Katrina's overriding lessons for environmental law are accordingly twofold. First, ecological catastrophe and human tragedy can occur when the laws of humankind fictionalize or otherwise ignore the laws of nature. Humankind invariably fails to anticipate adverse environmental consequences that will in fact occur by failing to undertake necessary

117. *Id.* at 26-27.

118. *See* Houck, *supra* note 39, *passim* (explaining how human development of the Mississippi River Valley has transformed the entire ecosystem).

119. *See, e.g., id.* at 16-19.

120. *See* Cornelia Dean, *Time To Move the Mississippi, Experts Say*, N.Y. TIMES, Sept. 19, 2006, at F1.

121. *See supra* note 99 and accompanying text.

122. In addition to the psychological impacts of discounting, policy makers failed to consider the ecological and flood protection benefits arising from wetlands protection expenditures. *See* Ryan, *supra* note 38, at 999-1000.

preventive actions and unwittingly promoting others with actions that affirmatively trigger or exacerbate such harmful consequences. Second, human nature promotes such a result when larger scales of technology allow for the greater export of the consequences of actions today to increasingly distant locations and times. Whether the product of culture or biology, humankind tends to maximize welfare in the more immediate space and the shorter term. Long-term planning beyond the lifespan of those currently living, including even their immediate existing or potential offspring, does not seem to come naturally. People discount future consequences heavily, no doubt partly because of the enormous uncertainty involved, but perhaps also because of the absence of sufficient cognitive engagement with such consequences. When the consequential reach of any one community is fairly confined in time and space, the impact of such a cognitive shortfall is correspondingly limited. But, as the increasing technological scale dramatically expands those consequences, increasingly catastrophic and tragic impacts result. In Katrina, the consequences were apparent to all, yet perversely destructive actions overwhelmed any meaningful long-term preventive or remedial action. In most respects, the same seems true for global climate change more broadly here in the United States. Herein lies environmental law's greatest challenge after Katrina.

II. HUMAN NATURE AND THE NATURE OF OUR LAWMAKING INSTITUTIONS

Katrina's central lesson is therefore disturbing. The problem is not ignorance of the related science. Nor is it a lack of understanding of the kinds of laws and public investments that are now necessary to reduce future human and ecological devastation like the nation recently witnessed in Katrina's aftermath.¹²³ It would not be difficult to have a blue ribbon committee of scientists from the National Academy of Sciences publish a report that described with a fair amount of consensus what locations should be free of any kind of residential development, what locations should be free of certain types of industrial development that place tons of toxic chemicals in ecologically fragile areas, and what areas should be allowed, in effect, to be recaptured by nature so as to provide natural protection from natural forces that cannot otherwise be wished away. No doubt there could be lots of reasonable disagreements at the margins and considerable debate about the precise size and recipients of transfer

123. See VAN HEERDEN & BRYAN, *supra* note 24, at 284.

payments as needed to compensate those who would suffer economic and personal hardship as the result of a transition to a land-use plan that accounted for, rather than ignored, the laws of nature. But the basic contours of what that plan would have to look like and the enormous efficiencies to be obtained by paying the large short-term redistributive costs now, rather than huge losses that occur when disaster actually strikes, are fairly clear. Indeed, I expect that one could save a lot of time and heartache if we skipped the commission and just asked Professor Oliver Houck to draft a plan now based on the blue ribbon commissions and serious academic studies completed years ago.

What is disturbing is that the problem may well lie in our lawmaking institutions rather than in our laws *per se*. Fixing the problem is not simply a matter of changing existing laws or changing the identity of current lawmakers, whether elected legislators or appointed agency officials. There is a deeper reason why the laws have fictionalized and ignored the laws of nature and why legislators and agency officials, no matter their political stripe, have consistently failed to secure the needed law reform. Katrina suggests to me that the deeper reason lies in the structure of our existing lawmaking institutions, which are inherently biased against producing the kinds of laws or lawmakers needed for the difficult decisions presented.¹²⁴ In other words, existing environmental lawmaking institutions may simply be incapable of establishing the necessary laws, and it is therefore foolish to expect them to do so.

Katrina also casts light on the root cause of the problem. Especially with increasing scales of technology, our lawmaking institutions must be capable of producing environmental laws that overcome the tendency of human nature to discount disproportionately the consequences of human conduct that are distant rather than immediate. When technology was more limited in its reach, the failure to redress that tendency was naturally confined. But this is no longer the case. As recent events with Katrina make starkly clear, and the current debate about global climate change dramatically underscores,

124. Posner suggests that political leaders, lawyers, and others in similar fields are able to understand complex math and science, but suffer from a “mathematics phobia” that directs them away from scientific fields. POSNER, *supra* note 86, at 96-97, 200-08 (explaining that lawyers and judges are unlikely to have science backgrounds and this phenomenon limits legal professionals’ ability to understand catastrophic risks). The result is that policy makers are unable to take full advantage of the information and opportunities that modern science provides. *See id.* at 96-97.

the stakes are huge and the price of failing to undertake the necessary changes may well be catastrophic.

Based on the Katrina experience, however, existing lawmaking institutions seem more likely to succumb to such human tendencies rather than to overcome them. At best, elected officials respond to the demands of the voters whose own focus is on the near rather than the far.¹²⁵ Voters notoriously respond to the moment—what are you doing for me now—and generally display a lack of interest in significant short-term economic sacrifice for the benefit of other persons (and environmental interests) in distant places and times.¹²⁶ As long as elected officials are primarily interested in reelection and are subject to those voter preferences in relatively short-term election cycles, there is little reason to suppose that the elected officials will rise above and vote against their own reelection interests.¹²⁷ Legislators are also subject to the same heuristics and cognitive distortions as the general public.¹²⁸ And, certainly here too, Katrina does not suggest otherwise.

Nor does the political equation become any more favorable if one considers the likelihood that elected officials may respond more immediately to the views of those who contribute significant sums to their campaigns than the views of voters in the abstract.¹²⁹ Quite the opposite occurs. Those who contribute such significant sums are presumably no less interested in a short-term return on their

125. See Richard J. Lazarus, *Congressional Descent: The Demise of Deliberative Democracy in Environmental Law*, 94 GEO. L.J. 619, 680 (2006) (explaining that lawmakers are averse to environmental protection because they easily succumb to short-term pressures from constituents).

126. *Id.* Voters are also generally disposed against environmental laws that decrease current well-being in order to sustain gains in the future. Noll & Krier, *supra* note 78, at 342.

127. See POSNER, *supra* note 86, at 118-19; Richard A. Posner, *Efficient Responses to Catastrophic Risk*, 6 CHI. J. INT'L L. 511, 514 (2006). Some commentators have pointed out that voters' desires on a certain policy may change over time (because of temporal biases) even if the objective circumstances surrounding the policy do not change. Noll & Krier, *supra* note 78, at 336. In this case, an elected official will face intertemporal inconsistencies in voters' preferences and will have to choose whether to disappoint citizens in the short or long term. *Id.* As Posner points out, the relatively short terms of elected officials—especially in relation to the long-term risks society faces—provokes legislators to satisfy their constituents' short-term preferences. See POSNER, *supra* note 86, at 118.

128. Rachlinski & Farina, *supra* note 92, at 572. Congress has attempted to counter these tendencies by developing an extensive committee process to better inform members. *Id.* at 574-75.

129. See Lazarus, *supra* note 125, at 664. Natural disaster policy makers should not be blind to concerns of equity. Because of the declining marginal utility of goods, a policy that was geared towards protecting the poorest may also be utility maximizing. Matthew D. Adler, *Equity Analysis and Natural Hazards Policy*, in ON RISK AND DISASTER: LESSONS FROM HURRICANE KATRINA 129, 132 (Ronald J. Daniels et al. eds., 2006). General considerations of fairness also suggest a focus on equity. *Id.* at 134. Policies that promote equity over efficiency are, however, not likely to be politically popular.

investment.¹³⁰ The vast majority of contributions are based on what they perceive the candidate can do for them in the short, not long, term if elected. Here again, certainly the short-term election cycles promote that perspective.

It would also seem fair to speculate that those who have large sums of money to give are disproportionately those who are interested in shorter-term profit maximization. Business and commercial interests are not ignorant of the longer term, but various pressures, including employee and corporate officer interest in higher salaries now, consumer preference for lower prices now, and shareholder interests in higher stock values now, all contribute to an emphasis on the shorter term and on economic return.¹³¹ To be sure, there are wealthy campaign contributors who—once they have made especially enormous sums in the short term and therefore have much more money than they could ever expend on themselves and their families—possess different, longer-term, more aspirational goals that are not so profit driven. But there is little basis for supposing that they define the vast majority of the largest contributors, and, in any event, the process of creating such contributors—initial massive short-term profit maximization—inherently undercuts their relative subsequent impact on the political process.

Of course, at least in theory, unelected executive branch officials are not as exposed or responsive to short-term economic pressures as are elected representatives of the legislative branch. But neither has their work proved immune. As testified to by the history leading up to Katrina, executive branch officials, whether federal, state, or local in character, have their own channels of political accountability. Their offices are typically led by politically appointed officials who are ultimately responsive to the same kinds of shorter-term political pressures applied to the legislative branch. And, the legislative branch itself exerts great control over the executive branch both by passing the laws the latter must implement and, less directly but no less

130. Louisiana industry successfully lobbied Louisiana politicians to view development from a short-term perspective. See BRINKLEY, *supra* note 34, at 11. The principal beneficiaries of environmental protection are often future generations, who necessarily cannot contribute, and proponents of diffuse interests, which encounter collective action problems when trying to advocate for environmental protection. Lazarus, *supra* note 125, at 664.

131. For a discussion of the involvement of monied interests in Louisiana's development, see Houck, *supra* note 37, at 16.

significantly, controlling the budget.¹³² In recent years, within the federal government, budgetary controls over the executive branch have dramatically proliferated as individual members of the federal legislature have increasingly micromanaged executive branch activity to further narrow, short-term interests of their constituents.¹³³

With regard to Katrina, enormous political pressure was brought to bear on the many federal, state, and local legislative and executive branch officials who possessed decision-making authority over development patterns in the New Orleans area. It was not the absence of knowledge, but the absence of the necessary political constituency, that prompted this decision making. There was apparently no politically powerful constituency ready to support legislators and agency officials who (1) opposed further residential and industrial development in wetlands capable of providing natural flood protection, (2) opposed environmentally destructive infrastructure subsidies to existing industry, and (3) favored raising taxes as necessary to implement a more sensible reconciliation of human aspirations for settlement and the physical realities of the surrounding ecosystem.¹³⁴ That is why federal, state, and local legislative and agency officials not only failed to promote a pattern of development in the area consistent with the laws of nature, but instead promoted one that perversely made the threats posed there even greater.¹³⁵

132. See Rachlinski & Farina, *supra* note 92, at 569 (discussing a public-choice analysis of agency interaction with Congress). Congress increasingly resorts to legislating through appropriating. See Lazarus, *supra* note 125, at 638.

133. See *id.* at 640-47.

134. See Houck, *supra* note 37, at 14-16. MR-GO is also a good example of this phenomenon. See discussion *supra* note 43. In the 1950s, the Corps of Engineers initially opposed the canal because cost-benefit analysis could not possibly justify its construction. VAN HEERDEN & BRYAN, *supra* note 24, at 79. Congress simply told the Corps to run the numbers again. *Id.* Today, the Canal is used by less than one ship per day and costs seven to eight million dollars per year to maintain. MEMBER SCHOLARS FOR THE CTR. FOR PROGRESSIVE REFORM, *supra* note 24, at 14. This amounts to a subsidy of \$10,000 for every ship that uses the canal. *Id.* Despite knowledge that the Canal, which has been referred to as a “shotgun” pointed at the head of New Orleans for its ability to funnel a storm surge from the Gulf to New Orleans, would channel water to the city, despite public support for its closure, the MR-GO remained open. *Id.* at 14. A researcher from the LSU Hurricane Center, G. Paul Kemp, called MR-GO the “initial cause of the disaster.” See Michael Grunwald, *Canal May Have Worsened City’s Flooding*, WASH. POST, Sept. 14, 2005, at A21. In accord with the “availability heuristic,” one analyst suggested that New Orleanians had more sensational problems, such as poverty, which made wetlands restoration an inferior concern. BRINKLEY, *supra* note 34, at 16.

135. It is particularly striking that, even when the federal government sought to enact modest development restrictions or increase hurricane protection that would require state and local spending, local government opposed the efforts because of potential political or monetary cost. Burby, *supra* note 36, at 178-79.

While the proposition that lawmaking institutions themselves may require reform in order to overcome tendencies of human nature might strike some as extremely radical and profoundly undemocratic, the possibility of such reform is entirely in keeping with our nation's existing and traditional notions of a democratic government.¹³⁶ Indeed, the existing structure of our government is riddled with efforts to anticipate the dangers of unchecked democracy because of concerns about human nature and its potential interference with our nation's aspirations for a just society, including our responsibilities to future generations. James Madison "expressly embraced the notion that what would separate his constitution from those that had gone before it would be a more realistic [i.e., cynical] conception of human nature."¹³⁷ As further observed by the political scientist Martin Diamond in commenting on the version of political science embraced by the Framers of the United States 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*."¹³⁸

The Framers in the late eighteenth century faced a lawmaking challenge of enormous dimensions: "[T]o solve what was an apparently insoluble political problem."¹³⁹ How can one construct a framework for government and lawmaking capable of realizing both the nation's long-term aspirations for true greatness while addressing the near- and short-term demands of those whose efforts had been indispensable in the American Revolution? Their work product, in the form of the Constitution, "purported to create a consolidated federal government with powers sufficient to coerce obedience to national laws . . . while remaining true to the republican principles of 1776."¹⁴⁰ What made this seemingly such an impossible tightrope to walk was that those same republican principles, especially in the aftermath of the American Revolution, naturally rebelled against the sheer notion of

136. See Rachlinski & Farina, *supra* note 92, at 570 (explaining how lawmakers have moved power to politically autonomous units to escape electoral and budgetary pressures).

137. Jonathan R. Macey, *Competing Economic Views of the Constitution*, 56 GEO. WASH. L. REV. 50, 55 (1987).

138. 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)).

139. JOSEPH J. ELLIS, *FOUNDING BROTHERS: THE REVOLUTIONARY GENERATION* 9 (2000).

140. *Id.*

coercive national power by leaders far removed from those they purported to rule.¹⁴¹

The federal system, and parallel state systems, deliberately make lawmaking difficult for that very reason: to guard against the potential for overreaction to more immediate impulses of the moment.¹⁴² Thus, the legislative branch is comprised of two, rather than one, chambers to reduce the potential for impulsive lawmaking.¹⁴³ That is also why representatives within each are elected for different terms and from differing jurisdictional boundaries.¹⁴⁴ As a further guard, the President is entitled to veto legislation, which only a supermajority of legislators in both chambers can overcome.¹⁴⁵ 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.¹⁴⁶ 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,¹⁴⁷ to silence unpopular speech,¹⁴⁸ to disrespect minority religions,¹⁴⁹ to impose cruel and unusual punishment against the despised,¹⁵⁰ and to diminish private property rights of the few in order to promote the interests of the many.¹⁵¹

Early Supreme Court precedent drew just this connection between the Constitution and the tendency of human nature to make poor short-term decisions. In *Fletcher v. Peck*, Chief Justice John Marshall writing for the Court in 1810 emphasized “that the framers of the constitution viewed, with some apprehension, the violent acts which might grow out of the feelings of the moment.”¹⁵² According to the Court, “the people of the United States, in adopting that instrument, have manifested a determination to shield themselves and

141. *Id.*

142. See THE FEDERALIST Nos. 15 (Alexander Hamilton), 10, 51 (James Madison); Macey, *supra* note 138, at 296-98. These protections can be seen as counteracting heuristics and other cognitive biases. William N. Eskridge, Jr. & John Ferejohn, *Structuring Lawmaking To Reduce Cognitive Bias: A Critical View*, 87 CORNELL L. REV. 616, 638-39 (2002).

143. U.S. CONST. art. I, § 1; Macey, *supra* note 138, at 298.

144. U.S. CONST. art. I, §§ 2-3.

145. *Id.* art. I, § 7.

146. *Id.* amend. XXII, § 1.

147. *Id.* amends. V-VI.

148. *Id.* amend. I.

149. *Id.*

150. *Id.* amend. VIII.

151. *Id.* amend. V.

152. 10 U.S. (6 Cranch) 87, 137-38 (1810).

their property from the effects of those sudden and strong passions to which men are exposed.”¹⁵³

For analogous reasons, Congress has sometimes sought to limit its own lawmaking authority to guard against majoritarian and narrow-minded impulses to 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.¹⁵⁴ In that manner, Congress can decide ahead of time to prevent the introduction of amendments, including those that members anticipate would be approved were there 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 the former are elected for extremely short terms and from much smaller districts.

Congress has also passed formal legislation designed to circumscribe its lawmaking authority in the future. For instance, Congress passed the Congressional Budget and Impoundment Control Act of 1974 for the express purpose of changing internal congressional lawmaking procedures to enhance legislative prospects for limiting deficit spending.¹⁵⁵ This represents a Congressional response to the natural tendency of individual members of Congress to vote for additional federal expenditures in support of their own pet projects without any concern for the longer-term impacts of the federal deficit on future generations.¹⁵⁶ The 1974 Budget Act was designed to address this tendency by reducing the discretionary authority of individual appropriations committees and the Congress overall.¹⁵⁷ The Act established procedures for imposing budgetary caps applicable to each appropriation subcommittee through passage of budget resolutions.¹⁵⁸ These resolutions, while not themselves law, are procedural prerequisites to the passage of appropriations legislation and are binding within Congress itself.¹⁵⁹ They are designed to make it more difficult for legislators to be influenced unduly by short-term

153. *Id.* at 138.

154. *See* WM. HOLMES BROWN & CHARLES W. JOHNSON, HOUSE PRACTICE: A GUIDE TO THE RULES, PRECEDENTS, AND PROCEDURES OF THE HOUSE § 2, at 19 (2003).

155. Congressional Budget and Impoundment Control Act of 1974, Pub. L. No. 93-344, 88 Stat. 297; Lazarus, *supra* note 125, at 666.

156. Lazarus, *supra* note 125, at 666.

157. *Id.*; Congressional Budget and Impoundment Control Act § 2, 88 Stat. at 288.

158. *See* Congressional Budget and Impoundment Control Act § 403, 88 Stat. at 320; Lazarus, *supra* note 125, at 666.

159. *See* Lazarus, *supra* note 125, at 667.

incentives to maximize current economic returns at the expense of longer-term societal goals.¹⁶⁰

Another recent example is the Defense Base Closure and Realignment Act of 1990.¹⁶¹ 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."¹⁶² 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 decision-making process.¹⁶³ The adverse economic consequences to geographic areas where a military base warranted closure were so seemingly harsh and focused that the political processes precluded lawmakers from making necessary decisions.¹⁶⁴ The resulting patchwork of military bases around the nation both wasted limited federal dollars and undermined effective and efficient military operations.¹⁶⁵ Only by creating an artificially rigid and encumbered decision-making process that allowed broader spatial and temporal considerations (related to both budget and defense) to dominate could a more rational decision be made.¹⁶⁶

More specifically, the Act establishes a commission charged with making recommendations regarding the identity of military bases that should be closed or realigned.¹⁶⁷ The Act next creates a carefully calibrated procedure, including initial recommendations to the commission from the Secretary of Defense,¹⁶⁸ commission recommendations for presidential review,¹⁶⁹ and the President's approval in whole or in part of the commission recommendations,¹⁷⁰ the possibility of revised commission recommendations upon presidential disapproval,¹⁷¹ and finally, allowance of congressional disapproval by joint resolution of both chambers.¹⁷² The Act, however, specifically imposes significant limitations on the timing of such

160. *See id.* at 667-68.

161. Defense Base Closure and Realignment Act of 1990, Pub. L. No. 101-510, div. B, tit. XXIX, pt. A, § 2901, 104 Stat. 1808, 1808.

162. *Id.*

163. *See* Kenneth R. Mayer, *Closing Military Bases (Finally): Solving Collective Dilemmas Through Delegation*, 20 LEGIS. STUD. Q. 393, 396 (1995).

164. *See id.*

165. *See id.*

166. *See id.* at 396-98.

167. Defense Base Closure and Realignment Act § 2902(a).

168. *Id.* § 2903(c).

169. *Id.* § 2903(d).

170. *Id.* § 2903(e).

171. *Id.* § 2903(e)(3).

172. *Id.* § 2904(b).

congressional consideration, which limits the ability of individual members to hold lengthy hearings and debates and to introduce amendments.¹⁷³ The legislation provides which congressional committees have initial jurisdiction,¹⁷⁴ how much time they have to consider the recommendations,¹⁷⁵ when consideration on each chamber's floor is in order,¹⁷⁶ how much time (two hours) is allotted for floor debate, and that amendments are barred.¹⁷⁷ The joint resolution is a straight up-or-down vote on the commission recommendations as a whole.¹⁷⁸ While the Act necessarily does not bar Congress from changing those ultimately self-imposed limitations, it makes it deliberately harder for Congress to do so.¹⁷⁹ It is a restraint that Congress plainly welcomes because it deliberately limits their own perceived accountability for decisions that are greatly unpopular in the short term.¹⁸⁰

The proposition that our lawmaking institutions may require significant reform in light of our now enhanced understanding of the interactions of human nature with modern technology is simply a more recent iteration of this same theme. Just as the Framers fashioned our nation's constitutional framework based on their perceptions of the possible adverse consequences of the tendencies of human nature and the corresponding need of government to overcome such tendencies, so too can reform of our modern administrative state be justified.¹⁸¹ To the extent that we now have reason to appreciate better the challenges presented by the mismatch between the spatial and temporal reach of modern technology and the tendency of human nature to underestimate the related consequences, we may need lawmaking institutions deliberately designed to fill that gap. And, just as recognized by laws ranging from the Constitution itself to the Defense Base Closure and Realignment Act, the necessary lawmaking institutions may sometimes require some immunization from the inevitable political pressures created by more short-term and narrow interests.

Indeed, Louisiana has already begun to take formal steps to accomplish this kind of reform. Governor Kathleen Babineaux Blanco created, by Executive Order, the Louisiana Recovery Authority (LRA) to plan for the recovery and rebuilding of Louisiana, and the Louisiana

173. *Id.* §§ 2903(b), 2908.

174. *Id.* § 2908(b).

175. *Id.* § 2908(c).

176. *Id.* § 2908(d)(1).

177. *Id.* § 2908(d)(2).

178. *Id.* § 2908(d)(3).

179. *See* Mayer, *supra* note 163, at 394-95.

180. *Id.* at 397-98, 405-06.

181. *See supra* notes 143-151 and accompanying text.

Legislature followed up with detailed authorizing legislation.¹⁸² By statute, the LRA is charged with working with federal, state, and local agencies to coordinate both short- and long-term planning.¹⁸³ Its members are appointed by the governor, subject to confirmation by the state Senate.¹⁸⁴ They must be representative of the state based on a number of factors.¹⁸⁵ The LRA possesses considerable authority over a host of significant issues, including the disbursement of hundreds of millions of dollars of recovery funds.¹⁸⁶ Its leadership includes highly regarded and accomplished luminaries with Louisiana roots.¹⁸⁷ This approach creates a novel kind of lawmaking body that is removed from some of the normal hurly burly of the political process. The apparent hope is that such an institution might be more effective in addressing the compelling problems faced, including making the necessary sensitive political tradeoffs.

Katrina raises the question whether institutional lawmaking reform of a fundamental nature is generally warranted for the achievement of necessary environmental protection. At the very least, Katrina should require us to seriously consider the possibility. More than sufficient grounds exist for suspecting that something somewhere must be broken when current lawmaking institutions have proven incapable of securing the law reform needed even when, as was true for Katrina, the relevant facts demonstrating the overwhelming need for such reform were so apparent for so long. When, moreover, hurricanes like Katrina are not an isolated once-in-a-lifetime event, but there is instead reason to worry about the beginning of a series of such potential catastrophes in response to humankind's manipulation of the natural environment, the need for such a rethinking is especially compelling.

What precise lawmaking reforms are necessary is beyond the scope of this particular contribution, which seeks merely to initiate rather than conclude what is quickly becoming an overdue conversation. But a few preliminary matters do seem clear. We need more than just a new statute, regulatory program, or plan. The lawmaking institutions themselves, as well as the related process for selecting those with lawmaking authority within those institutions,

182. See LA. REV. STAT. ANN. §§ 36:4(H), 49:220.1-7 (Supp. 2007); La. Exec. Order No. KBB 2005-63 (Oct. 17, 2005).

183. See LA. REV. STAT. ANN. § 49:220.5(A)(1).

184. See § 49:220-4(B).

185. *Id.*

186. *Id.* § 49:220.5.

187. See La. Recovery Auth., Board of Directors, <http://www.lra.louisiana.gov/board.html> (last visited Mar. 11, 2007).

must change. For as long as we have environmental lawmaking institutions, structures, and processes “that fail to acknowledge the threat posed by illusions of judgment, and to employ measures that counteract human cognitive limitations,” the kind of catastrophic human and environmental devastation witnessed in Katrina is destined to recur.¹⁸⁸

To be sure, some of the problems currently suffered by environmental lawmaking are not wholly unique to environmental law. The undermining of important social policies by short-term rent seeking is endemic to our nation’s lawmaking in general. Whether or not one broadly subscribes to the dismal view of politics and lawmaking advanced by public-choice theorists¹⁸⁹ (which I do not), it cannot be gainsaid that our lawmaking institutions are too often influenced and sometimes even dominated by those whose behavior could best be explained in those terms. For this reason, the need for widespread and dramatic campaign finance reform is, without question, a root cause of much of what does not currently work well, and environmental law is, within that broader context, simply yet another manifestation of the problem. So too, current problems with environmental lawmaking can be traced to the broader structural problems created by federal and state legislative processes that allow, or at least fail to discourage, monied interests from securing legislative riders that would never pass muster on their own merits, but sail through once attached to otherwise-compelling legislation.

The demands for better environmental lawmaking, however, cannot patiently wait for those kinds of broader lawmaking reforms to occur. If the challenges to environmental lawmaking highlighted by Katrina prompt the reforming of current lawmaking institutions or the creation of new ones, environmental law can lead by example. Environmental law can demonstrate how innovations in lawmaking institutions and decision-making processes can overcome the tendency of human nature to discount unduly certain kinds of risk, and the related exploitation of that tendency by our current political and lawmaking systems. If those innovations prove successful, they can be adapted, as appropriate, and applied to other areas of lawmaking as well.

188. See Rachlinski & Farina, *supra* note 92, at 571.

189. See, e.g., *id.* at 551; Edward L. Rubin, *Public Choice, Phenomenology, and the Meaning of the Modern State: Keep the Bathwater, but Throw Out That Baby*, 87 CORNELL L. REV. 309, 343 (2002) (arguing that sanctions are necessary to ensure people comply with the requirements of governmental programs).

We now most need not another report by scientific experts on the science of flood control and land use development by the National Academy of Sciences. What instead seems more apt and pressing is a report by the nation's foremost experts on governance and political science under the auspices of the National Academy of Public Administration. We need our best minds to take up the challenge on how best to create a lawmaking process consistent with our democratic traditions and capable of effectively addressing the enormous environmental risks that Katrina reminds us are now increasingly in play.

III. KNOWING THY ENEMY

The political advertisement in the *New York Times* described at the outset purports to identify the "enemy" and then offers a policy prescription for "fighting back": federal government reinsurance to compensate for residential property losses up to \$200 billion for those who suffer damage from hurricanes, tornados, and earthquakes and cannot be fully covered by otherwise-available private or state insurance.¹⁹⁰ But instead of proffering a sound public policy solution, the advertisement unwittingly illustrates the challenges that we now face as a nation.

The advertisement's sponsors tap into human nature's preference to see stark choices between "good" and "evil" and to embrace short-term solutions that offer compensation rather than longer-term change that might entail some self sacrifice.¹⁹¹ Mother Nature accordingly becomes, in practical effect, al-Qaeda: "*An enemy that has no government, no money trail and no qualms about killing women and children.*"¹⁹² The sponsor of the advertisement asserts that Mother Nature "killed" people, "devastated" hundreds of square miles, and "caused over 100 billion dollars worth of destruction."¹⁹³ "Even when her wrath isn't as grand," the advertisement continues, "she is still accountable every year for almost 500 American deaths and 14 billion dollars worth of damage."¹⁹⁴

190. ProtectingAmerica.org, *supra* note 1; see H.R. 4366, 109th Cong. § 2 (2005).

191. "Reinsurance" is, in effect, insurance for insurance companies that allows them to cap their losses and provides an alternative source of funds for losses that exceed certain catastrophic amounts. See BLACK'S LAW DICTIONARY, *supra* note 112, at 1312.

192. ProtectingAmerica.org, *supra* note 1.

193. *Id.*

194. *Id.* This is probably a vast understatement given that Mother Nature might presumably be accused of causing the deaths of all who die of "natural causes," including old age and its many proxies.

To counter this enemy, we must “start[] fighting back.”¹⁹⁵ ProtectingAmerica.org, moreover, becomes equated with providing federally subsidized reinsurance to make it easier to build back in those areas that Katrina destroyed.¹⁹⁶ A failure to provide such a federal subsidy is presumably the policy equivalent of a retreat or even societal cowardice in the face of a brutal, menacing enemy.

Wholly missing, however, is acknowledgment of the reason why the private market or state reinsurance, standing alone, cannot provide the coverage necessary to overcome the disincentives that people would otherwise inevitably have for placing their lives and their livelihoods in the path of future destructive storms. There is an insufficient private market because the true cost of such reinsurance, given the actual risks presented, would be prohibitively high. Nor are the states willing to pick up the tab. Only by masking those actual risks through government subsidies, in the form of a federal reinsurance program, can the irrational and tragic development patterns that existed prior to Katrina perversely recur.

To be sure, there are instances when market failure may warrant a government subsidy that corrects the failure by restoring accurate incentives. With regard to insurance and reinsurance, in particular, private market participants may argue that they are unable to offer insurance for low probability events that, when realized, have huge catastrophic consequences.¹⁹⁷ Their contention is that it takes many years to capture the premiums necessary to create the reserves required for a payout if the catastrophe strikes, yet that event could happen before the necessary reserves are created.¹⁹⁸

No doubt there are many circumstances when a government subsidy is warranted not to further efficiency goals, but because a collective decision of other important societal goals warrants promotion regardless of their apparent short-term inefficiencies. Precisely because those other goals are unrelated to economic efficiency, society cannot rely on free market forces for their accomplishment. Understandably, few short-term, economic-efficiency questions are posed when the nation responds to a threat to its national security or to the plight of victims of a natural disaster.

195. *Id.*

196. See ProtectingAmerica.org, <http://www.protectingamerica.org> (last visited Mar. 11, 2007).

197. See Jeffrey R. Brown et al., *An Empirical Analysis of the Economic Impact of Federal Terrorism Reinsurance*, 51 J. MONETARY ECON. 861, 866-67 (2004).

198. See *id.* at 865-67. Indeed, Katrina was the costliest American catastrophe, with insurance losses estimated at \$34.4 billion. Rhee, *supra* note 106, at 591.

But neither such circumstance is present here. Private market failure in the reinsurance industry is not the primary reason for any possible lack of adequate incentives to rebuild in certain threatened areas in the Gulf Coast. The more likely cause has been the very kind of more perfect information upon which free market forces are supposed to attend. At least in the immediate aftermath of Katrina, before memories began to fade over time and the inevitable disproportionate discounting of risk over time occurs, individuals will properly take into account the risks of development in ecologically fragile areas susceptible to flooding. The illusions of impregnable levees are fresh. So too are the real world repercussions of decades of destroying thousands of acres of wetlands and of constructing barriers that prevent the Mississippi River from depositing millions of tons of sediment each year. The federal reinsurance program is more akin to a subsidy to overcome the economic disincentives naturally created by that information than a boost designed to promote economically efficient decisions. Even though the initial proposal may suggest that insurance premiums must be “sufficient to pay the expected annualized cost” of coverage, it does not require much imagination to speculate how such a program, once in place, will naturally evolve over time.¹⁹⁹ Similar to the history of implementation of federal flood insurance programs, once private economic expectations begin to harden and form political constituencies, the federal reinsurance program will inevitably become riddled with special interest exceptions and fictional regulatory definitions.²⁰⁰ Terms like “sufficient” and “costs” will denote one thing but provide another, allowing the programs to operate as a subsidy in practical effect.

Government-supplied insurance subsidies will result in the amplification, rather than the minimization, of natural catastrophic risk. The promise of government to bail out property owners when a catastrophe occurs effectively encourages development in risky areas.²⁰¹ There are few clear winners. The development is itself likely to lead to increased injury because of the removal of nature’s own protections. The property owners whose lives and livelihoods are destroyed receive compensation, but compensation that is unlikely to compensate them fully for the hardships they suffer, let alone the injuries of those around them who suffer vicariously. And, of course, the taxpayers lose because of the enormous sums that have to be paid

199. See H.R. 4366, 109th Cong. § 7(b)(6)(A)(iii) (2005).

200. See Houck, *supra* note 37, at 22-23; Rhee, *supra* note 106, at 599-600.

201. See Rhee, *supra* note 106, at 598, 602. Because of this government subsidy, property owners have a reduced incentive to take efforts to mitigate risk. *Id.*

out to the victims. Only the insurance companies may come out ahead, still able to make a profit while protected against huge losses by the promise of a federal reinsurance bailout.²⁰²

Nor, notwithstanding the advertisement's not-so-veiled efforts to the contrary, is the supposed call to arms against Mother Nature even a remote cousin to the kind of compelling circumstance present when, as in the aftermath of September 11th, the nation must respond to a terrorist attack by taxpayer-supported governmental action without any assumption that private market forces will somehow forge the necessary response. Yes, in the immediate aftermath of Katrina, the nation should, as it did, spend substantial resources to redress the needs of Katrina's victims. Those types of payments to victims in distress define the kind of society and nation we strive to be. Indeed, the government likely should have spent more than it did in light of its complicity in the construction of levees and the development patterns that increased the resulting damage.

But, government subsidies to redress past mistakes are a far cry from a call for further subsidies that seem destined to repeat those same mistakes and cause further misery and destruction that no kind of compensation can ever make whole. For each kind of subsidy, there may well be a moral imperative. The stark difference is that in the former situation, it supports the subsidy, yet in the latter cases, it may well require the subsidy's rejection.

In a related insurance context, Louisiana officials have recently taken what seems like a bold step in a positive direction. The Governor rejected the kind of approach embraced by the State of Florida, which increased the upper limit of the state's liability under its insurance program and thereby "makes it attractive for people to call their very own dangerous piece of hurricane alley home—much to the delight of developers."²⁰³ The Louisiana Governor's declared approach is to lower insurance rates by seeking to lower the amount of damage caused by hurricanes by imposing more stringent building codes, adopting sounder flood control policies, and providing citizens with tax incentives that promote steps to limit hurricane damage to residences. As was well described by a recent *Washington Post* editorial: "That's the best kind of insurance reform."²⁰⁴

New Orleans and the Gulf Coast have extraordinarily rich environmental and cultural histories. The region is literally the mixing

202. Mowbray, *supra* note 3.

203. Editorial, *Louisiana's Better Bet: Gov. Blanco Is Not Willing To Fool with Mother Nature*, WASH. POST, Mar. 24, 2007, at A16.

204. *Id.*

bowl of the Mississippi River and the Gulf of Mexico, forming an ecologically rich and dynamic combination of land, water, and plant and animal life. Approximately 40% of the country's water, extending to thirty-one states, drains into the Mississippi River, which in turn flows down to the Gulf.²⁰⁵ Driven together by the same forces of nature, the region has witnessed a remarkable blending of cultures producing its own remarkable style. Originally inhabited by Native Americans, the region early on witnessed waves of settlers from France, Spain, Acadia, England, Germany, the West Indies, Africa, Ireland, Italy, Yugoslavia, and Hungary, among other nations.²⁰⁶ New Orleans feels different than the rest of the nation, with its parishes and Napoleonic Code-influenced civil law traditions, which is also why so many people throughout both the United States and the world have such a profound sense of loss at its threatening. The City of New Orleans, extending to its surrounding area, is its own distinct species full of historic and cultural richness, and it would be irreplaceable if it were lost.

Perhaps that same remarkable blending of nature and culture can now, in Katrina's wake, help produce a new way to think about lawmaking, at least for environmental law. After all, innovation in lawmaking is, in many respects, what made this nation great at its founding and what has maintained its greatness ever since. The Framers established a system of government that has proven sustainable over time by embracing a creative combination of democratic and republican theories of government, while accounting for both the possible positive and negative tendencies of human nature. It was an extraordinary innovation that has proven remarkably stable for more than two centuries, partly because its genius included the potential for further innovation over time in light of changing circumstances. What Katrina teaches is that the combination of the laws of nature and human nature may now require just such institutional innovation. Environmental law after Katrina may well require no less than new approaches to making environmental law.

205. BARRY, *supra* note 63, at 21.

206. See Arnold R. Hirsch & Joseph Logsdon, *The People and Culture of New Orleans*, NEW ORLEANS ONLINE.COM, <http://www.neworleansonline.com/neworleans/history/people.html> (last visited Mar. 11, 2007).