

**UNSETTLED: HOW CLIMATE CHANGE CHALLENGES A FOUNDATION OF OUR LEGAL SYSTEM,
AND ADAPTING THE LEGAL STATE**

Victor B. Flatt*

Abstract:

One of the fundamental goals of law is to end disputes. This “push to settlement” is foundational and has historically worked to increase societal efficiency and justice by engendering legitimate expectations among the citizenry. However, the efficient nature of much legal finality, settlement and repose only exists against a background of evolution of the physical environment that is predictable and slow-paced. That background no longer exists. The alteration of the physical world, and thus the background for our societal structure and decisions, is accelerating rapidly due to human caused climate change. This creates a mismatch between the law’s tendency to finality and repose and the now fast changing nature of the real world. This article proposes that law’s repose must be re-examined, and then addressed, if we are to have any hopes of societal efficiency moving forward. In order to do this, however, this article posits that we need to understand the nature of the law’s tendency to finality, settlement, and repose, and preserve this to the extent that it is still necessary and useful, while we undertake actions to re-examine the parts of static law that are most impacted by the changing physical world.

* Tom & Elizabeth Taft Distinguished Professor of Environmental Law and Director of the Center for Climate, Energy, Environment, and Economics (CE3) at the UNC School of Law. I would like to thank Lisa Sun, John Coyle, Maria Savasta-Kennedy, Robin Craig, Alex Camacho, and Rob Glicksman for valuable comments on an earlier draft of this piece, as well as the participants at the Searle Center workshop on climate change adaptation (convened by David Dana) at Northwestern University School of Law who participated when I workshopped this idea, and the Faculty Speaker Workshop Series at the UNC School of Law. Finally, I would like to thank my research assistants, Rex Young and Aaron Jones, for their valuable assistance on this piece.

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*“How does one reconcile the need for a stable legislation that stands ‘in radical contradiction with the pluralism and dynamism of life-as-becoming’”*¹

I. INTRODUCTION –THE PROBLEM OF CERTAINTY IN AN UNCERTAIN WORLD

One of the fundamental goals of law and legal regimes is to provide certainty.² “The norms of the legal system establish authoritatively enforced rights and duties, set the terms of social cooperation, and engender legitimate expectations among citizens.”³ The importance of certainty is reflected in the law’s push for settled rights. Reflecting on Hume and Bentham, Dan Tarlock states that “once a decision is rendered, we expect parties to forever abide by the outcome.”⁴ However, in our current changing climate, the “forever” or even proximate future is no longer predictable, and this requires a rethinking of law’s default to finality and repose. Some “final” legal settlements, whether in litigation or regulation, must be revisited because climate change is altering our background circumstances and will continue to do so in ways that undermine the assumption that led to the evolution of finality or settled rights in the legal system.

While criminal law and most private law (especially regarding private law disputes) still benefit tremendously from the values of finality, this is not true for many forms of private property, especially real estate, water rights, and rights to use public lands. On the public law side, the changing physical background not only affects environmental and natural resources law, but also diverse areas such as immigration law, trade law, banking, and insurances.

¹ MANUEL DRIES, NIETZSCHE ON TIME AND HISTORY 189 (Manuel Dries ed., Walter de Gruyter 2008) (reflecting on Siemens analysis of Nietzsche).

² Gregory C. Keating, *Fidelity to Pre-existing Law and Legitimacy of Legal Decision*, 69 NOTRE DAME L. REV. 1, 4 (1993).

³ *Id.*

⁴ A. Dan Tarlock, *Environmental Law: Ethics or Science*, 7 DUKE ENVTL. L. & POL’Y F. 193, 206 (1996).

The Coastal Zone Management Act (“CZMA”) provides an illustrative example of the issue. Congress passed the CZMA in 1972 to mitigate coastal environmental destruction from human activity.⁵ The coastal states were charged with creating Coastal Zone Management Plans, in which they identify land uses, critical coastal areas, management measures, and other details on how they plan to protect their coastal regions.⁶ The CZMA is administered by the National Oceanic and Atmospheric Administration (“NOAA”), in the Department of Commerce.⁷

Coastal zones in the United States are among the areas most affected by climate change. NOAA has recognized this reality by classifying climate change as affecting sea level rise, intensity of storms, rainfall variability, oceanic acidification, and water temperature.⁸ Congress amended the CZMA in 2012 specifically to require the states to consider the impact of climate change in developing new state coastal zone management plans.⁹ This amendment should have pushed each state to revise its CZM plans to reflect this, but most coastal states have not.¹⁰ This failure arises mainly because the CZMA has no legal mechanism to require a change in the plan once the original plan is accepted by NOAA. There is no right of public participation or petition to NOAA to require that a state’s plan be consistent with the CZMA’s substantive provisions, nor is there legal authority for NOAA to disapprove an already approved plan.¹¹ While

⁵ 16 U.S.C. §§ 1451(b), (d) (2012).

⁶ *Id.* § 1455(b).

⁷ 15 C.F.R. 923.1(a) (2015); 16 U.S.C. §§ 1451-1455 (2012).

⁸ NOAA OFFICE OF OCEAN AND COASTAL RESOURCE MGMT., *ADAPTING TO CLIMATE CHANGE: A PLANNING GUIDE FOR STATE COASTAL MANAGERS* 28 (2010), <http://coastalmanagement.noaa.gov/climate/docs/adaptationguide.pdf>.

⁹ 16 U.S.C. § 1451(i) (2012) (“Because global warming may result in substantial sea level rise with serious adverse effects in the coastal zone, coastal states must anticipate and plan for such an occurrence.”).

¹⁰ See Georgetown Climate Center’s Adaptation Law and Governance List for State and Local coastal planning for climate change, available at

http://www.georgetownclimate.org/search/apachesolr_search?filters=tid%3A12&featured=lg. Of the 34 states and territories that currently have coastal zone management authority, arguably only Maryland, California, Delaware, New York, Rhode Island, Virginia, and Massachusetts have taken action that could be construed as considering the impact of climate change on the coastal plan. For a list of links to all approved coastal zone management programs, are available at <https://coast.noaa.gov/czm/mystate/>.

¹¹ *California Coastal Comm’n v. Mack*, 693 F. Supp. 821, 825 (1988).

regulations exist for “continuing review” of coastal zone plans, these reviews concern whether or not the state has followed its original, existing plan.¹² NOAA may suspend financial assistance if a state fails to follow its approved coastal plan.¹³ However, “NOAA does not have the authority to revisit the approvability of a plan . . . [O]nce NOAA determines that a program satisfies the requirements of the CZMA and grants final approval, it may no longer examine the content of the approved program.”¹⁴ Only the states can re-initiate the process to change a plan.¹⁵

This perverse result, which does not allow the federal government to require states to take climate change, or indeed any new natural physical impacts, into account in a coastal plan, is the direct result of the assumption of a static physical environment at the time the CZMA was created. As explained in *California Coastal Commission v. Mack*, the states must have confidence that “the initial approval” will be sufficient; otherwise the state could not be confident that it could have a “settled” plan.¹⁶

In this essay, I will explore the nature of finality and settled rights in our legal system and how this normative background, properly understood, must be altered to accommodate the massive changes occurring in our world from climate disruption. Part II explores the evolution of law, and its embrace of finality and settled rights. This part also recognizes the existence of legal dynamism in certain areas in law. Part III then takes this current framework and explores why it fails to recognize or accommodate unplanned, rapid change in the physical world. Part IV

¹² 15 C.F.R. § 923.132 (2015).

¹³ 16 U.S.C. § 1458(c)(1) (2012).

¹⁴ *California Coastal*, 693 F. Supp. at 825.

¹⁵ *Id.* (holding that a statutory change in 1986 does allow NOAA to condition state funding on protection of certain coastal resources); *see also* 16 U.S.C. § 1458(c) (2012).

¹⁶ *California Coastal*, 693 F. Supp. at 826.

looks at possible responses, including a review of prior scholarship which has recognized that a changing climate challenges the legal system, but then distinguishes this prior work by noting how its collective reasoning fails to fully address the underlying normative framework of law's push towards finality, and law's ill fit with the new world norm. Part V explains how recognition of these issues is the most important step for change and then explores additional legal tools that might help, ending with a proposed statutory means to address the issue. Part VI concludes.

II. SETTLED LAW BASED ON A STABLE WORLD

The fact that a law designed to deal with the needs of a physical area (the coastal zone), which is most susceptible to climate change impacts, does not have the capacity to alter settled legal rights and responsibilities is not surprising when one recognizes the power of our legal system's push towards settled rights. The legal default to, and preference for, certainty, finality, and settled rights is seen in the basic common laws of torts (laches doctrine),¹⁷ contracts (rules governing when cases can be brought on breach),¹⁸ and property (adverse possession),¹⁹ as well as procedural aspects of the common law system, such as exhaustion.²⁰ Statutorily, we have statutes of limitations and statutes of repose.²¹ This push towards finality and repose has evolved in the common law over centuries and been adopted as a normative underpinning in law generally, including statutory and administrative law.²² Some reasons for legal finality are

¹⁷ John Bourdeau & Rachel M. Kane, 27A AM. JUR. 2D *Equity* § 108 (explaining the foundation of laches).

¹⁸ *Laseter v. Pet Dairy Products Co.*, 246 F.2d 747 (4th Cir. 1957) (failing to find breach of an employment contract for lack of definiteness); *see also* 1 Williston on Contracts § 4:21 (4th ed.).

¹⁹ Jeffrey Evans Stake, *The Uneasy Case for Adverse Possession*, 89 GEO. L.J. 2419, 2441 (2001).

²⁰ BLACK'S LAW DICTIONARY 594-95 (7th ed. 1999).

²¹ Jill E. Evans, *See Repose Run: Setting the Boundaries of Repose in Environmental Trespass and Nuisance Cases*, 38 WM. & MARY ENVTL. L. & POL'Y REV. 119, 132-33 (2013).

²² *U.S. v. Sanchez-Cervantes*, 282 F.3d 664, 667 (2002) (noting that rules against retroactive application of laws serves the interest of finality in law)

obvious: requiring quick settled legal resolution can avoid “staleness” which can help render justice (as seen in the evidentiary rules of hearsay, utterances, etc.), and settled rights and responsibilities have been called critical for a legal system to function efficiently.²³ Statutes of limitation promote justice by preventing revival of claims that have been allowed to “slumber” until evidence has been lost.²⁴ Statutes of Repose go even further, supporting fresh starts as a social goal, by deciding “there should be a specific time beyond which a defendant should no longer be subject to protracted liability.”²⁵

But to fully understand the impact of a mismatch between a system prone to settled answers and a world that is not settled, we need to explore the “why” of finality and settlement more comprehensively. How do the normative reasons for settled outcomes in law relate to the other normative underpinnings of “law”? And most importantly can we preserve the normative functions of settled doctrine in law while creating a way to accommodate the mismatch between this finality and a changed and fast changing world?

A. The Purpose of Laws, Finality and Settlement

The concept of law and the purpose of laws has grown and evolved in complexity from a device to keep the peace in ancient societies to the modern ideas of balancing equity, due process, and economics. The evolution of laws can be viewed as a progression of phases adding, modifying, and evolving the legal systems. These phases add new ideas of the purpose of law and make the legal systems more complex. Harvard Law School Dean and influential legal scholar Roscoe Pound attempted to create a coherent understanding of this evolution in the early

²³ Keating, *supra* note 2, at 4; Evans, *supra* note 9, at 133.

²⁴ *CTS Corp. v. Waldburger*, ___ U.S. ___, 134 S.Ct. 2175, 2183 (quoting *Railroad Telegraphers v. Railway Express Agency, Inc.*, 321 U.S. 342, 348-349, 64 S.Ct. 582, 88 L.Ed. 788 (1944)) (2014).

²⁵ *Id.* (quoting *School Board of Norfolk v. United State Gypsum Co.*, 234 Va. 32, 37, 360 S.E.2d 325, 328 (1987)).

part of the twentieth century. His article addressed the origins of law with emerging doctrines in the American legal system.²⁶ In his explanation of law's evolution, settled doctrine and finality have figured in importance since the beginning of the concept of law.²⁷

The earliest origins of settled doctrine came from the push to settle disputes peacefully, avoiding ongoing bloodshed, which could be a drain to the population as a whole.²⁸ In ancient, stateless societies the mode of redress prior to laws was primarily self-help, meaning if a person had something stolen from her, she could take revenge on the thief or his family.²⁹ This mode of redress often led to ongoing feuds between kindred groups. Thus, primitive laws sought to codify the regulation of self-help and revenge.³⁰ Consequently, law emerged as a tool to “avert private vengeance and prevent private war as an instrument of justice”³¹ and substitute those feuds with a peaceful device for redress. The social interests at the time were the general security of a community, and law contributed to this through peaceful resolutions of disputes.³²

As societies and states grew more complex, the amount of human interactions grew as well as the need for regulation of those actions. The next phase in legal development traces its sources to classical societies of Rome and Greece.³³ Though most disputes were now taken to the state for resolution, the fear of arbitrary decision prompted a rigid system of strict results.³⁴ In a time when disputes could end in the spilling of blood and few records were kept, the formal procedure of these strict laws offered a general notion of security through certainty and

²⁶ Roscoe Pound, *The End of Law as Developed in Legal Rules and Doctrines*, 27 HARV. L. REV. 195 (1914).

²⁷ *Id.* at 203 (in ancient law, “[m]odes of trial are not rational but mechanical, since the end is to reach a peaceable solution, not to determine the truth exactly...”).

²⁸ *Id.* at 198.

²⁹ James Q. Whitman, *At the Origins of Law and the State: Supervision of Violence, Mutilation of Bodies, or Setting of Prices?* 71 CHI.-KENT L. REV. 41, 46 (1995).

³⁰ *Id.*, at 44.

³¹ *See* Pound, *supra* note 26, at 200.

³² *Id.*, at 204.

³³ Roscoe Pound, *Classification of Law*, 37 HARV. L. REV. 933, 951 (1924).

³⁴ Pound, *supra* note 26, at 205.

uniformity in law.³⁵ As stated by Pound, “[t]he chief end which the legal system seeks is certainty.”³⁶ This claim for certainty and formality found root in the formality of procedure and pleading.³⁷ Formal doctrine could remove the unpredictability and arbitrariness of decision outcomes, though the strict adherence to the letter and form of law led to harsh and sometimes unjust outcomes.³⁸

Over time, the need for perceived justice further developed legal doctrines and drove the adoption of natural law theories in both ancient Rome and in English common law through ideas of equity.³⁹ These ideas of natural law also became an influence on the American legal system.⁴⁰ Natural law theories incorporated ideas from Greek philosophers such as Plato and Aristotle.⁴¹ While they did not overturn the idea of settlement, they grounded outcomes and laws in morality and justice.⁴² The purpose of natural law can be seen as supporting the common good of the community and the development of law to reflect recognized moral obligations.⁴³ The aims of natural law were “reduced by Justinian in a famous passage to three maxims: ‘to live honestly, to hurt no one, to give everyone his due.’”⁴⁴

³⁵ *Id.* at 204, 208-209.

³⁶ *Id.* at 204.

³⁷ *Id.* at 205

³⁸ *Id.* (“in Greek law if a plaintiff sued for twenty minae and could prove only eighteen due, the issue being whether twenty were due, a verdict for the defendant was required.”)

³⁹ *Id.* at 213.

⁴⁰ Amir Aaron Kakan, *Evolution of American Law, From its Roman Origin to the Present*, 48-FEB ORANGE COUNTY LAW. 31, 31-35 (2006).

⁴¹ *Id.* at 42; see also John R. Kroger, *The Philosophical Foundations of Roman Law: Aristotle, The Stoics, and Theories of Natural Law*, 2004 WIS. L. REV. 905, 916 (2004).

⁴² Pound, *supra* note 26 at 213.

⁴³ Ricardo Gosalbo-Bono, *The Significance of the Rule of Law and Its Implications for the European Union and the United States*, 72 U. PITT. L. REV. 229, 233 (2010); See also Pound, *supra* note 26, at 220.

⁴⁴ Richard A. Epstein, *From Natural Law to Social Welfare: Theoretical Principles and Practical Applications*, 100 IOWA L. REV. 1743, 1745 (2015)

The importance of these theories were embraced by early Christian philosophers such as St. Thomas Aquinas and other influential advocates of natural law.⁴⁵ Thus, strains of natural law grounded in Christian legal theory have had a strong influence on the development of American law.⁴⁶ While natural law brought the concepts of equity and justice to our concept of the role of law, it did not diminish the need or importance of certainty. “In order to insure equality, the maturity of law again insists strongly upon certainty...”⁴⁷

Modern theories of law such as positivism, realism, and formalism, can be seen as evolutions of, or reactions to, the emergence of natural law. These legal theories promote their own justification for laws. Some were reacting against natural law; for example, positivism purports to separate morals from law.⁴⁸ Further, many of these ideas, such as formalism and realism, developed at odds with one another.⁴⁹

Much of today’s legal preference for settlement can be traced to the importance of predictability in formalism. Predictability in the application and operation of legal doctrine promotes a perception of fairness among the citizenry. “Formalism holds that ‘legal reasoning should [and thus can] determine all specific actions required by the law based only on objective facts, unambiguous rules, and logic.’”⁵⁰ In other words, that judges are, and should be, tightly

⁴⁵ Matthew D. Wright, *The Aim of Law and the Nature of Political Community: an Assessment of Finnis on Aquinas*, 54 AM. J. JURIS. 133, 134 (2009).

⁴⁶ Note, *Natural Law for Today's Lawyer*, 9 STAN. L. REV. 455, 495 (1957) (“Historically, natural law has played an important part in the development of our jurisprudence and of our case law.”).

⁴⁷ Pound, *supra* note 26, at 221.

⁴⁸ Charles L. Barzun, *The Forgotten Foundations of Hart and Sacks*, 99 VA. L. REV. 1, 27-29 (2013) (This is a highly generalized definition of legal positivism; many positivists acknowledge an interconnection between law and ethical considerations. “Since ultimately the purpose of the law is to maximize the satisfactions of valid human wants and to establish and maintain the conditions necessary for community life to perform its role in the complete development of man, that means that courts must look to moral principles in interpreting the law. In short, in determining what the law is, courts must determine what the law ought to be.” *Internal quotations omitted*).

⁴⁹ Brian Leiter, (Reviewing) *Positivism, Formalism, Realism Legal Positivism in American Jurisprudence*. by Anthony Sebok, 99 COLUM. L. REV. 1138, 1168 n.30 (1999).

⁵⁰ *Id.* at 1144 (*citing* Steven J. Burton, *An Introduction to Law and Legal Reasoning* 3 (2d ed. 1995)).

constrained by the objectively determinable meaning of a statute.⁵¹ The formalists believed that law should be unresponsive to factual contexts and circumstances and should be based on principles that were indifferent to the changing needs of society and the social purposes that law may serve.⁵² These principles center on certainty and the protection of the community through the distinction of the rule of law and a rule of arbitrary humanity.⁵³

Legal realism holds an opposing viewpoint concerning the role of law. It posits that judges react primarily to the underlying facts of the case, rather than to applicable legal rules and reasons.⁵⁴ The purpose of law under realism is the realization of articulated social policies, and questions of law “should be resolved with a view to the social consequences that would flow from a particular ruling.”⁵⁵ Though perhaps not as tethered to “certainty” as formalism, the finality and settlement of just outcomes means legal realism also includes the concept of certainty.

Yet despite its push for certainty, law has always accommodated concepts of change, especially change driven by “progress.” In the latter half of the 20th century, Wisconsin Professor Robert Gordon lumped all of the historic episodes of legal change under the term “adaptation” theory, which sought to explain the need for stability and predictability with changing circumstances. He felt it was the examples of legal change that could explain commonalities across many of the different legal theories.⁵⁶

⁵¹ *Id.* at 1144. (*citations omitted*).

⁵² Gerald B. Wetlaufer, *Systems of Belief in Modern American Law: A View from Century's End*, 49 AM. U. L. REV. 1, 12 (1999)

⁵³ Shawn J. Bayern, *Against Certainty*, 41 HOFSTRA L. REV. 53, 84-86 (2012) (*citing* Friedrich Hayek “Nothing distinguishes more clearly conditions in a free country from those in a country under arbitrary government than the observance in the former of the great principles known as the Rule of Law.”; and *citing* Justice Antonin Scalia “Long live formalism. It is what makes a government a government of laws and not of men.”).

⁵⁴ *Id.* at 1148.

⁵⁵ Marcus J. Curtis, *Realism Revisited: Reaffirming the Centrality of the New Deal in Realist Jurisprudence*, 27 YALE J.L. & HUMAN. 157, 164 (2015).

⁵⁶ Robert W. Gordon, *Historicism in Legal Scholarship*, 90 YALE L.J. 1017, 1036 (1981)

“I have given a lot of attention to adaptation theory because under one name or another—expediency, convenience, utility, growth, development, modernization, historical or sociological jurisprudence, the functional approach, social engineering, policy analysis, efficiency, or responsive law— it has been a component of virtually all the major movements of Anglo-American juristic writing, and has been a common element cutting across otherwise violent controversies between schools.”⁵⁷

Based on this perspective of law, Gordon argues the purpose of law is to realize in society certain norms tied to a notion of historical development, either gradually realizing themselves in history or evolving into their current norms from past, inferior ones. In that view constancy and dynamism both support the purpose of law.⁵⁸ He also states that legal science is “related to something more fundamental than mere politics: to principles of fundamental rights as realized ideologically through historical experience and, even more important, to needs spontaneously emerging from social life and to the long-term logic of historical development.”⁵⁹

It is not surprising that climate change has resurrected the term “adaptation” to underscore the need for change to accommodate a different physical world. What can it mean, however, when we apply it to law itself?

B. *Certainty and Dynamism in Law*

While the desire and need for certainty is important to the nature of our law generally, as noted *infra*, this concept of settled decisions supposes that unchanging solutions and settled doctrines are functional underpinnings of legal decision because areas in which the law tends

⁵⁷ *Id.*

⁵⁸ *Id.*

⁵⁹ *Id.* at 1040.

towards repose address problems that are themselves unchanging. Against such unchanging backgrounds, law must respect settled doctrine and legitimate expectations.⁶⁰ For example, a quiet title action assumes that a property line is fixed, and rules governing exposure levels to toxins assume that human response to certain exposures is unchanging (subject to scientific uncertainty).

However, as recognized by Gordon, such repose and settlement in law is not uniform. Law is not always “unchanging” and settled. Certainty is notably absent in legal areas in which underlying change is expected, recognized and accommodated. Since the industrial revolution, dynamism has found a way to trump *stare decisis* when it is necessary in common law tort evolution. Regarding the supposed definitive nature of *per se* negligence when a statute is violated, New York’s highest court noted how newly enacted legislation to accommodate the growing use of motor vehicles would not be construed “to charge negligence as a matter of law for acting as prudence dictates.”⁶¹ The famous case of the *T.J. Hooper* holds that custom should not be controlling in negligence cases when “a whole calling may have unduly lagged in the adoption of new and available devices.”⁶²

Of course contract law has always allowed for consideration of changed circumstance when such is anticipated by the parties, and in certain areas, such as agreements concerning technology, the law recognizes the pace and scope of underlying change and allows for some dynamism in legal governance.⁶³ Private ordering can also allow flexibility and absence of

⁶⁰ This forms the reasoning underlying the majority opinion in the famous *Lucas v South Carolina Coastal Commission*, 505 U.S. 1003 (1992), even though it is arguable that the opinion itself ignored the extent to which actual changes had occurred to the background environment that could have elicited altered legal doctrine.

⁶¹ *Tedla v. Ellman*, 280 N.Y. 124, 128, 19 N.E. 2d 987, 989 (NY 1939)

⁶² *The T.J. Hooper*, 60 F.2d. 737, 740 (2nd Cir. 1932).

⁶³ John F. Coyle & Joseph M. Green, *Contractual Innovation in Venture Capital*, 66 HASTINGS L.J. 133, 160-71(2013) (detailing a variety of convertible notes arising from technological advances).

repose in disparate areas of the law,⁶⁴ which would allow dynamic adjustment to changed circumstances.

The acceleration of the statutory and administrative state can itself be seen as law adjusting itself to changed circumstances. Again, in areas in which change is common and expected, such as from technology or economic policy, our legislatures routinely intervene to alter prior statutes or the common law to address these changes. A recent example is the passage of the Cybersecurity Information Sharing Act of 2015, enacted on December 18, 2015.⁶⁵ The bill was passed in response to concerns about the ability of hackers to engage in cyberattacks, a relatively new national security threat brought on by changes to information technology.⁶⁶ Though the pace of statutory reaction to technological innovations may not be suitably quick for all of us, there *is* legal response to rapid technological change through both common law and statutory change.⁶⁷

The existence of change in this area but not in areas based on the physical world's undergoing of rapid change demonstrates that legal dynamism appears to be associated only with predictable or understood purposeful change.

C. Legal Constancy and Dynamism as both Supporting Efficiency

⁶⁴ See e.g., MARTHA ERTMAN & JOAN C. WILLIAMS, *RETHINKING COMMODIFICATION* (2005) (demonstrating that private ordering has been embraced even by scholars in family law).

⁶⁵ 2015 H.R. 2029 694 (copy on file with the author).

⁶⁶ Frederick Ding, *Senate Passes Cybersecurity Information Sharing Act*, Harvard Journal of Law and Technology Online Digest, available at <http://jolt.law.harvard.edu/digest/legislation/senate-passes-cybersecurity-information-sharing-act>

⁶⁷ Other recent examples include new regulations of drones and state laws regarding gathering information of employee social media accounts. Bart Jansen, "FAA Unveils Drone Rules," *U.S.A. Today*, <http://www.usatoday.com/story/news/2015/02/15/faa-drone-rule/23440469/> (Feb. 16, 2015); National Conference of State Legislatures, *Access to Social Media Usernames and Passwords*, Feb. 2, 2016, at <http://www.ncsl.org/research/telecommunications-and-information-technology/employer-access-to-social-media-passwords-2013.aspx> (Feb. 4, 2016).

Our law has evolved to address changed circumstances from technological and economic advances. While the normative reasons for such apparent flexibility may not be fully articulated, it seems based at root on the understanding that technological and economic advances adopted by society create a changed efficiency equation. Laws and rules that worked with prior technology or economic systems may no longer be efficient or appropriate. As set out in the *T.J. Hooper*, this means that if custom lags what is reasonable as determined by probability of harm, the defendant should not disregard the “coefficient of prudence.”⁶⁸

Modern statutes also reflect the understanding of technological innovation requiring that legal parameters be reset at times. In the environmental law realm, the Clean Air Act (“CAA”) and the Clean Water Act (“CWA”) both require the EPA to revisit what constitutes the “best” pollution control technology at regular intervals.⁶⁹ If “best technology” were static, this requirement would not be necessary.

Our understanding of the interaction between legal standards and technological change in fact goes all the way back to our constitutional protections for inventors. The patent system was designed to create an economic incentive to invent beneficial devices by providing a legal monopoly on its sale for a time, but not to stifle innovation on new ideas completely, by withdrawing the patent protection after this set time.⁷⁰

The evolution of personhood and human rights in law (though occurring more slowly than legal recognition of technological change) can also be understood in terms of economic efficiency:

⁶⁸ T.J. Hooper, *supra* note 62.

⁶⁹ Clean Air Act, 42 U.S.C. § 7411(b)(1)(B); Clean Water Act, 33 U.S.C. § 1314(b).

⁷⁰ Benjamin N. Roin, *The Case for Tailoring Patent Awards Based on Time-to-Market*, 61 UCLA L. REV. 672, 689 (2014).

“Although consistent protections for bodily integrity arose somewhat later [in law] than did widespread conceptions of property, they are similar in that they arose in connection with opportunities for greater wealth production for society as a whole . . .”⁷¹

This link between staticism and efficiency has also been cited in the law and climate change literature. In critiquing the use of conservation easements, Jessica Owley has specifically cited economic efficiency as a reason for revisiting settled legal concepts and ideas in areas affected by climate change.⁷²

III. A RAPIDLY CHANGING PHYSICAL WORLD IS A NEW PHENOMENON; THERE EXISTS NO LEGAL HISTORY OR THEORY TO ACCOMMODATE SUCH CHANGE

Given the fact that certain areas of law do reflect dynamism and changing legal systems, why has such evolution not occurred based on newly accelerated changes being wrought to our physical world? The reason is both philosophical and practical, and both of these must be addressed to accommodate the push away from “settled” legal doctrine.

A. Western Religious and Philosophic Thought Embrace an Unchanging World

Historically, though much of common and statutory law, including environmental law, recognize and acknowledge that technology and scientific innovations should be accommodated in law, unplanned change in the background itself is philosophically suspect to a large cohort of Western society. Part of the reason is that for much of recorded human history, humanity itself

⁷¹ Victor B. Flatt, *This Land is Your Land (Our Right to the Environment)*, 107 W. VA. L. REV. 1, 17 (2004).

⁷² Jessica Owley, *Changing Property in a Changing World: A Call for the End of Perpetual Conservation Easements*, 30 STAN. ENVTL L.J. 121 144-45 (2011).

has assumed an unchanging physical world. In western culture, from the creation of a static earth in Genesis through the settled stories of mythology, the formation of the world was something that had happened, and was not ongoing. And for much of human history, nothing challenged this discourse. It wasn't until the theory of evolution, not fully embraced by science until the late Nineteenth Century, that a background norm of change was even recognized by a small part of Western culture.⁷³

As might be expected, the conflict over the concept of a changing world also has a spiritual component. Even today, many religious persons question the scientific validity of evolution based on the assumption that it is incompatible with the Judeo-Christian teachings of the "creation" and thus the story of God's relationship with humanity.⁷⁴ This is not based just on the creation story, but also on the conception of God's relationship with the world.⁷⁵ The early Christian church decided that the reality of God's covenant and Christ's sacrifice was a singular, unrepeatable event.⁷⁶ According to Catholic Catechism, a central tenet of Christianity is that all of God's mystery had been revealed, and that there will be no new revelations forthcoming.⁷⁷ This religious argument has also been put forth to argue against the existence of harmful climate change at all.⁷⁸

⁷³ H. Wayne House, *Darwinism and the Law: Can Non-naturalistic Scientific Theories Survive Constitutional Challenge?* 13 REGENT U. L. REV. 355, 356 (2000-01).

⁷⁴ Susan Haack, *Cracks in the Wall, A Bulge Under the Carpet: The Singular Story of Religion, Evolution, and the U.S. Constitution*, 57 WAYNE L. REV. 1303, 1325 (2011).

⁷⁵ See e.g. Casey Luskin, *Seal for Darwin's House Consume Them: How Supporters of Evolution Encourage Violation of the Establishment Clause*, 3 LIBERTY U. L. REV. 403,445 (2009)

⁷⁶ Hebrews 10:1-18 (New Revised Standard Bible – Thomas Publishing)

⁷⁷ Catechism of the Catholic Church 66, available at http://www.vatican.va/archive/ccc_css/archive/catechism/p1s1c2a1.htm

⁷⁸ Joe Romm, "Inhofe: 'It is Arrogance of People to Think that We . . . Would be Able to Change' What God is Doing with the Climate," *Climate Progress*, <http://thinkprogress.org/climate/2012/03/12/442584/inhofe-arrogance-people-change-god-climate/> (March 12, 2012).

Our environmental law, resource use, property ownership and policies governing development in the physical world themselves adopt this dominant Western philosophy. The transcendental movement, which underlies modern environmentalism, sought to preserve the static, even from technical innovation, based on solely the spiritual notion that the unaltered natural world was somehow holy.⁷⁹ Writing a century later, Aldo Leopold stated “a thing is right when it tends to preserve the integrity, stability, and beauty of the biotic community.”⁸⁰ Such a world view is deeply embedded in human social thought, and as noted by evolutionary biologists, such core beliefs may not be rational or necessarily responsive to reasoned argument.⁸¹

Thus our entire legislative and regulatory infrastructure concerning the physical world was based not only on the concept that the world’s natural background has a static setting – but that perturbations to this setting are in fact unnatural and should be corrected to such extent as necessary to return to the norm.⁸² The Endangered Species Act takes the pre-modern mix of species and natural ecosystems as the goal for action under that statute.⁸³ The concept of a static physical background state is also present in the Stafford Act,⁸⁴ the Marine Mammal Protection

⁷⁹ Victor B. Flatt, *The Human Environment of the Mind: Correcting NEPA Implementation by Treating Environmental Philosophy and Environmental Risk Allocation as Environmental Values Under NEPA*, 46 HASTINGS L. J. 85, 98 (1994).

⁸⁰ Aldo Leopold, *THE LAND ETHIC IN A SAND COUNTY ALMANAC, WITH ESSAYS ON CONSERVATION FROM ROUND RIVER* 262 (1949).

⁸¹ Shi-Ling Hsu, *The Accidental Postmodernist: A New Era of Skepticism in Environmental Policy*, 39 VERMONT L. REV. 27, 55 (2014).

⁸² J.B. Ruhl & James Salzman, *Gaming the Past: The Theory and Practice of Historic Baselines in the Administrative State*, 64 VAND. L. REV. 1, 14, 21 (2011) (“[H]istoric baselines [are thought to] return things to a prior state of health.”); Todd S. Aagaard, *Environmental Harms, Use Conflicts, and Baselines in Environmental Law*, 60 DUKE L. J. 1505, 1516 (demonstrating that “natural” baselines are prevalent in the discussion of environmental law, even though this creates a normative assumption).

⁸³ Endangered Species Act § 3, 16 U.S.C. § 1532 (2012) (designating a species as endangered when in danger of extinction throughout all or a portion of its *historic* range).

⁸⁴ 42 U.S.C. §§ 5121-5122 (2012) (emphasis added) (declaring a need for *special* measures to protect human health amid major natural disasters disrupting the normal functioning of governments and communities).

Act,⁸⁵ the Wilderness Act,⁸⁶ the Monuments Act,⁸⁷ Native American Grave Protection and Repatriation Act (“NAGPRA”),⁸⁸ and the National Historic Preservation Act (“NHPA”).⁸⁹ Federal courts have declared that NEPA “does not apply to federal action that merely maintains the status quo” or the “routine maintenance of an ongoing pre-NEPA project,”⁹⁰ implicitly endorsing the idea that once something is in place, it does not change.⁹¹ Similarly, common law and prior agreements over water tend to assume a static baseline that is inconsistent with modern reality.⁹² All of these areas involve the physical world as a background, and all assume an unchanging background.

These static legal doctrines are enforced by litigation or regulatory action. For example, in *Norton v. Southern Utah Wilderness Alliance*, the Supreme Court held that NEPA is not triggered by changing circumstances unless yet another federal “action” is to occur.⁹³

B. Until Recently, the Physical Environment has been “Unchanging” Outside of Planned Human Activity

⁸⁵ 16 U.S.C. § 1386 (2012) (emphasis added) (directing the Secretary to conduct species stock assessments based on *current* population trends and to note any decline or departure from the existing stock baseline).

⁸⁶ 16 U.S.C. § 1131 (2012) (emphasis added) (*preserving* federal land retaining its *natural and primeval* conditions).

⁸⁷ 16 U.S.C. § 433(h) (2012) (authorizing the Secretary of the Interior to accept donated land for preservation only when its boundaries are *determined and fixed*).

⁸⁸ 16 U.S.C. § 3002(a)(2)(C) (2012) (establishing an ownership standard favorable to the historical, aboriginal inhabitants of an area).

⁸⁹ 54 U.S.C.S. § 100101 (LexisNexis 2015) (directing the National Park Service to *preserve* areas recognized for “superb environmental quality”).

⁹⁰ *Wild Fish Conservancy v. Kempthorne*, 613 F. Supp. 2d. 1209, 1218 (E.D. Wash. 2009) (citations omitted), *rev’d on other grounds sub nom.* *Wild Fish Conservancy v. Salazar*, 628 F.3d 513 (9th Cir. 2010).

⁹¹ Bob Egelko, “Judge dismisses most of a suit against EPA pesticide approvals,” *SFGate*, <http://www.sfgate.com/science/article/Judge-dismisses-most-of-a-suit-against-EPA-5689391.php> (Aug. 15, 2015, 8:42 AM) (exemplifying the final nature of administrative decisions in a ruling on pesticide approvals under TSCA, wherein the magistrate held tightly to a 60 day deadline to challenge with an extension possible only “if issues . . . were impossible to see at an earlier date”).

⁹² Craig Anthony (“Tony”) Arnold, *Adaptive Water Law*, 62 U. KAN. L. REV. 1043, 1044-49 (2014).

⁹³ *Norton v. Southern Utah Wilderness Alliance*, 542 U.S. 55, 73 (2004).

The belief in a static background also has a practical component. Rapid change that has occurred in our world has been related to the understood changes from human development and intervention in the world. Natural processes, or unexpected impacts of human activity, have historically not been recognized. To the extent that most major geologic changes occur over longer spans than human history, the physical shell of our world for all practical purposes is historically unchanging. And even though we accept the theory of evolution, natural evolution without human pressure has primarily occurred over longer time spans than human attention.⁹⁴ Since it is costly to always reanalyze and reconsider relationships in law, if the physical world for all practical purposes is unchanging aside from technological advances, then why expend the resources necessary just to confirm the obvious? Our common law is much older than the theory of evolution, and few people would normally see noticeable changes in any species within one human lifetime.⁹⁵ As noted above, efficiency suggests that law should not be changing if we assume the background is static.⁹⁶

While at one time, this assumption of a static or slowly changing background might have made practical sense, today the underlying assumption of a static background is clearly untrue and no longer makes practical sense from an efficiency point of view. In 2014, the Journal Science reported that “present extinction rates are likely a thousand times higher than the background rate.”⁹⁷ A study from Princeton, Berkeley and Stanford, citing climate change,

⁹⁴ Susan Emmenegger and Axel Tschentscher, *Taking Nature’s Rights Seriously: The Long Way to Biocentrism in Environmental Law*, 6 GEO. INT’L. ENVTL. L. REV. 545, 580 (1994).

⁹⁵ Charles Darwin, *THE ORIGIN OF SPECIES BY MEANS OF NATURAL SELECTION* 153 (J.W. Burrow ed., England Penguin Books 1968) (1859).

⁹⁶ Law of course does change and “evolve,” but outside of purposeful change, historically at a slow pace also not generally recognized at a social scale. Note Eric Freyfogle’s critique of the perception of unchanging property law in Eric Freyfogle, *ON PRIVATE PROPERTY: FINDING COMMON GROUND ON THE OWNERSHIP OF LAND* xv (Beacon Press 2007).

⁹⁷ Pimm, Jenkins, Abell, Brooks, Gittelman, Joppa, Raven, Roberts, and Sexton, *The biodiversity of species and their rates of extinction, distribution, and protection*, SCIENCE 30 May 2014: Vol. 344 no. 6187, available at <http://www.sciencemag.org/content/344/6187/1246752.full>

pollution, and deforestation, declares that “[t]he Earth has entered a new period of extinction,” with “vertebrates disappearing at a rate 114 times faster than normal.”⁹⁸ While the background world has always changed, “historic changes in the climate and sea levels occurred at much slower rates and absent built environments that restrict species' movements.”⁹⁹ Thus, “[a]lthough humanity is generating and accruing information of its own design at an exponential rate, human activity is destroying biological information at a pace that qualifies our time as one of the great extinction spasms in geological history.”¹⁰⁰ This destruction and rapid change will accelerate in the future.¹⁰¹ While most humans may not have witnessed species evolve, we have seen multiple species become extinct since the passage of the Endangered Species Act.¹⁰²

Legal scholars, especially those that write about the environment and natural resources, now recognize that our physical world is not a static environment, and that dynamism and unpredictability will become more commonplace as climate change accelerates.¹⁰³ As Robin Craig writes, “[E]xisting environmental and natural resources laws are preservationist, grounded in the old stationarity framework that no longer reflects ecological realities.”¹⁰⁴ Add to this all other law concerning or based on any part of our physical world, and the scale of the mismatch

⁹⁸ “Earth Entering New Extinction Phase,” *BBC News*, <http://www.bbc.com/news/science-environment-33209548> (June 30, 2015).

⁹⁹ Jaclyn Lopez, *Biodiversity on the Brink: The Role of “Assisted Migration” in Managing Endangered Species Threatened With Rising Seas*, 39 HARV. ENVTL. L. REV. 157, 162 (2015).

¹⁰⁰ Jim Chen, *Webs of Life: Biodiversity Information as a Species of Information Policy*, 89 IOWA L. REV. 495, 501(2004).

¹⁰¹ Intergovernmental Panel on Climate Change (“IPCC”) *Climate Change 2014: Impacts, Adaptation, and Vulnerability, Summary for Policymakers* 12 (2014), available at http://ipcc-wg2.gov/AR5/images/uploads/WG2AR5_SPM_FINAL.pdf

¹⁰² John Buse, *A Different Perspective on the Endangered Species Act at 40: Responding to Damien Schiff*, 38-FALL ENVIRONS ENVTL. L. & POL’Y J. 145, 154 (2014).

¹⁰³ Cf. Arnold, *supra* note 92, at 1048 (asserting that current regulations “based on average conditions at a fixed point in time” may be inadequate to address the extremes expected with climate change).

¹⁰⁴ Robin Kundis Craig, *“Stationarity is Dead” – Long Live Transformation: Five Principles for Climate Change Adaptation Law*, 34 HARV. ENVTL. L. REV. 9, 17 (2010).

becomes crystal clear. The very notion of climate change must alter our world view and thus our view of governance.¹⁰⁵

C. Administrative Law Reflects this Dominant View that Law Changes Only to Accommodate Planned or Expected Change

What may seem puzzling is why administrative law is not equipped to handle such changing circumstances. After all, isn't one of the benefits of the administrative law structure that it allows for quick incorporation of new information? "One of the purposes of administrative law is to permit a more elastic and informal procedure than is possible before our formal courts."¹⁰⁶ However, while administrative law is often premised and justified on the notion of flexibility, this flexibility was bounded and historically had to be balanced with consistency and finality to promote the legitimacy of administrative actions.¹⁰⁷

Most formal administrative action operates without any recognition of changed circumstances. Before agency action can be reviewed, it must have reached a form of staticism through finality and ripeness.¹⁰⁸ The settled doctrine of rulemaking forbids challenging agency action when an issue was not raised at an early stage.¹⁰⁹ Even more insidiously, the very notion of administrative rulemaking is premised on the idea that the conditions for a certain type of

¹⁰⁵ Cf. Craig, *supra* note 104, at 34 ("climate change adaptation law will often require both a new way of thinking about what regulation is supposed to accomplish and different kinds of legal frameworks for accomplishing those new goals").

¹⁰⁶ *Lambros v. Young*, 145 F.2d. 341, 343 (1944).

¹⁰⁷ Aaron L. Nielsen, *Visualizing Change in Administrative Law*, 49 GA. L. REV. 757, 773 (2015); Mark Fenster, *The Birth of a Logical System: Thurman Arnold and the Making of Modern Administrative Law*, 84 OR. L. REV. 69, 73-74 (2005).

¹⁰⁸ William Funk, *Interpretive Rules Symposium: A Primer on Nonlegislative Rules*, 53 ADMIN. L. REV. 1321, 1335-37 (2001); *see also* *Bennett v. Spear*, 520 U.S. 154, 177-78 (1997); *Abbott Labs. V. Gardner*, 387 U.S. 136, 151 (1967).

¹⁰⁹ *See* Egelko, *supra* note 91.

regulatory intervention will continue to exist indefinitely, and thus such rulemakings rarely have any re-examination provision.¹¹⁰ As Professors Craig and Ruhl note, “administrative law drives agencies toward finality,”¹¹¹ or stated more prosaically: “agencies . . . steamroll their decisions through public-comment scrutiny and judicial review litigation and then never look back.”¹¹² As noted by Professor Daniel Farber, an “unspoken assumption of administrative law” is that it is “defined by discrete ‘final and binding actions.’”¹¹³ Camacho and Glicksman similarly assert that certainty is a basic legal premise of administrative regulation even as they argue for more “adaptive administrative regulation.”¹¹⁴

Though statutes may legally allow agencies more flexibility, agencies have failed to use this flexibility to account for changed background circumstances.¹¹⁵ Administrative flexibility that does occur is primarily utilized for policy change rather than accommodating unpredictability of changed background circumstances or to revisit settled assumptions. Petitions for new agency action can be – and sometimes are – proposed because of “changed circumstances,” but such petitioning is driven by a push for policy change based on changed political rather than factual circumstances.¹¹⁶ Though policy flexibility has been critiqued for undercutting certainty and reliance on policy decisions,¹¹⁷ the ability of agencies to change

¹¹⁰ Kathleen Sullivan, *The Justices of Rules and Standards*, 106 HARV. L. REV. 22, 61 (1992).

¹¹¹ Robin Kundis Craig and J.B. Ruhl, *Designing Administrative Law for Adaptive Management*, 67 VAND. L. REV. 1, 36 (2014).

¹¹² *Id.* at 5.

¹¹³ Daniel Farber, *The Lost World of Administrative Law*, 92 TEX. L. REV. 1137, 1150 (2014).

¹¹⁴ Alejandro Camacho & Robert Glicksman, *Legal Adaptive Capacity: How Program Goals and Processes Shape Federal Land Adaptation to Climate Change*, 2015 COLORADO L. REV. (forthcoming 2015) (manuscript at 69-70) (on file with author).

¹¹⁵ Victor B. Flatt & Jeremy Tarr, *Adaptation, Legal Resiliency, and the U.S. Army Corps of Engineers: Managing Water Supply in a Climate-Altered World*, 89 N.C. L. REV. 1499, 1500 (2011).

¹¹⁶ Farber, *supra* note 113, at 1168-69.

¹¹⁷ Jonathan Masur, *Judicial Deference and the Credibility of Agency Commitments*, 60 VAND. L. REV. 1021, 1023 (2007).

policies or interpretations, often for political reasons, has been well established since *Chevron*.¹¹⁸ This has given rise to an examination of the interplay between administrative flexibility and the need for policy finality.

The literature critiquing agency policy flexibility provides the theoretical case for why agency action should tend towards settled doctrine. Clear and consistent *policy* decisions can increase economic efficiency.¹¹⁹ Absent a purposeful human change to the world, whether through technology or changing social norms or expectations, revisiting prior decisions against an unchanging background would either 1) simply lead to the same result and would thus be inefficient to undertake, or 2) lead to a markedly different set of regulatory requirements because of policy desires in the executive branch, undermining business and societal expectations. However, this assumption only makes sense in a static physical environment.

Aside from statutory reauthorizations and sunset provisions, our laws and their administrative implementation are designed with consistency and settlement in mind. Decisions may be made by the agency, but they are to “fill in the gaps,” not alter the trajectory based on changed circumstances in most cases.¹²⁰ While some forms of this finality, such as in some statute of limitation rules and the finality of rulemaking, may seem necessary to avoid a situation in which policy choice questions are reconsidered or re-litigated forever, they were never predicated on the need to stymie changes when the background facts themselves change.¹²¹

Considering that laws have evolved and been created with an understanding of a static physical world, the lack of agency responsiveness to a changing background, even given an

¹¹⁸ Russell Weaver, *A Foolish Inconsistency is the Hobgoblin of Little Minds*, 44 BAYLOR L. REV. 529, 542-43 (1992).

¹¹⁹ *Id.*

¹²⁰ *Chevron, U.S.A., Inc. v. NRDC, Inc.*, 467 U.S. 837, 843 (1984).

¹²¹ Masur, *supra* note 54, at 1023-24. The thesis of this article also suggests that such was never planned because it was never anticipated.

agency's flexibility inherent in its enabling legislation, is no surprise. The theoretical and Constitutional underpinnings of administrative law would also provide some limit to agency flexibility to respond to completely unexpected circumstances. Though ignored by the majority of the Supreme Court today, complete unbounded flexibility could raise issues with the non-delegation doctrine were the laws to allow agency flexibility in any truly unpredictable circumstance.¹²²

The rare case in which administrative inertia overcomes its default stationarity is the exception that proves the rule. Because it is so unusual, the Bureau of Offshore Energy Management's ("BOEM") 2015 decision to revisit financial responsibility regulation for offshore oil platform decommissioning is instructive.¹²³ Offshore oil drilling has changed drastically in the last twenty-five years, and this suggests that the rules written for financial responsibility for decommissioning these much larger rigs should have changed also.¹²⁴ However, this proposed change did not occur until the Macondo Well explosion brought focus to problems with outdated rules in offshore oil drilling.¹²⁵ Without this attention from the Macondo Well explosion, and the Mineral Management Service re-organization to BOEM, the rules regarding financial responsibility likely would have remained static.

¹²² Am. Trucking Ass'n v. EPA, 175 F.3d 1027, 1057 (D.C. Cir. 1999), *aff'd in part, rev'd in part sub nom.* Whitman v. Am. Trucking Ass'n, 531 U.S. 457, 485–86 (2001); Michigan v. EPA, 135 S. Ct. 2699, (2015) (Thomas, J., concurring) ("These cases bring into bold relief the scope of the potentially unconstitutional delegations we have come to countenance in the name of *Chevron* deference.").

¹²³ Phil Taylor, "Interior to Update Decades-old Bonding Regs," *GREENWIRE*, <http://www.reefrelieffounders.com/drilling/2014/08/19/ee-interior-to-update-decades-old-bonding-regs/> (Aug. 18, 2014).

¹²⁴ Jennifer Dlouhy, "Obama Administration Plan Would Ensure Energy Companies Pay To Scrap Old Offshore Hulks." *Houston Chronicle, Fuelfix*, <http://fuelfix.com/blog/2015/09/22/new-white-house-rule-would-ensure-energy-companies-pay-to-scrap-old-offshore-hulks/#29976101=0> (Sept. 22, 2015) ("Existing financial assurance regulations and guidelines need an update to better reflect the "realities" of offshore energy development, which include aging infrastructure and increasing decommissioning costs, [BOEM Director Abigail] Hopper said.")

¹²⁵ Hari Osofsky, *Multidimensional Governance and the BP Deepwater Horizon Oil Spill*, 63 FLA. L. REV. 1077, 1123 (2011).

There have been attempts to litigate to force administrative agencies to take into account changed circumstances as seen in two recent climate adaptation-related complaints. One, *U.S. v. Miami-Dade County, Fla.*, alleges that a proposed consent decree will violate the Clean Water Act (“CWA”) as the climate alters, and thus must be changed.¹²⁶ Another, *Conservation Law Foundation v. McCarthy*, also under the CWA, alleges that water quality planning from 1978 must be revisited to consider the changes to water quality that can be expected as a result of climate change.¹²⁷ As noted by Hari Osofsky and Jacqueline Peel, such cases illustrate that without litigation, government agencies will not undertake examination of climate change impacts in planning and infrastructure contexts, though the changed environment would suggest the necessity of such consideration.¹²⁸ Unfortunately, preparing for all eventualities even if they could be predicted is itself not an answer. As Professor Osofsky notes in her analysis of the *Deepwater Horizon* tragedy, complex problems are not solved necessarily by more complicated regulatory management schemes.¹²⁹

IV. ADDRESSING THE DEFAULT TO SETTLEMENT IN LAW

A. *Legal Flexibility or Adaptive Capacity Alone is not the Answer*

¹²⁶ Complaint in Intervention at 7, *U.S. v. Miami-Dade County, Fla.*, No. 12-24400-FAM (S.D. Fla. June 25, 2013) available at <http://www.arnoldporter.com/resources/documents/US%20v%20Miami-Dade%20Cnty-intervenor%20complaint.pdf>

¹²⁷ First Amended Complaint, *Conservation Law Foundation v. McCarthy*, Case No. 11-cv-11657, Sept. 10, 2012, available at <http://www.arnoldporter.com/resources/documents/CLF%20v%20McCarthy%20amended%20complaint.pdf>

¹²⁸ Jacqueline Peel & Hari M. Osofsky, *Sue to Adapt?*, MINN. L. REV. (forthcoming 2015) (manuscript at 54) (on file with the author).

¹²⁹ Osofsky, *supra* note 125, at 1099-1100.

Recognition of the problems of this staticism in the law is not completely new. Scholars and scientists have identified this issue in the ESA and other resource laws for several years.¹³⁰ Palmer and Ruhl describe the general mismatch between ecological “restoration” and the idea that restoration must harken back to a prior natural state.¹³¹ Jessica Owley has critiqued the use of permanent conservation easements for failing to recognize changing circumstances.¹³² Some scholars have proposed “adaptive management” as a tool to recognize changing circumstances and new information in the regulatory context.¹³³ For the most part, this criticism has tended to focus on the impact of a changing climate on resource management. But a changing climate’s impacts go beyond natural resources as our entire social and legal system is predicated on our physical environment.¹³⁴

Some recent literature has tried to square a static legal and regulatory system with a rapidly changing world.¹³⁵ Professor Doremus explores whether the common law of property can “evolve” when pressured by a fast changing world.¹³⁶ Other literature has proposed

¹³⁰ Alejandro E. Camacho, *Assisted Migration: Redefining Nature and Natural Resource Law Under Climate Change*, 27 YALE J. ON REG. 171, 174-75 (2010); J.B. Ruhl, *Climate Change and the Endangered Species Act: Building Bridges to the No-Analog Future*, 39 E.L.R. 10735, 10736-37 (2009); Niina Heikkinen, “Will it be extinction or “translocation” as impacts of climate change increase?”, *CLIMATEWIRE*, <http://www.eenews.net/climatewire/stories/1060004459> (Aug. 15, 2014).

¹³¹ Margaret A. Palmer and J.B. Ruhl, *Aligning Natural Science and the Law to Sustain Ecological Infrastructure for the Future*, FRONT ECOL ENVIRON 2015: 13(9): 512-519, doi:10.1890/150053.

¹³² Owley, *supra* note 72.

¹³³ Craig and Ruhl, *supra* note 111, at 7-10 (citations omitted) (“[T]he adaptive management trial has only recently begun, and it is moving slowly with mixed results. Putting adaptive management into practice has proven far more difficult than its early theorists predicted.”). Some laws do anticipate changing circumstances and recognize that allocation decisions or scientific studies may need to be revisited. These include the federal planning laws in FLPMA and the NFMA, which require re-analysis of long-term goals at certain intervals, and the Clean Air Act, which anticipates further scientific discoveries concerning the impact of air pollutants on human health and the environment. 42 U.S.C. § 7409(d)(2)(B) (2012).

¹³⁴ See Victor B. Flatt, *Adapting Laws for a Changing World: A Systemic Approach to Climate Change Adaptation*, 64 FLA. L. REV. 269, 273 (2012).

¹³⁵ Camacho & Glicksman, *supra* note 114, at 2 (citing Freeman, Salzman & Ruhl, Lazarus, Camacho, Craig & Ruhl, Glicksman & Shapiro, and Hornstein).

¹³⁶ Holly Doremus, *Climate Change and the Evolution of Property Rights*, 1 U.C. IRVINE L. REV. 1091 (2011). Eric Freyfogle notes that the common law of property has evolved, but not on a time scale that evolution is commonly recognized. See Freyfogle, *supra* note 94.

procedural flexibility¹³⁷ and examining and changing underlying statutes to support substantive flexibility.¹³⁸ For instance, Professors Hornstein,¹³⁹ Camacho,¹⁴⁰ and Ruhl¹⁴¹ all have looked at the importance of “resilience” in administrative law. Professor Hornstein has examined the idea of whether “adaptive” administrative structures can improve outcomes in complex systems.¹⁴²

Craig and Ruhl take the call for adaptive management in the face of climate change a step further by proposing that administrative law generally be changed to make adaptive management more effective while still allowing for the oversight of agency discretion.¹⁴³ They suggest that a certain track of administrative law be altered to allow for flexible rulemaking and enforcement in areas where physical facts are changing quickly.¹⁴⁴ This is a step in the recognition of this conflict between the need for legal finality and changing circumstances, yet it is suggested for a limited arena in resource laws in which administrative agencies are given more decision making authority. Such a proposal does not address the more fundamental problem of the embedded finality in law generally that hampers society’s ability to adapt to changing circumstances. Hannah Wiseman has discussed the problem of agency staticism with respect to scale. Once rules are made, she writes, the agency has no incentive to revisit them even though the problems that the rules originally addressed may have changed scale so much that another response is

¹³⁷ Cf. Craig & Ruhl, *supra* note 111, at 46 (arguing for the need to abandon finality for periodic agency reassessment); Arnold, *supra* note 17, at 1054; Jody Freeman, *Collaborative Governance in the Administrative State*, 45 UCLA L. REV. 1, 28 (1997).

¹³⁸ Camacho & Glicksman, *supra* note 114, at 2.

¹³⁹ Donald T. Hornstein, *Resiliency, Adaptation, and the Upsides of Ex Post Lawmaking*, 89 N.C. L. REV. 1550 (2010).

¹⁴⁰ Alejandro E. Camacho, *Transforming the Means and Ends of Natural Resources Management*, 89 N.C. L. REV. 1405 (2010).

¹⁴¹ J.B. Ruhl, *General Design Principles for Resilience and Adaptive Capacity in Legal Systems – With Applications to Climate Change Adaptation*, 89 N.C. L. REV. 1373 (2010).

¹⁴² Donald Hornstein, *Complexity Theory, Adaptation, and Administrative Law*, 54 DUKE L.J. 913 (2005).

¹⁴³ Craig & Ruhl, *supra* note 111, at 40-49.

¹⁴⁴ *Id.* at 19.

required.¹⁴⁵ Though in both of these scholarly tracks the problem is identified, the solution isn't grounded in a normative idea of why or when agencies should undergo review of settled doctrine.

At an earlier time, and in a general critique of the administrative process, Professor Jody Freeman hoped that collaborative governance could introduce standards that change as needed, instead of a one time, final decision.¹⁴⁶ Professors Camacho and Glicksman note that substantive as well as procedural law may need to be changed in order to accommodate flexibility.¹⁴⁷ However, even in those cases in which substantive flexibility is allowed in an authorizing statute, such variation was meant to allow variation only in limited parameters, and while changing the substance of a law to add adaptive capacity *could* allow a broad flexible regulatory response to physical changes underlying settled decisions, exercise of the authority to alter the substantive impact of a law has not occurred on a large scale.¹⁴⁸ Such a state of our laws is not surprising when we juxtapose the seeming flexibility against the primary tendency in the law towards finality and consistency.¹⁴⁹

This literature thus explores and explains many effective legal “fixes” to address the mismatch between stationarity and dynamism, but outside of particular laws, none of the literature has examined the fundamental bias towards stationarity within the legal and regulatory systems. Aside from proposals seeking to apply adaptive management theories from the resource context to the regulatory context,¹⁵⁰ the centrality of dynamism from climate change in

¹⁴⁵ Hannah Wiseman, *Remedying Regulatory Diseconomies of Scale*, 94 B.U.L. REV. 235, 238-39 (2014).

¹⁴⁶ Jody Freeman, *Collaborative Governance in the Administrative State*, 45 UCLA L. REV. 1, 7 (1997).

¹⁴⁷ Camacho & Glicksman, *supra* note 114.

¹⁴⁸ *Id.*; Flatt & Tarr, *supra* note 115, at 1500.

¹⁴⁹ Discussed *supra* at pp. 4-5.

¹⁵⁰ Craig & Ruhl, *supra* note 111, at 19 (Craig and Ruhl suggest a new “adaptive management track: to allow agency flexibility where necessary to accommodate changing circumstances.” They propose this specifically for dynamic systems in which uncertainty and controllability are high, but risk is low.).

opposition to the static nature of law itself has yet to be addressed as a conflict for our legal system generally.

Given climate change's effects on our legal and social systems,¹⁵¹ we cannot adapt without recognizing and replacing our default push for settlement in law. Outside of the private law context in which parties can agree for mutually beneficial change of legal governance, legal adaptive capacity in common law or statutes would depend on judge made or regulatory evolution to initiate flexibility. This will not prove sufficient for the big picture. The focus on flexibility in climate change adaptation in law may be helpful but doesn't address whether underlying assumptions of so many prior rules and decisions have changed so as to require re-examination.¹⁵² What really should be examined is the notion of "settlement" that will never be revisited, even when background circumstances have changed and will continue changing.

This doesn't mean the concept or importance of settled doctrine should be consigned to the garbage heap. It is foundational to the legal and administrative system.¹⁵³ However, suggesting a way for legislatures, administrative agencies, and the judicial branch to recognize that changed circumstances require a re-examination of a "final" decision is critically important if we are to accommodate our changed world.

B. Alternatives to Unsettle the Law

Flexibility alone will not make our laws more responsive to changed background circumstances. Scholars who have looked at the ways in which there could be systemic change

¹⁵¹ Flatt, *supra* note 134, at 173.

¹⁵² Arnold, *supra* note 92, at 1054 (acknowledging the static nature of water law but proposing flexibility as an adaptive solution going forward).

¹⁵³ The necessity of settled doctrine and how "settled" it should be has been explored in multiple fora. *See, e.g.,* Sullivan, *supra* note 110 at 61; Carol Rose, *Crystals and Mud in Property Law*, 40 STAN. L. REV. 577, 592-93 (1988).

in a regulatory system or the possibilities or necessity for common law change are on the right track, but addressing inefficient repose and settlement in public law requires addressing both the underlying impacts of inappropriate settled doctrine or decision (inefficiency) and why the law itself has not already responded. As discussed, *supra*, human social preference for settled doctrine has historically been efficient for changes outside of human will, and philosophical and religious belief has intertwined itself to mutually reinforce this historically efficient state of human society.¹⁵⁴

I do not propose to change human nature, philosophy or religion, but I do believe if we as a society and country recognize the importance of avoiding legal calcification in the face of an unprecedented rate of physical change in our world, it is possible to bring to bear recognized legal tools to the job. Two solutions that have an effect of avoiding legal permanency would be sunset provisions for most statutes and ad hoc legal and regulatory work-arounds when necessary to make a situation more economically efficient or to accomplish other agreed upon principles.

1. Can we wait for *ad hoc* solutions when evidence demonstrates a misfit between law and the climate altered world?

While work-arounds for a climate change world have been attempted (as would be expected when the legal system does not work efficiently), they have not proven themselves particularly effective.

An illustrative example comes from legal responses and approaches to flood control. The last ten years have demonstrated the enormous economic impact of a fast changing and unpredictable physical environment, while also demonstrating how difficult it has been to try and

¹⁵⁴ *Supra*, pp. 10-15.

correct the economic losses, based in part on a legal system that is mal-adaptive to the new reality.

Many devastating floods hit the United States in the early part of the twentieth century causing great loss of life and property.¹⁵⁵ In an effort to reduce such flooding, the federal government began many construction projects to control floodwaters on the riverine systems, which were known to vary.¹⁵⁶ Because the federal government agencies believed the rivers were controllable, there were predictable parameters (such as the 100 year flood plain or 500 year flood plain).¹⁵⁷ Once the flood protections were in place, this in turn allowed development to occur in these former floodplains.¹⁵⁸ The development was later assisted by the National Flood Insurance Program (“NFIP”) which would provide government sponsored flood insurance in those areas deemed to be safe from flooding based on government protection and known flood parameters.¹⁵⁹

The last decade, however, has shown how the system has failed and the difficulty in using “ad hoc” fixes. The NFIP remained fairly solvent until 2005, but then with the unprecedented hurricane season of that year, it became insolvent, and the insolvency has continued to increase, reaching 23 billion dollars by 2013.¹⁶⁰ While the impacts of Hurricane Katrina show the most vivid example of loss of life and property, it is the increase in total events and scope of these events that demonstrate the real misfit between the legal regime designed to

¹⁵⁵ Christine Klein and Sandra Zellmer, *Mississippi River Stories: Lessons from a Century of Unnatural Disasters*, 60 S.M.U. L. REV. 1471, 1480 (2007).

¹⁵⁶ *Id.* at 1485.

¹⁵⁷ Daniel McCool, *The River Commons: A New Era in U.S. Water Policy*, 83 TEXAS L. REV. 1903, 1904 (2005).

¹⁵⁸ Klein and Zellmer, *supra* note 155, at 1486.

¹⁵⁹ *Id.* at 1491.

¹⁶⁰ Carolyn Kousky and Howard Kunreuther, Resources for the Future, *Addressing Affordability in the National Flood Insurance Program* 1, August 2013, Issue Brief 13-02, available at <http://www.rff.org/files/sharepoint/WorkImages/Download/RFF-IB-13-02.pdf>.

protect and compensate against flooding and the major losses that have occurred. The last decade has seen multiple precipitation events wholly outside the realm of historic memory. These include the Iowa floods of 2008¹⁶¹, the Nashville flood of 2010¹⁶², the Vermont flooding of 2011¹⁶³, and the South Carolina flooding of 2015¹⁶⁴. In each of these cases, massive precipitation, outside of the historic norm, overwhelmed federally designed protections for flood control along river systems. Additionally, Hurricane Katrina and Superstorm Sandy had the first and second highest property losses ever incurred from flooding.¹⁶⁵

Economically, the payout from disasters has swelled to many times the ability to pay. In 2004 the Federal flood insurance system was solvent. By 2013, it owed \$23 billion to the federal treasury, putting the solvency of the program at risk.¹⁶⁶ Much of this cost could have been avoided with a changed and better designed legal system. It is very clear that certain mitigation actions taken *before* recent weather events would have greatly reduced the total loss incurred.¹⁶⁷ However, the legal system to deal with floods, setup decades earlier, incentivized increased economic losses, by paying for harm, but not prevention of harm. In 2014, this led to an outlay

¹⁶¹ Department of Commerce, NOAA, National Weather Service, Central Iowa Floods of 2008, Local Office Service Assessment (2009), *available at*

www.crh.noaa.gov/images/dmx/2008Flood,NSWDesMoines_2008_Flood_Assessment_publicPDF.pdf

(“This service assessment focuses on the historic flooding in central Iowa from late May 2008 through June 2008.”)

¹⁶² May 1&2 2010 Epic Flood Event for Western and Middle Tennessee, *available at*

<http://www.srh.noaa.gov/ohx?n=may2010epicfloodevent>

¹⁶³ “Irene Leaves Vermont with ‘Epic’ Flooding,” *CBS News*, <http://www.cbsnews.com/news/irene-leaves-vermont-with-epic-flooding/> (Aug. 29, 2011)

¹⁶⁴ Carolinas Integrated Sciences & Assessments (“CISA”), The South Carolina Floods of October 2015, *available at* <http://www.cisa.sc.edu/PDFs/October%202015%20Flood%20Event%204%20Pager.pdf>

¹⁶⁵ Rawle O. King, *The National Flood Insurance Program: Status and Remaining Issues for Congress 1* (Congressional Research Service 2013), *available at* <http://fas.org/sgp/crs/misc/R42850.pdf>

¹⁶⁶ U.S. GAO, *High Risk: National Flood Insurance Program*, *available at* http://www.gao.gov/highrisk/national_flood_insurance/why_did_study

¹⁶⁷ Experts project that every dollar of hazard mitigation saves five dollars in disaster costs. King, *supra* note 165, at 5.

for flood damages and thus for climate change impacts, from the federal government of over \$65 billion.¹⁶⁸

In the face of such enormous loss and inefficiency, one would expect to see attempted work-arounds by both government and the private sector. One proposed government work-around was to allow recovery money to be used to rebuild in areas more out of harm's way.¹⁶⁹ While this has not occurred as formal policy, post-Sandy guidance does allow money for buyouts of damaged locations and encourages structures to be rebuilt with more resilient features.¹⁷⁰ After the staggering costs and NFIP losses of Superstorm Sandy, Congress amended the whole statutory strategy to make insurance premiums more correctly reflect the risk of the climate altered world, particularly in coastal areas.¹⁷¹ However, after public outcry, this amendment to the Federal Flood Insurance Program (Biggert-Waters) was itself amended to slow the adjustment of premium increases and thus incentives for better hazard mitigation.¹⁷² Thus, even *ad hoc* attempts to amend laws in the face of a changing physical background face resistance from inertia and parties who might lose entrenched economic benefits.¹⁷³

2. Sunset provisions

¹⁶⁸ Doyle Rice, "Hurricane Sandy, Drought, Cost U.S. \$100 billion," *USA Today*, <http://www.usatoday.com/story/weather/2013/01/24/global-disaster-report-sandy-drought/1862201/#> (Jan. 25, 2013).

¹⁶⁹ King, *supra* note 165 at 4.

¹⁷⁰ Ben Jervy, "Year After Sandy, Rebuilding for Storms and Rising Seas," *National Geographic*, <http://news.nationalgeographic.com/news/2013/10/131026-hurricane-sandy-anniversary-sea-level-rise-adaptation/> (Oct. 22, 2013).

¹⁷¹ King, *supra* note 165, at 8.

¹⁷² Deborah Berry and Ledyard King, "House Passes Flood Insurance Bill," *USA Today*, <http://www.usatoday.com/story/news/nation/2014/03/04/house-passes-flood-insurance-bill/6037775/#> (March 4, 2014).

¹⁷³ A similar dynamic is at play in state regulation of insurance, wherein the state subsidizes risk that is increasing due to climate change. Brittany Patterson, "Insurance Debate Flares as Climate Change Boosts Wildfire Risk," *Climatewire* (Jan. 28, 2016).

Sunset provisions which require laws to be reauthorized to continue would seem one way of forcing consideration of laws at regular intervals which might allow matching the legal response to the state of the physical world at the time of reconsideration. Our current model of sunset provisions in law, however, is ill-suited to this paradigm. Rather than providing a clean slate for reconsidering changed circumstances, most often, sunset provisions provide new opportunities for lobbying and revisiting policy.¹⁷⁴ Such provisions often come about as a political compromise that both sides may hope to enhance or jettison at the time of sunset.¹⁷⁵ Similarly, sunset provisions have been used to impact budget projections by taking laws “off the books” at some future time to limit fiscal impacts even if most legislators might intend or plan to continue the policy into the future.¹⁷⁶

Historic use of sunset provisions is thus based on anticipation of policy changes or trade-offs, which undermines the core reasons for certainty and settlement in law.¹⁷⁷ Such provisions thus create economic uncertainties and inefficiencies (such as a drain of resources for lobbying), while not necessarily allowing for changes in law to better mirror unexpected changes in the physical world.¹⁷⁸ Expiring tax credits for renewable energy at the federal level illustrate the potential and problem of using sunset provisions to update legal systems.

Tax credits for renewable energy started with bipartisan support in 1992.¹⁷⁹ Nevertheless, over time, these renewable energy credits, were subject to multiple sunset provisions in 1999, 2002, 2004, 2005, 2008, 2012, and 2016.¹⁸⁰ Unlike many sunset provisions,

¹⁷⁴ Erin Dewey, *Sundown and You Better Take Care: Why Sunset Provisions Harm the Renewable Energy Industry*, 52 B.C.L. REV. 1105, 1120-21 (2011).

¹⁷⁵ Paul Ohm, *The Argument Against Technology Neutral Surveillance Laws*, 88 TEX. L. REV. 1685, 1710 (2010).

¹⁷⁶ Dewey, *supra* note 174, at 1121.

¹⁷⁷ *See supra*, at pp. 17-20.

¹⁷⁸ Ohm, *supra* note 175, at 1710.

¹⁷⁹ Dewey, *supra* note 174, at 1110.

¹⁸⁰ *Id.* at 1128.

one explanation of sun-setting renewable energy tax breaks relates to possible expected changes in future costs of technology. In this way, sunset provisions could be a tool for updating law as persons expect that the cost structure in the future for the system may be different, but are uncertain how different. But in truth, so many sunset provisions in this arena suggest that the real reason for the sunset provisions was that neither party could get energy policy reflecting its views entirely, so tradeoffs in the form of these sunset provisions were made.¹⁸¹

Even assuming that the sunset provisions were originally put in place because of uncertainty over the future state of technology and development, the subsequent history of tax credit extensions illustrates mostly a profound disagreement over the role of government in supporting renewable energy – a policy dispute – rather than any attempt to fit law to economic change.¹⁸²

V. WHAT TO DO

What then is a possible solution? It must both grow out of the recognition of the need to shift the paradigm from legal permanency and an agreement to do so. One can imagine ideas from the literature recognizing the need for legal flexibility. But this will not be sufficient. The first part of the solution is the recognition of the fundamental problem now lying at the heart of our legal system.

The Supreme Court's holding that NEPA does not cover changed circumstances without "actions" shows how oblivious our statutes and court interpretations are to both the fact that an altered background can change the efficiency of settled rights and the static fallback of our legal

¹⁸¹ *Id.* at 1141-42.

¹⁸² Melissa Powers, *Sustainable Energy Subsidies*, 43 ENVTL. L. 211, 226-27 (2013).

system.¹⁸³ Given the slow pace of common law evolution to background physical changes (as opposed to policy or technical advancements) directed change will likely require legislative action.¹⁸⁴ Over the last several decades, our legislatures have intervened more and more in altering common law schemes, and replacing them with statutory and administrative schemes.¹⁸⁵

Within statutory schemes we have examples of new (often administrative) actions based on particular timing or triggering devices. Some resource planning laws, such as the Federal Land Planning and Management Act and the National Forest Management Act, allow changes through planning periods,¹⁸⁶ while certain pollution laws assume that pollution sources should be re-permitted.¹⁸⁷ Notice and comment during the re-examination or re-permitting process, and if necessary, subsequent litigation, could provide the necessary mechanisms to consider the changed background. While the aforementioned statutes were designed to allow alteration for updated scientific knowledge or policy changes, provisions requiring periodic administrative action *could* be used to incorporate climate change and altered physical realities into new situations, without necessarily using re-visitation and flexibility solely to unsettle policy.

Because of the base assumption of the unchanging physical backdrop, however, many laws have no substantive mechanism that would allow such a re-examination or provide a way to petition for one. For instance, as noted in the introduction, the CZMA, a law obviously impacted by climate change, does not have codified rules or any mechanism governing revisions. The example of the CZMA demonstrates that absent specific provisions to the contrary, a statute

¹⁸³ Norton v. Southern Utah Wilderness Alliance, 542 U.S. 55 (2004).

¹⁸⁴ Unlike sunset provisions, a general law requiring periodic analysis of programs would not necessarily invite rent-seeking and lobbying. When changes are necessary due to climate altered backgrounds, such input is justified.

¹⁸⁵ Vincent R. Johnson, *On Race, Gender, and Radical Tort Reform: A Review of Martha Chamallas and Jennifer B. Wriggins, The Measure of Injury: Race, Gender, and Tort Law*, 17 WM. & MARY J. WOMEN & L. 591, 605-06 (2011)

¹⁸⁶ 43 U.S.C. § 1712; 16 U.S.C. § 1604.

¹⁸⁷ 33 U.S.C. § 1342(b)(1)(B) (Clean Water Act); 42 U.S.C. § 7661a(b)(5)(B) (Clean Air Act).

requiring administrative action will not require automatic updating under changing circumstances but only when explicitly mandated by statute. These statutory provisions are available in the CWA, the CAA, and major federal planning laws but not in the CZMA, the NHPA,¹⁸⁸ or NAGPRA,¹⁸⁹ to name a few. In these cases, Camacho and Glicksman's call for substantive authority to allow adaptation to occur would be a necessary first step.¹⁹⁰

Beyond the need for substantive authority, some mechanism would need to require the re-visitation of settled doctrine. Such changes on a statute-by-statute basis are unlikely.¹⁹¹ A better option might be a statute of general applicability that provides government authorities the ability to make changes based on climate impacts.¹⁹² This statute should also require that agencies periodically re-examine their programs and policies (not individual decisions) and make recommendations concerning areas that would be affected by climate change.¹⁹³ A comprehensive review statute of policies and regulations specifically focused on background changes due to climate need not become a tool for hindering individual agency decisions but

¹⁸⁸ 54 U.S.C.S. § 100101 (LexisNexis 2015).

¹⁸⁹ 25 U.S.C. § 3001 (2012).

¹⁹⁰ Camacho & Glicksman, *supra* note 114.

¹⁹¹ *Id.* at 68 (suggesting that in limited areas, however, such as major resource statutes, a statute-by-statute change is feasible).

¹⁹² Much as NEPA gives authority to take action to protect the environment. *See* NEPA, 42 U.S.C. § 4332 (A) and (B) (“The Congress authorizes and directs that, to the fullest extent possible: (1) the policies, regulations, and public laws of the United States shall be interpreted and administered in accordance with the policies set forth in this chapter, and (2) all agencies of the Federal Government shall—

(A) utilize a systematic, interdisciplinary approach which will insure the integrated use of the natural and social sciences and the environmental design arts in planning and in decisionmaking which may have an impact on man's environment;

(B)

identify and develop methods and procedures, in consultation with the Council on Environmental Quality established by subchapter II of this chapter, which will insure that presently unquantified environmental amenities and values may be given appropriate consideration in decisionmaking along with economic and technical considerations;”)

¹⁹³ Obviously adding a “look-back” provision generally may do more harm than good. *See* Tom McGarity, *EPA at Helm's Deep: Surviving the Fourth Attack on Environmental Law*, 24 FORDHAM ENVTL. L. REV. 205, 240 (2012-13). By linking the examination of programs to climate change, however, the law might avoid additional procedure merely for disruption's sake.

would create a parallel process for high level analysis. For example, in 2010, the state of North Carolina passed a law requiring most of its executive branch agencies to undertake such an examination of the impact of climate change on their regulations and programs and report the results back to the legislature.¹⁹⁴ Similarly, at the federal level, NEPA tasked agencies with a requirement of examining their programs to understand how they might impact the environment.¹⁹⁵

VI. CONCLUSION

We have a legal infrastructure based on the important legal notion of settled doctrine. That notion, crucial to our concept of law and justice, is becoming and will continue to become increasingly dysfunctional as the world on which our system is based becomes less settled. This disruption does not mean that we have to give up settled doctrine all across the legal landscape.

¹⁹⁴ North Carolina Session Law 2010-180 (House Bill 1766), from the 2009 Session of the General Assembly of North Carolina, 2010 N.C. Sess. Laws 728, *available at* <http://www.ncleg.net/EnactedLegislation/SessionLawsCD/SessionLaws/2010SessionLaws.pdf>.

Section 13(a)-(b) of SL 2010-180 reads:

(a) The Department of Administration, the Department of Agriculture and Consumer Services, the Department of Commerce, the Department of Crime Control and Public Safety, the Department of Environment and Natural Resources, the Department of Health and Human Services, the Department of Insurance, and the Department of Transportation shall:

- (1) Review their respective planning and regulatory programs to determine whether the programs currently consider the impacts of global climate change, including adaptation and sea level rise.
- (2) For those programs that currently consider the impacts of global climate change, the agency shall describe how the program considers the impacts of global climate change, including adaptation and sea level rise, and recommend whether the consideration of the impacts of global climate change should be modified or expanded.
- (3) For those programs that do not currently consider the impacts of global climate change, the agency shall recommend if and how the program should consider the impacts of global climate change, including adaptation and sea level rise.

(b) No later than September 1, 2011, each State agency shall report the results of its review and any recommendations to the Department of Environment and Natural Resources. The Department shall compile the results and recommendations and report them to the Environmental Review Commission and to any future legislative commission that directly and primarily addresses issues concerning global climate change no later than November 1, 2011.

¹⁹⁵ 42 U.S.C. Sec. 4333 (“All agencies of the Federal Government shall review their present statutory authority, administrative regulations, and current policies and procedures for the purpose of determining whether there are any deficiencies or inconsistencies therein which prohibit full compliance with the purposes and provisions of this chapter and shall propose to the President not later than July 1, 1971, such measures as may be necessary to bring their authority and policies into conformity with the intent, purposes, and procedures set forth in this chapter.”)

As noted, *supra*, it serves important purposes. It does mean, however, that we should be aware that it will no longer serve us in the way it should. This recognition suggests, at the very least, that the goals of our legal system may be better served by having options to alter “final” decisions based on changing physical parameters.

A wholesale change would likely need to come about by purpose and generally applicable statute. While we have several examples of such laws being passed or proposed,¹⁹⁶ the association with climate change may make this change politically difficult. Nevertheless, a focus on the problem will allow us to keep calling for and working on a solution. The fact that the Coastal Zone Management Act is based so obviously on a static view of coastal systems and areas is an egregious example of the mismatch between our laws and our changing world – but it is not the only such mismatch.

In his writings, the philosopher Frederick Nietzsche often returned to the theme of change. While his writings applied to why humans anticipated the future in a certain way, he correctly noted that human society has resisted the idea of impermanence and change.¹⁹⁷ Such foundational social constructs also undergird our legal system. This staticism and predictability serve many important purposes in law and society. But climate change is and will continue to make settled legal doctrine more and more dysfunctional. While we do not have to surrender the desire and utility for predictability and finality, we must be aware of the impacts it will have in areas that we have left unexamined. Much of our legal infrastructure is built on the idea of this unshakeable and never changing world. Where this is clearly causing harm and inefficiency, we should not settle.

¹⁹⁶ See, e.g., Small Business Disaster Reform Act of 2013, S. 415, 113th Cong. (2013).

¹⁹⁷ See Dries, *supra* note 1.

