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Unsettled: How Climate Change Challenges a Foundation of Our Legal System, and Adapting the Legal State

Unsettled: How Climate Change Challenges a Foundation of Our Legal System, and Adapting the Legal State

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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 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 law's tendency to finality and preserve this to the extent that it is still necessary and useful, while re-examining the parts of static law that are most impacted by the changing physical world.

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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: "The norms of the legal system establish authoritatively enforced rights and duties, set the terms of social cooperation, and engender legitimate expectations among citizens."[2] The importance of certainty is reflected in the law's push for settled rights. Reflecting on Hume and Bentham, Dan Tarlock states that "[o]nce a decision is rendered, we expect parties to abide permanently by the outcome."[3] However, in our current changing climate, even the 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. Climate change is altering our background circumstances and will continue to do so in ways that undermine the assumptions that led to the evolution of finality or settled rights in the legal system.

While criminal law and most private law (especially as it pertains to private law disputes) still benefit tremendously from the values of finality, the same is not true of the law governing many forms of private property, especially real estate, water rights, and rights to use public lands.[4] On the public law side, the changing physical background not only affects environmental and natural resources law, but also areas of law such as immigration, trade, banking, and insurance.

The Coastal Zone Management Act (CZMA) provides an illustrative example of the issue. Congress passed the CZMA in 1972

1. Herman W. Siemens, *Nietzsche and the Temporality of (Self-)Legislation, in* NIETZSCHE ON TIME AND HISTORY 191 (Manuel Dries ed., 2008).

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

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

4. *See, e.g.*, Lara D. Guercio, *Climate Change Adaptation and Coastal Property Rights: A Massachusetts Case Study*, 40 B.C. ENVTL. AFF. L. REV. 349, 350 (2013).

to mitigate coastal environmental destruction from human activity.[5] Under the CZMA, coastal states are charged with creating coastal zone management plans that identify land uses, critical coastal areas, management measures, and other details on how the states 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.[8] NOAA has recognized this reality by classifying climate change as a force that affects sea level, intensity of storms, rainfall variability, oceanic acidification, and water temperature.[9] Congress amended the CZMA in 2012 specifically to require coastal states to consider the impact of climate change as they developed new state coastal zone management plans.[10] This amendment should have pushed each state to revise its coastal zone management plans to reflect this, but most coastal states have not.[11] This failure arises mainly because the CZMA has no legal mechanism to require a state to change its plan once NOAA accepts the original plan.[12] "Whatever authority NOAA may have to impose implementation requirements . . . it may not revisit the question of

5. 16 U.S.C. § 1451 (2012).

6. 16 U.S.C. § 1455(b), (d) (2012).

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

8. U.S. GLOB. CHANGE RES. PROGRAM, CLIMATE CHANGE IMPACTS IN THE UNITED STATES: NATIONAL CLIMATE ASSESSMENT 580 (Jerry M. Melillo et al. eds., 2014), http://nca2014.globalchange.gov/report/regions/coasts. "The combined effects of climate changes with other human-induced stresses makes predicting the effects of climate change on coastal systems challenging. However, it is certain that these factors will create increasing hazards to the coasts' densely populated areas." *Id*. at 582.

9. NOAA OFFICE OF OCEAN & COASTAL RES. MGMT., ADAPTING TO CLIMATE CHANGE: A PLANNING GUIDE FOR STATE COASTAL MANAGERS 28 (2010), http://coastalmanagement.noaa.gov/climate/docs/adaptationguide.pdf.

10. 16 U.S.C. § 1451(l) (2012) ("Because global warming may result in a substantial sea level rise with serious adverse effects in the coastal zone, coastal states must anticipate and plan for such an occurrence.").

11. *See* Office for Coastal Management, *Coastal Management Programs,* NAT'L OCEANIC & ATMOSPHERIC ADMIN., https://coast.noaa.gov/czm/mystate/ (last visited Oct. 14, 2016) (demonstrating that of the thirty-five states and territories that currently have coastal zone management authority, arguably only California, Delaware, New York, Rhode Island, and Virginia have taken action that could be construed as incorporating the considering of climate change on the state's coastal zone into their official coastal zone management plan).

12. Cal. By Cal. Coastal Comm'n v. Mack, 693 F. Supp. 821, 825 (N.D. Cal. 1988).

the program's adequacy."[13] While the NOAA has regulations for "continuing review" of coastal zone plans, these reviews concern only whether or not the state has followed its original, existing plan.[14] NOAA may suspend financial assistance if a state fails to follow its approved coastal plan.[15] However, "NOAA does not have 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 . . . ."[16] Only the states can initiate the process to change a plan.[17]

This perverse result—which prevents the federal government from requiring states to take climate change, or, indeed, any new natural physical impacts into account in a coastal plan—is a direct consequence of the assumption of a static physical environment that prevailed at the time the CZMA was created. As explained in *California Coastal Commission v. Mack*, the main concern after initial approval of a plan is that a state can depend on having a "settled" plan.[18]

In this Article, 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. It also recognizes the existence of legal dynamism in certain areas of 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 looks at possible responses, including a review of prior scholarship recognizing that a changing climate challenges the legal system. It then notes how previous work collectively fails to fully address the normative framework underlying law's push toward finality and resulting 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 framework. Part VI concludes.

13. *Id*. at 826.

14. 15 C.F.R. §§ 923.132(a), 923.133(a) (2015).

15. 16 U.S.C. § 1458(c)(1) (2012).

16. *Cal. By Cal. Coastal Comm'n*, 693 F. Supp. at 825.

17. *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).

18. *Id*.

II. SETTLED LAW BASED ON A STABLE WORLD

The fact that a law designed to deal with the needs of the physical area (the coastal zone) 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),[19] contracts (rules governing when cases can be brought upon breach),[20] and property (adverse possession),[21] as well as procedural aspects of the common law system, such as exhaustion.[22] Statutorily, we have statutes of limitation and statutes of repose.[23] This push toward finality has evolved in the common law over centuries and has been adopted as a normative underpinning in law generally, including statutory and administrative law.[24]

Some reasons for legal finality are obvious: requiring quick, settled legal resolution can avoid evidentiary staleness[25] and avoid prejudice (as seen in the evidentiary rules).[26] Moreover, settled rights and responsibilities have been considered critical for a legal system to function efficiently[27] as evidenced by statutes of limitation and statutes of repose. "Statutes of limitation[] 'promote justice by preventing surprises through [the] revival of claims that have been allowed to

19. 19 AM. JUR. 2D *Equity* § 108 (1939) (explaining the foundation of laches). Laches is a common law doctrine that requires cases to be brought in a certain time period, so that legal status will not be continually subject to changes wrought by new lawsuits.

20. Laseter v. Pet Dairy Prods. Co., 246 F.2d 747, 750 (4th Cir. 1957) (failing to find breach of an employment contract for lack of definiteness); *see also* RICHARD A. LORD, 1 WILLISTON ON CONTRACTS § 4:21 (4th ed. 2016). Subsequent or different agreements should not change settled contract unless it meets specific rules and requirements.

21. Jeffrey Evans Stake, *The Uneasy Case for Adverse Possession*, 89 GEO. L.J. 2419, 2441 (2000–2001). Adverse possession allows parties creating economic wealth from property the certainty of settled ownership doctrine if disputes later erupt.

22. *Exhaustion of remedies*, BLACK'S LAW DICTIONARY (7th ed. 1999).

23. Jill E. Evans, *See Repose Run: Setting the Boundaries of the Rule of Repose in Environmental Trespass and Nuisance Cases*, 38 WM. & MARY ENVTL. L. & POL'Y REV. 119, 132–33 (2013–2014).

24. *See, e.g.*, United States v. Sanchez-Cervantes, 282 F.3d 664, 667 (9th Cir. 2002) (noting that rules against retroactive application of laws serve the interest of finality in law).

25. Stake, *supra* note 21, at 2438.

26. Jessica L. West, *Is Injustice Relevant? Narrative and Blameworthiness in Protester Trials*, 86 TEMP. L. REV. 107, 122 (2013–2014).

27. Keating, *supra* note 2, at 4.

slumber until evidence has been lost . . . ."[28] 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 subjected to protracted liability."[29]

But to fully understand the impact of a mismatch between a system prone to settled answers and an unsettled world, we need to explore the *why* of finality and settlement more comprehensively. How do the normative reasons for settled outcomes relate to the other normative underpinnings of law? And, most importantly, can we preserve the normative functions of settled doctrine[30] while accommodating the mismatch between 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 evolved and grown in complexity from the ancient view of law as a device to keep the peace to the modern idea that law balances equity, due process, and economics.[31] The evolution of laws can be viewed as a progression of phases that add to and modify the legal system. These phases add new ideas about the purpose of law and make legal systems more complex. In seeking to determine the state of legal justice as it related to ideas of social and economic justice, Harvard Law School Dean and influential legal scholar Roscoe Pound attempted to create a coherent understanding of this evolution in the early part of the twentieth century. He addressed the relationship between the origins of law and emerging doctrines in the American legal system.[32] His explanation of

28. CTS Corp. v. Waldburger, 134 S. Ct. 2175, 2183 (2014) (quoting Order of R.R. Telegraphers v. Ry. Express Agency, Inc., 321 U.S. 342, 348–49 (1944)).

29. *Id.* (quoting Sch. Bd. of Norfolk v. United States Gypsum Co., 360 S.E.2d 325, 328 (Va. 1987)).

30. Throughout the Article, I use the term "settled doctrine" to refer to legal rules that appear to be static.

31. John Cirace, *When Are Law and Economics Isomorphic?*, 39 GOLDEN GATE U. L. REV. 183, 220 (2008–2009) (suggesting that legal rationality—based on traditional legal concepts including due process and equity—and economic rationality are separate but coequal rational processes that can be brought to bear when examining legal questions); John C. Gardner, *The Origin of Law*, 49 JURID. REV. 329, 332 (1937) ("Although law is a social growth and a social necessity, that does not mean that it is unrelated to moral as well as to economic forces.").

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

law's evolution demonstrates that settlement and finality have been important since the beginning of the concept of law.[33]

The earliest origins of the settled doctrine came from the push to resolve disputes peacefully and avoid ongoing bloodshed,[34] which could be a drain to the population as a whole. In ancient, stateless societies, one mode of redress prior to law was self-help; if a person were offended or harmed by someone, he or she could retaliate directly.[35] This mode of redress often led to ongoing feuds between kindred groups.[36] Thus, primitive laws sought to codify the regulation of self-help and revenge.[37] Consequently, law emerged as a tool to "avert private vengeance and prevent private war []as an instrument of justice"[38] and substitute those feuds with a peaceful device for redress. The prevailing social interest at the time was the general security of a community, and law contributed to this by providing the means for peaceful resolution of disputes.[39]

As societies and states grew more complex, human interaction became more common, as did as the need for regulation of those interactions. In the classical society of Rome, for example, most disputes were taken to the state for resolution. The fear of arbitrary decision-making prompted a rigid system characterized by strict application of decisional rules.[40] In a time when disputes could end in the spilling of blood, the formal procedure provided by these strict laws offered a general notion of security, certainty, and uniformity.[41] In other words, Roman systems reflected the principle that Pound observed centuries later: "The chief end which the legal system seeks is certainty."[42] This claim for certainty found root in the formality of

33. *See id.* at 203 (discussing that, 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 . . . .").

34. *Id.* at 198–99.

35. *Id.* at 199; 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, 42, 46 (1995).

36. Pound, *supra* note 32, at 199.

37. *See, e.g.*, Whitman, *supra* note 35, at 46.

38. *See* Pound, *supra* note 32, at 199.

39. *Id.* at 204.

40. Roscoe Pound, *The End of Law as Developed in Legal Rules and Doctrines*, 27 HARV. L. REV. 195, 204 (1915).

41. Pound, *supra* note 32, at 204, 208–09, 213.

42. *Id.* at 204.

procedure and pleading.[43] Formal doctrine could remove the unpredictability and arbitrariness of decision outcomes, though strict adherence to the letter and form of law often led to harsh and sometimes unjust outcomes.[44]

Over time, the perceived need for justice led to further developments in legal doctrines and the adoption of natural law theories of equity in both ancient Rome and in English common law.[45] These same Roman ideals later influenced the American legal system.[46] Natural law theories incorporated ideas from Greek philosophers, such as Plato and Aristotle,[47] and grounded outcomes and laws in morality and justice.[48] Natural law's purpose thus ostensibly supports the common good of the community and the development of law to reflect recognized moral obligations.[49] 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 every one his due.'"[50]

These theories were embraced by early Christian philosophers such as St. Thomas Aquinas and other influential advocates of natural law.[51] Thus, strains of natural law grounded in Christian legal theory have had a strong influence on the development of American law.[52] While natural law brought the concepts of equity and justice to our

43. *Id*. at 205.

44. *Id*. ("[I]n 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.").

45. *Id*. at 213.

46. *See* Amir Aaron Kakan, *Evolution of American Law, from its Roman Origin to the Present*, ORANGE COUNTY LAW., Feb. 2006, at 31–46.

47. *See* 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). *But see* John R. Kroger, *The Philosophical Foundations of Roman Law: Aristotle, The Stoics, and Roman Theories of Natural Law*, 2004 WIS. L. REV. 905, 916 (2004).

48. *See* Pound, *supra* note 32, at 213.

49. *See* Gosalbo-Bono, *supra* note 47, at 233; Pound, *supra* note 32, at 220.

50. Richard A. Epstein, *From Natural Law to Social Welfare: Theoretical Principles and Practical Applications*, 100 IOWA L. REV. 1743, 1745 (2015) (quoting JUSTINIAN, INSTITUTES 1.1.3 (J.B. Moyle trans., 1911)).

51. *Natural Law for Today's Lawyer*, 9 STAN. L. REV. 455, 459 (1957) [hereinafter *Natural Law*]; *see* Matthew D. Wright, *The Aim of Law and the Nature of Political Community: An Assessment of Finnis on Aquinas*, AM. J. JURIS. 133–34 (2009); *Thomas Aquinas: Political Philosophy,* INTERNET ENCYCLOPEDIA OF PHILOSOPHY, http://www.iep.utm.edu/aqui-pol/#H1 (last visited Oct. 18, 2016).

52. *See Natural Law, supra* note 51, at 495 ("Historically, natural law has played an important part in the development of our jurisprudence and of our case law.").

concept of the role of law, it did not diminish the need or importance of certainty. As Pound noted, "In order to insure equality, the maturity of law again insists strongly upon certainty . . . ."[53]

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 are reactions against natural law; for example, positivism purports to separate morals from law.[54] Others, such as formalism and realism, have developed at odds with one another.[55]

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.'"[56] In other words, judges are, "and should be[,] tightly constrained by the objectively determinable meaning of a statute . . ."[57] Formalists believed that law "should be[] unresponsive to factual contexts and circumstances" and based on principles indifferent to the changing needs of society and the social purposes that law may serve.[58] These principles center on certainty and the protection of the community by separating the rule of law from arbitrariness.[59]

In contrast, legal realism posits that "judges react primarily to the underlying facts of the case, rather than to applicable legal rules and reasons."[60] Under realism, the purpose of law is the realization of

53. Pound, *supra* note 32, at 221.

54. *But see* Charles L. Barzun, *The Forgotten Foundations of Hart and Sacks*, 99 VA. L. REV. 1, 27–29 (2013) (discussing scholarly views on positivism and its association with morality).

55. *See* Brian Leiter, *Positivism, Formalism, Realism*, 99 COLUM. L. REV. 1138, 1147 n.30 (1999) (reviewing ANTHONY SEBOK, LEGAL POSITIVISM IN AMERICAN JURISPRUDENCE (1998)).

56. *Id*. at 1144 (alteration in original) (quoting STEVEN J. BURTON, AN INTRODUCTION TO LAW AND LEGAL REASONING 3 (2d ed. 1995)).

57. *Id*. at 1144 (quoting William Eskridge, Jr., *The New Textualism*, 37 UCLA L. REV. 621, 646 (1990)).

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

59. *But see* Shawn J. Bayern, *Against Certainty*, 41 HOFSTRA L. REV. 53, 84–86 (2012) (arguing that viewing formalism as a protection against arbitrary government may be overly simplistic).

60. Leiter, *supra* note 55, at 1148.

"articulated social policies," and "questions of law should be resolved with a view to the social consequences that would flow from a particular ruling."[61] Though perhaps not as tethered to "certainty" as formalism, legal realism's preoccupation with just outcomes also envisions a kind of formal endpoint.

Law is never completely static, however; the very evolution of law attests to this.[62] Moreover, the common law has always accommodated changes. But these changes occur at a pace that in general does not harm the benefits of stability. In a recent defense of the importance of common law, Balganesh and Parchomovsky state that the very essence of the common law's survival is its ability to balance the competing forces of "stability and change."[63] Thus, while legal changes occur slowly in the common law, the common law has still been able to accommodate evolving social values.[64] Accepting that societal values and systems are interwoven with the physical environment, discussed earlier, this kind of evolution that does exist in law is mismatched with the current realities occurring in the physical world.

In addition to this slow evolution that still accommodates the values of stability and predictability, law has also seen accelerated change that can disrupt stability and reliance if driven by "progress." Separating the normal legal evolution that seeks to preserve stability and predictability from this separate strand of legal change is important to understanding the role of stability in law. In the latter half of the twentieth century, Professor Robert Gordon lumped all of the historic episodes of legal evolution 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.[65]

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

62. *See* discussion *infra* Section II.A.

63. Shyamkrishna Balganesh & Gideon Parchomovsky, *Structure and Value in the Common Law*, 163 U. PA. L. REV. 1241, 1243–44 (2015).

64. *See id.* at 1247.

65. 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.[66]

Based on this perspective of law, Gordon argues that the purpose of law is to realize in society that certain norms are tied to a notion of historical development, either gradually realizing themselves in history or evolving into their current norms from past, inferior ones.[67] In that view, constancy and dynamism both support the purpose of law. He also states that legal science is "related to something more fundamental than mere politics: to principles of fundamental right as realized teleologically through historical experience and, even more important, to needs spontaneously emerging from social life and to the long-term logic of historical development."[68]

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 adaptation mean, however, when we apply it to law itself?

B. Certainty and Dynamism in Law

While the desire for certainty is important to the nature of our law generally,[69] this concept of settled decisions supposes that those areas of the law with repose are themselves unchanging. Against such unchanging backgrounds, law must respect settled doctrine and legitimate expectations.[70] 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.

66. *Id*.

67. *Id*.

68. *Id*. at 1040.

69. *See infra* Section II.A.

70. This forms the reasoning underlying the majority opinion in the famous *Lucas v. South Carolina Coastal Council*, 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 an altered legal doctrine.

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 necessary in common law tort evolution.[71] 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 be charged with negligence as [a] matter of law for acting as prudence dictates."[72] 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."[73]

Of course, contract law has always allowed for consideration of changed circumstance when such is anticipated by the parties. 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.[74] Private ordering can also allow flexibility without need of repose in disparate areas of the law,[75] 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.[76] The bill was passed in response to concerns about the ability of hackers to engage

71. *See e.g.,* The T.J. Hooper, 60 F.2d 737, 740 (2nd Cir. 1932).

72. Tedla v. Ellman, 19 N.E.2d 987, 989 (N.Y. 1939).

73. *The T.J. Hooper*, 60 F.2d at 740.

74. *See* John F. Coyle & Joseph M. Green, *Contractual Innovation in Venture Capital*, 66 HASTINGS L.J. 133, 160–71 (2014) (detailing a variety of convertible notes arising from technological advances).

75. *See*, *e.g.*, RETHINKING COMMODIFICATION: CASES AND READINGS IN LAW AND CULTURE 9 (Martha M. Ertman & Joan C. Williams eds., 2005) (demonstrating that private ordering and markets continue to be "discovered" in new areas).

76. Consolidated Appropriations Act, 2016, H.R. 2029, 114th Cong. (2015) (The Cybersecurity Information Sharing Act of 2015 was amended into the spending bill).

in cyber-attacks, a relatively new national security threat brought on by changes to information technology.[77] 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.[78]

Contrast this with the opening discussion of the Coastal Zone Management Act. It seems that the law can respond quickly to rapid changes in the technological and market field, but not in areas in which the physical world is undergoing rapid change. This suggests that legal dynamism is associated only with those worlds in which purposeful change is understood.

C. Legal Constancy and Dynamism as Both Supporting Efficiency

As described above, our law contains features that allow for rapid evolution when technological and economic advances result in changed circumstances. While the normative reasons for such apparent flexibility may not always be fully articulated, I believe they are based 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.[79]

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

77. *See* Frederick Ding, *Senate passes Cybersecurity Information Sharing Act*, HARV. J.L. & TECH.: JOLT DIG. (Nov. 18, 2015), http://jolt.law.harvard.edu/digest/legislation/senate-passes-cybersecurity-information-sharing-act.

78. Other recent examples include new regulations of drones and state laws regarding gathering information of employee social media accounts. *See Access to Social Media Usernames and Passwords*, NAT'L CONF. STATE LEGS. (July 6, 2016), http://www.ncsl.org/research/telecommunications-and-information-technology/employer-access-to-social-media-passwords-2013.aspx; Bart Jansen, *FAA unveils drone rules*; *Obama orders policy for agencies*, U.S.A. TODAY (Feb. 16, 2015, 8:12 AM), http://www.usatoday.com/story/news/2015/02/15/faa-drone-rule/23440469/.

79. Michael Pappas argues how conceptualizing environmental and resources laws as "anti-waste" is a superior method for understanding these laws because it allows for flexibility in application to preserve efficiency. Michael Pappas, *Anti-Waste*, 56 ARIZ. L. REV. 741, 788–89 (2014).

ideas completely, by withdrawing the patent protection after this set time.[80]

Michael Pappas notes how property law evolved quite quickly when necessary to capture efficiencies.[81] 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: "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. . . ."[82]

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 prudence, even if not general practice.[83] Modern statutes likewise reflect the understanding that technological innovation at times requires that legal parameters be reset. In the environmental law realm, for instance, 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.[84] If "best technology" were static, this requirement would not be necessary.

As discussed, below, the link between staticism and efficiency has also been cited in the law and climate change literature.[85] In critiquing the use of conservation easements, Jessica Owley uses efficiency as a standard to judge whether these legal doctrines should be amended.[86] Her theory is that underlying changes in the world have rendered or could render the conservation easements inefficient in a societal

80. *See* Benjamin N. Roin, *The Case for Tailoring Patent Awards Based on Time-to-Market*, 61 UCLA L. REV. 672, 677 (2014); *see also* Stephen S. Mosher, *Best Idea Ever*, 77 TEX. B.J. 448 (2014).

81. Pappas, *supra* note 79, at 772–74.

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

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

84. Clean Water Act, 33 U.S.C. § 1314(b) (2012); Clean Air Act, 42 U.S.C. § 7411(a)(1) (2012).

85. *See infra* Section IV.A.

86. 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).

sense.[87] As this example illustrates, efficiency is an important consideration in determining whether and how law should evolve.

III. RECOGNITION OF A 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 respond to change dynamically, why has evolution lagged in the legal structures that govern the physical world and is the subject of such accelerated change? The reason is both philosophical and practical, and both of these must be addressed to facilitate a move away from "settled" legal doctrine.

A. Western Religious and Philosophic Thought Embrace an Unchanging World

Though much of common and statutory law, including environmental law, recognizes and acknowledges that technological and scientific innovations should be accommodated in law, the recognition of a changing world is philosophically suspect to a large cohort of Western society. In Western culture, from the creation of a static earth in Genesis through the settled stories of mythology, the creation was something that had happened and was not ongoing; the world was stable.[88] And for much of human history, nothing challenged this discourse. It was not until the theory of evolution—which was 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.[89]

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

87. *Id.*

88. *See generally* Plato, *Cratylus*, *in* THE COLLECTED DIALOGS OF PLATO: INCLUDING THE LETTERS 421 (Edith Hamilton & Huntington Cairns eds., 1961); CATECHISM OF THE CATHOLIC CHURCH art. 1:66, http://www.vatican.va/archive/ccc_css/archive/catechism/p1s1c2a1.htm (last visited Sept. 9, 2016).

89. H. Wayne House, *Darwinism and the Law: Can Non-Naturalistic Scientific Theories Survive Constitutional Challenge?* 13 REGENT U. L. REV. 355, 355–57 (2000).

of the "Creation," and thus the story of God's relationship with humanity.[90] This is not based just on the creation story, but also on the conception of God's relationship with the world.[91] The early Christian church decided that God's covenant through Christ's sacrifice was a singular, unrepeatable event.[92] According to Catechism of the Catholic Church, a central tenet of Christianity is that all of God's mystery has been revealed and that there will be no new revelations forthcoming.[93] This religious argument has also been put forth to argue against the existence of harmful climate change.[94]

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.[95] This was based on solely the spiritual notion that the unaltered natural world was somehow holy.[96] Writing a century later, Aldo Leopold stated that "a thing is right when it tends to preserve the integrity, stability, and beauty of the biotic community."[97] Such a worldview is deeply embedded in human thought. As noted by evolutionary biologists, such core worldview beliefs are not necessarily rational and not necessarily responsive to reasoned argument.[98] Therefore, we have a

90. 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, 1331 (2011).

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

92. *Hebrews* 10:1–18 (The New Revised Standard Version Catholic Edition: Anglicized Text).

93. *See* CATECHISM OF THE CATHOLIC CHURCH, *supra* note 88.

94. *Inhofe: It is 'Arrogance of People to Think That We . . . Would be Able to Change' What God is Doing with the Climate*, THINK PROGRESS (Mar. 12, 2012), http://thinkprogress.org/climate/2012/03/12/442584/inhofe-arrogance-people-change-god-climate/.

95. 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).

96. *Id*.

97. ALDO LEOPOLD, A SAND COUNTY ALMANAC: WITH ESSAYS ON CONSERVATION FROM ROUND RIVER 262 (1966).

98. *See* Shi-Ling Hsu, *The Accidental Postmodernists: A New Era of Skepticism in Environmental Policy*, 39 VT. L. REV. 27, 55 (2014) (discussing how "people do not naturally

philosophical worldview deeply entwined with permanence and stability, which is continually reinforced by our experiences and *supposed objective* observations.

Our laws naturally reflect that worldview.

Thus, our entire legislative and regulatory infrastructure concerning the physical world is based on the concept that the world's natural background has a static setting, and that perturbations to this setting are in fact unnatural and should be corrected to such extent as necessary to return to the norm.[99] For example, the Endangered Species Act takes the pre-modern mix of species and natural ecosystems as the goal for action under that statute.[100] The concept of a static physical background is also present in the Stafford Act,[101] the Marine Mammal Protection Act,[102] Wilderness Act,[103] Monuments Act,[104] Native American Grave Protection and Repatriation Act (NAGPRA),[105] and the National Historic Preservation Act (NHPA).[106] Federal courts have declared that National Environmental Policy Act (NEPA) does not apply to "federal actions that merely maintain[] the status quo" or the "routine maintenance of an ongoing, pre-NEPA

employ reason to reach a conclusion, but they overwhelmingly tend to have an emotive reaction and *subsequently* come up with a rationalization to support it.").

99. *See generally* Todd S. Aagaard, *Environmental Harms, Use Conflicts, and Neutral Baselines in Environmental Law*, 60 DUKE L.J. 1505, 1515–17 (2011) (demonstrating that "natural" baselines are prevalent in the discussion of environmental law, even though this creates a normative assumption); 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.").

100. 16 U.S.C. § 1532(6) (2012) (designating a species as endangered when in danger of extinction throughout all or a portion of its *historic* range).

101. 42 U.S.C. §§ 5121–5122 (1994) (declaring a need for *special* measures to protect human health amid major natural disasters disrupting the normal functioning of governments and communities).

102. 16 U.S.C. § 1386(a)(2)–(3) (2012) (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).

103. 16 U.S.C. § 1131(c) (2012) (*preserving* federal wilderness land, defined by its *natural and primeval* conditions "untrammeled by man").

104. 16 U.S.C. § 433(h) (2012) (authorizing the Secretary of the Interior to accept donated land for preservation and then to fix its boundaries).

105. 25 U.S.C. § 3002(a)(2)(C) (2012) (establishing an ownership standard favorable to the historical, aboriginal inhabitants of an area).

106. 54 U.S.C. § 100101(a), (b)(1)(C) (2014) (directing the National Park Service to *preserve* areas recognized for "superb environmental quality").

project,"[107] implicitly endorsing the idea that once something is in place, it does not change.[108]

Similarly, common law and prior agreements over water tend to assume a static baseline that—as shown below—is inconsistent with modern reality.[109] 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 another "ongoing major Federal action" is to occur.[110] All of these areas involve the physical world as a background, and all assume an unchanging background.

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

The belief in a static background also has a practical component. Natural processes have historically occurred so slowly that they generally do not register on human consciousness. 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 has been historically unchanging.[111] And, even though we accept the theory of evolution, natural evolution without human pressure has primarily occurred over longer time spans than human attention.[112] Since it is costly to always reanalyze relationships in law, if the physical world, for all practical purposes, is unchanging, then why expend

107. Wild Fish Conservancy v. Kempthorne, 613 F. Supp. 2d. 1209, 1210, 1218 (E.D. Wash. 2009) (rev'd on other grounds sub nom); *see also* Wild Fish Conservancy v. Salazar, 628 F.3d 513, 523 (9th Cir. 2010).

108. *See e.g.*, Bob Egelko, Editorial, *Judge dismisses most of a suit against EPA pesticide approvals*, SFGATE (Aug. 15, 2014, 8:42 AM), http://www.sfgate.com/science/article/Judge-dismisses-most-of-a-suit-against-EPA-5689391.php (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 that couldn't have been foreseen earlier").

109. Craig Anthony (Tony) Arnold, *Adaptive Water Law*, 62 U. KAN. L. REV. 1043, 1043–49 (2014).

110. 542 U.S. 55, 73 (2004) (discussing whether the Utah Bureau of Land Management failed to adequately protect Utah public lands from damage caused by off-road vehicles).

111. *See e.g.*, Daniel A. Farber, *Uncertainty*, 99 GEO. L.J. 901, 941 (2011).

112. *See generally* Susan Emmenegger & Axel Tschentscher, *Taking Nature's Rights Seriously: The Long Way to Biocentrism in Environmental Law*, 6 GEO. INT'L. ENVTL. L. REV. 545, 580 n.202 (1994) (discussing how human intervention negatively impacts the extremely slow process of natural selection).

resources 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.[113] Because humans don't witness evolutionary change in their lifetimes, there is not a large incentive for adopting a legal system that can adapt to that change. If one assumes an Unchanging background, efficiency would be best served by not revisiting background considerations with respect to new decision making.[114]

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. Thus, it is maladaptive from an efficiency point of view. In 2014, *Science* reported that "present extinction rates are likely a thousand times higher than the background rate."[115] "[T]he Earth has entered a new period of extinction," with vertebrates "disappearing at a rate 114 times faster than normal," declares a study examining climate change, pollution, and deforestation conducted at Princeton, Berkeley, and Stanford.[116] 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."[117] Thus, while law is not strictly static, it has historically changed so slowly in most circumstances to be practically unchanging. Human intervention, primarily in the form of climate change, alters that calculation. "Although 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

113. *Id.* at 580 n.202 (quoting CHARLES DARWIN, ON THE ORIGIN OF SPECIES BY MEANS OF NATURAL SELECTION 153 (J.W. Burrow ed., England, Penguin Books 1968)) ("Nothing can be effected, unless favorable variations occur, and variation itself is apparently always a very slow process.").

114. Law, of course, does change and *evolve*, but outside of purposeful change, it has historically done so at a slow pace not generally recognized at a social scale. *See* ERIC T. FREYFOGLE, ON PRIVATE PROPERTY: FINDING COMMON GROUND ON THE OWNERSHIP OF LAND xiv–xv (2007) (providing a critique of the perception of unchanging property law).

115. S. L. Pimm et. al., *The biodiversity of species and their rates of extinction, distribution, and protection*, 344 SCIENCE, May 30, 2014, at 1246752-1, 1246752-2, http://www.sciencemag.org/content/344/6187/1246752.full.

116. Sci. & Env't, *Earth 'entering new extinction phase'- US study*, BBC NEWS (June 20, 2015), http://www.bbc.com/news/science-environment-33209548.

117. 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).

one of the great extinction spasms in geological history."[118] This destruction and rapid change will most likely accelerate in the future.[119] While most humans may not have witnessed species evolve, they have seen multiple species become extinct since the passage of the Endangered Species Act.[120]

Most legal scholars, especially those that write about the environment and natural resources, now recognize that the physical world is not a static environment and that dynamism and unpredictability will become more commonplace as climate change accelerates.[121] This makes some current laws outdated. 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."[122] Add to this all other law concerning or based on any part of our physical world, and the scale of the mismatch between laws and the things law governs becomes crystal clear. The very notion of climate change must alter our worldview, and thus, our view of governance.[123]

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? In one of the first cases involving

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

119. *See, e.g.*, Intergovernmental Panel on Climate Change [IPCC], *Summary for Policymakers*, in CLIMATE CHANGE 2014: IMPACTS, ADAPTATION, AND VULNERABILITY 1, 12–25 (C.B. Field et al. eds., 2014), http://ipcc-wg2.gov/AR5/images/uploads/WG2AR5_SPM_FINAL.pdf.

120. *See generally* John Buse, *A Different Perspective on the Endangered Species Act at 40: Responding to Damien M. Schiff*, 38 ENVIRONS ENVTL. L. & POL'Y J. 145, 153–56, 154 n.61 (2014) (detailing the increased rates of extinction over the last decades).

121. *Cf.* Arnold, *supra* note 109, 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).

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

123. *Cf. id.* at 30 ("[C]limate 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.").

the modern administrative state, the D.C. Circuit stated that "[o]ne of the purposes of administrative law is to permit a more elastic and informal procedure than is possible before our more formal courts."[124] Although administrative law is often premised and justified on the notion of flexibility, historically, this flexibility was bounded and balanced with consistency and finality to promote the legitimacy of administrative actions.[125]

Most formal administrative action, from rulemaking to adjudication, initiates only after a stasis has been reached. Requests must be clear, evidence must be ready, and proposals must have taken on a final form. Before agency action can be reviewed, it must have reached a form of stasis through finality and ripeness.[126] The settled doctrine of rulemaking forbids challenges to agency action when an issue was not raised at an early stage.[127] Even more insidiously, the very notion of administrative rulemaking is premised on the idea that it is efficient because it minimizes the individuation necessary when the application of unchanging background materials to new facts.[128] As Professors Craig and Ruhl note, "[A]dministrative law drives agencies toward finality,"[129] or, stated more prosaically, "[A]gencies . . . steamroll their decisions through public-comment scrutiny and judicial review litigation and then never look back."[130] As noted by Professor Daniel Farber, an "unspoken assumption of administrative law" is that it is "defined by discrete 'final and binding action[s].'"[131] Camacho and Glicksman similarly assert that certainty is a basic legal

124. Lambros v. Young, 145 F.2d. 341, 343 (D.C. Cir. 1944).

125. *See generally* Mark Fenster, *The Birth of a "Logical System": Thurman Arnold and the Making of Modern Administrative Law*, 84 OR. L. REV. 69, 73–75 (2005); Aaron L. Nielsen, *Visualizing Change in Administrative Law*, 49 GA. L. REV. 757, 772–76 (2015).

126. William Funk, *A Primer on Nonlegislative Rules*, 53 ADMIN. L. REV. 1321, 1335–41 (2001); *see also* Bennett v. Spear, 520 U.S. 154, 177–78 (1997); Abbott Labs. v. Gardner, 387 U.S. 136, 149–51 (1967).

127. *See* Egelko, *supra* note 108.

128. *See* Kathleen M. Sullivan, *Foreword: The Justices of Rules and Standards*, 106 HARV. L. REV. 22, 63 (1992).

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

130. *Id*. at 5.

131. *See* Daniel A. Farber & Anne Joseph O'Connell, *The Lost World of Administrative Law*, 92 TEX. L. REV. 1137, 1150 (2014).

premise of administrative regulation even as they argue for more "adaptive administrative regulation."[132]

Though statutes may legally allow agencies more flexibility, agencies have failed to use this flexibility to account for changed background circumstances.[133] Despite beliefs to the contrary, much of administrative law change comes from political considerations, rather than from changes in circumstances[134]. 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 circumstances rather than factual circumstances.[135] Though policy flexibility has been critiqued for undercutting certainty and reliance on policy decisions,[136] the ability of agencies to change policies or interpretations, even for political reasons, has been well established since *Chevron*.[137] There is thus an interplay between administrative flexibility and the need for policy finality.

As discussed above, 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 the agency is allowed only to "fill [in] the gaps,"[138] not alter the trajectory based on changed circumstances in most cases. While some forms of finality, such as certain statute of limitation rules and rulemaking procedures, may seem necessary to avoid a situation in which policy choice questions are reconsidered or

132. *See* Alejandro E. Camacho & Robert L. Glicksman, *Legal Adaptive Capacity: How Program Goals and Processes Shape Federal Land Adaptation to Climate Change*, 87 U. COLO. L. REV. 711 (2015).

133. *See* Victor B. Flatt & Jeremy M. 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, 1501 (2011).

134. Farber, *supra* note 131, at 1168–69.

135. *Id*.

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

137. *See* Russell L. Weaver, *A Foolish Consistency is the Hobgoblin of Little Minds*, 44 BAYLOR L. REV. 529, 542–43 (1992) ("Agencies themselves are free to change their own interpretations provided that they give a reasoned explanation for the change.").

138. Chevron U.S.A., Inc. v. Natural Res. Def. Council, Inc., 467 U.S. 837, 847 (1984).

re-litigated forever, they were never predicated on the need to stymie changes when the background facts themselves change.[139]

The literature critiquing the flexibility of agency policy provides the theoretical case for why agency action should tend towards settled doctrine. Clear and consistent legal decisions can increase economic efficiency.[140] 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 preferences in the executive branch, undermining business and societal expectations. However, this assumption only makes sense in a static physical environment.

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 when agency flexibility is statutorily authorized through enabling legislation—is no surprise.[141] 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") 2014 proposal to revisit financial responsibility regulation for offshore oil platform decommissioning is instructive.[142] Offshore oil drilling has changed drastically in the last twenty-five years, with drilling occurring

139. Masur, *supra* note 136, at 1023–24 (suggesting that such was never planned because it was never anticipated).

140. *Id*.

141. 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. Am. Trucking Ass'ns v. EPA, 175 F.3d 1027, 1057 (D.C. Cir. 1999), *aff'd in part, rev'd in part sub nom by* Whitman v. Am. Trucking Ass'ns, 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.").

142. Risk Management, Financial Assurance, and Loss Prevention, 79 Fed. Reg. 160, 49027-31 (Aug. 19, 2014); Phil Taylor, *"E&E: Interior to Update Decades-old Bonding Regs*," E&E REP. (Aug. 18, 2014), http://www.reefrelieffounders.com/drilling/2014/08/19/ee-interior-to-update-decades-old-bonding-regs/.

in deeper and deeper waters.[143] The BOEM rules have required these rigs to have financial stability in case something goes wrong.[144] Given the large change in the actual operation, size and complexity of offshore drilling rigs, this suggests that the rules written for financial responsibility for decommissioning these much larger rigs should change. However, this proposed change did not occur until after the Macondo Well explosion brought focus to problems with outdated rules in offshore oil drilling.[145] Without this attention and the Mineral Management Service re-organization to BOEM, the rules regarding financial responsibility likely would have remained static. Agencies tend not to revisit prior determinations without attention and pressure, no matter how much the facts on the ground have changed.

There have been attempts to litigate to force administrative agencies to take changed circumstances into account, as seen in two recent climate adaptation-related complaints. One, *United States v. Miami-Dade County*, alleges that a proposed consent decree will violate the Clean Water Act (CWA) as the climate changes, and thus must be altered.[146] Another, *Conservation Law Foundation v. Jackson,* 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.[147] 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, even when the changed environment would suggest the necessity of such

143. Victor B. Flatt, *The "Worst Case" May be the Best: Rethinking NEPA Law to Avoid Future Environmental Disasters*, 6 ENVT'L. & ENERGY L. & POL'Y J. 181, 195 (2011).

144. Jennifer A. Dlouhy, "*Obama Administration Plan Would Ensure Energy Companies Pay to Scrap Old Offshore Hulks*," FUELFIX (Sept. 22, 2015), http://fuelfix.com/blog/2015/09/22/new-white-house-rule-would-ensure-energy-companies-pay-to-scrap-old-offshore-hulks/#29976101=0 ("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.").

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

146. Complaint in Intervention at 7, United States. v. Miami-Dade County, No. 12-24400-FAM (S.D. Fla. June 25, 2013).

147. First Amended Complaint at 1, Conservation Law Found., Inc. v. Jackson, No. 11-cv-11657 (D. Mass. Sept. 10, 2012).

consideration.[148] Unfortunately, preparing for all eventualities, even if they could be predicted, is not an answer. As Osofsky notes in her analysis of the Deepwater Horizon tragedy, complex problems are not necessarily solved by more complicated regulatory management schemes.[149]

IV. ADDRESSING THE DEFAULT TO SETTLEMENT IN LAW

A. Legal Flexibility or Adaptive Capacity Alone is Not the Answer

Recognition of the problems with 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.[150] Craig and Ruhl describe the general mismatch between *ecological "restoration"* and the idea that restoration must hearken back to a prior natural state.[151] Jessica Owley has critiqued the use of permanent conservation easements for failing to recognize changing circumstances.[152] Some scholars have proposed "adaptive management" as a tool to recognize changing circumstances and new information in the regulatory context.[153] For the most part, this criticism has tended to focus on the impact of a changing climate on resource management.[154] But a

148. Jacqueline Peel & Hari M. Osofsky, *Sue to Adapt?*, 99 MINN. L. REV. 2177 (2014).

149. Osofsky, *supra* note 145, at 1099–100.

150. 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,* 88 B.U. L. REV. 1 (2008); Niina Heikkinen, "*Will it be Extinction or "Translocation" as Impacts of Climate Change Increase?",* CLIMATEWIRE (Aug. 15, 2014), http://www.eenews.net/climatewire/stories/1060004459.

151. Margaret A. Palmer & J.B. Ruhl, *Aligning Restoration Science and the Law to Sustain Ecological Infrastructure for the Future*, FRONTIERS ECOLOGY ENV'T, Nov. 1, 2015, at 512–19.

152. Owley, *supra* note 86.

153. Craig & Ruhl, *supra* note 129, at 9 (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 has proven far more difficult than its early theorists expected."). 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).

154. *See* articles cited *supra* note 150.

changing climate's impacts go beyond natural resources as our entire social and legal system is predicated on our physical environment.[155]

Some recent literature has tried to square a static legal and regulatory system with a rapidly changing world.[156] Holly Doremus explores whether the common law of property can "evolve" when pressured by a fast changing world.[157] Other literature has proposed procedural flexibility[158] and examining and changing underlying statutes to support substantive flexibility.[159] For instance, Donald Hornstein,[160] Alejandro Camacho,[161] and J.B. Ruhl[162] each have looked at the importance of "resilience" in administrative law. Hornstein has examined whether "adaptive" administrative structures can improve outcomes in complex systems.[163]

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

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

156. Alejandro E. Camacho, *Adapting Governance to Climate Change: Managing Uncertainty Through a Learning Infrastructure*, 59 EMORY L.J. 1, 36–40 (2009); Alejandro E. Camacho, *Can Regulation Evolve? Lessons from a Study in Maladaptive Management*, 55 UCLA L. REV. 293, 331, 349–51 (2007); Camacho & Glicksman, *supra* note 132, at 713–14 (citing Jody Freeman, *Collaborative Governance in the Administrative State*, 45 UCLA L. REV. 1, 21–22 (1997)); Craig & Ruhl, *supra* note 129; Holly Doremus, *Adaptive Management as an Information Problem*, 89 N.C. L. REV. 1455 (2011); Robert L. Glicksman & Sidney A. Shapiro, *Improving Regulation Through Incremental Adjustment*, 52 U. KAN. L. REV. 1179 (2004); Donald T. Hornstein, *Complexity Theory, Adaptation, and Administrative Law*, 54 DUKE L.J. 913 (2005); Richard J. Lazarus, *Super Wicked Problems and Climate Change: Restraining the Present to Liberate the Future*, 94 CORNELL L. REV. 1153, 1156–57 (2009); J.B. Ruhl & James Salzman, *Climate Change, Dead Zones, and Massive Problems in the Administrative State: A Guide for Whittling Away*, 98 CAL. L. REV. 59, 97–98 (2010).

157. 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 114, at xv.

158. *Cf.* Craig & Ruhl, *supra* note 129, at 46 (arguing for the need to abandon finality for periodic agency reassessment).

159. Camacho & Glicksman, *supra* note 132, at 713.

160. Donald T. Hornstein, *Resiliency, Adaptation, and the Upsides of Ex Post Lawmaking*, 89 N.C. L. REV. 1551, 1553 (2010).

161. Alejandro E. Camacho, *Transforming the Means and Ends of Natural Resources Management*, 89 N.C. L. REV. 1405, 1411 (2010).

162. 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).

163. Hornstein, *supra* note 160.

while still allowing for the oversight of agency discretion.[164] 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.[165] This is a step toward recognition of the conflict between 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. Specifically, the 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.[166] 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 in scale so much that another response is required.[167] Though both of these scholarly tracks identify the problem of static legal mechanism, the solutions they propose are not 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, Jody Freeman hoped that collaborative governance could introduce standards that change as needed, instead of introducing one time, final decisions.[168] In their analysis of federal resource management agencies and their statutory power, Camacho and Glicksman note that substantive as well as procedural law may need to be changed in order to accommodate flexibility.[169] However, even in those cases in which substantive flexibility is allowed in an authorizing statute, such variation was meant for only limited parameters. Though 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.[170] That our laws are

164. Craig & Ruhl, *supra* note 129, at 40–49.

165. *Id*. at 19.

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

167. *Id*. at 236–39.

168. Freeman, *supra* note 156, at 7–8.

169. Camacho & Glicksman, *supra* note 132, at 716.

170. *See e.g.*, *id*. at 718; Flatt & Tarr, *supra* note 133, at 1500.

currently in this state is not surprising when we juxtapose the seeming flexibility against the primary tendency in the law towards finality and consistency.[171]

The resource adaptation literature thus explores and explains many potential legal fixes to address the mismatch between stationarity and dynamism. Yet, 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,[172] the centrality of dynamism from climate change in 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,[173] 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 depends on judicial, legislative, 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 does not address whether the physical facts underlying the assumptions of so many prior rules and decisions have changed so that the rules and decisions require re-examination.[174] What really should be examined is the notion of "settlement,"[175] even when background circumstances have changed and will continue changing.

This does not mean the concept of settled doctrine should be consigned to the garbage heap. It serves important functions in the legal system.[176] However, finding a way for legislatures, administrative agencies, and the judicial branch to recognize that changed

171. *See* discussion *supra* Part I.

172. Craig & Ruhl, *supra* note 129, at 19 (suggesting 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.).

173. Flatt, *supra* note 155, at 273.

174. Arnold, *supra* note 109, at 1054 (acknowledging the static nature of water law, but proposing flexibility as an adaptive solution going forward).

175. *See* discussion *supra* Section II.B.

176. The necessity of settled doctrine and how "settled" it should be and has been explored in multiple fora. *See*, *e.g.*, Carol Rose, *Crystals and Mud in Property Law*, 40 STAN. L. REV. 577, 592–93 (1988); Sullivan, *supra* note 128.

circumstances require a re-examination of decisions 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 circumstances. The scholarly work about systemic changes in a regulatory system and possibilities of common law change are on the right track. But it is not enough. Inefficient repose and settlement in public law requires addressing both the underlying impacts of inappropriate settled doctrines or decisions and why the law itself has not already responded. As discussed, the preference for settled doctrine has historically been efficient for changes outside of human will, and philosophical and religious beliefs have intertwined to mutually reinforce this historically efficient state of human society.[177]

I do not propose to change human nature, philosophy, or religion, but I do believe that 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 include 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. I examine the functionality of both of these in this situation.

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

Work-arounds for a climate change world have been attempted—as would be expected when the legal system does not work efficiently. Even so, they have not proven themselves particularly effective. Because the normative baseline is finality, ad hoc attempts to infuse flexibility into the legal system seem to fail. Though there may be some legal "reset," the broader system always drifts back to the finality default for the reasons we have discussed.[178] 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

177. *See supra* Sections III.A–B.

178. *See infra* Section II.A.

changing and unpredictable physical environment, while also demonstrating how difficult it has been to try and 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.[179] In an effort to reduce such flooding, the federal government began many construction projects to control floodwaters on the riverine systems, though such flooding was known to be variable.[180] However, federal government agencies believed that this variability had predictable parameters—such as the 100-year flood plain or 500-year flood plain—and focused on protecting these areas to control flooding.[181] Once the flood protections were in place, authorities allowed development to occur in these former floodplains.[182] 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.[183]

The failures of the NFIP and related flood programs in the past decade shows the difficulty of using ad hoc fixes.[184] The NFIP remained fairly solvent until 2005, but with the unprecedented hurricane season of that year, it became insolvent.[185] This insolvency has continued to increase, reaching twenty-four billion dollars by 2013.[186] While the impacts of Hurricane Katrina show the most vivid example of loss of life and property, it is the increase in total quantity and scope of these events that demonstrates the real misfit between

179. Christine Klein & Sandra Zellmer, *Mississippi River Stories: Lessons from a Century of Unnatural Disasters*, 60 S.M.U. L. REV. 1471, 1480 (2007) (explaining rapid development put more people and settlement in floodplains).

180. *Id*. at 1485.

181. Daniel McCool, *The River Commons: A New Era in U.S. Water Policy*, 83 TEX. L. REV. 1903, 1904–05 (2005).

182. Klein & Zellmer, *supra* note 179, at 1486.

183. *Id*. at 1491.

184. *Id*. at 1533.

185. Carolyn Kousky & Howard Kunreuther, *Issue Brief: Addressing Affordability in the National Flood Insurance Program*, RES. FOR THE FUTURE & THE WHARTON RISK MGMT. DECISION PROCESSES CTR. 1 (Aug. 2013), http://www.rff.org/files/sharepoint/WorkImages/Download/RFF-IB-13-02.pdf.

186. *Id*.

the legal regime designed to 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 2008,[187] the Nashville flood of 2010,[188] the Vermont flooding of 2011,[189] the South Carolina flooding of 2015,[190] and the Baton Rouge flooding in 2016.[191] 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.[192]

The payout from disasters has swelled. As noted above, in 2004, the federal flood insurance system was solvent.[193] By 2013, it owed twenty-four billion dollars to the federal treasury, putting the solvency of the program at risk.[194] 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.[195] However, the legal

187. WEATHER & FORECAST OFFICE – DES MOINES, IOWA, NAT'L WEATHER SERV., CENTRAL IOWA FLOODS OF 2008, LOCAL OFFICE SERVICE ASSESSMENT (2009), 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.").

188. *May 1&2 2010 Epic Flood Event for Western and Middle Tennessee*, NAT'L WEATHER SERV. (May 18, 2010), http://www.srh.noaa.gov/ohx?n=may2010epicfloodevent.

189. *See* Kousky & Kunreuther, *supra* note 185; *see also Irene Leaves Vermont with "Epic" Flooding*, CBS NEWS (Aug. 29, 2011, 11:05 AM), http://www.cbsnews.com/news/irene-leaves-vermont-with-epic-flooding/.

190. CAROLINAS INTEGRATED SCI. & ASSESSMENTS, THE SOUTH CAROLINA FLOODS OF OCTOBER 2015 (Oct. 30, 2015), http://www.cisa.sc.edu/PDFs/October%202015%20Flood%20Event%204%20Pager.pdf.

191. Camille Robertson & Alan Binder, *As Louisiana Floodwaters Recede, the Scope of Disaster Comes into View*, N.Y. TIMES (Aug. 16, 2016), http://www.nytimes.com/2016/08/17/us/louisiana-flooding.html?_r=0.

192. RAWLE O. KING, CONG. RESEARCH SERV., R42850, THE NATIONAL FLOOD INSURANCE PROGRAM: STATUS AND REMAINING ISSUES FOR CONGRESS (Feb. 6, 2013), http://fas.org/sgp/crs/misc/R42850.pdf.

193. *See* discussion *supra* Section IV.B.1

194. U.S. GOV'T ACCOUNTABILITY OFF., GAO-15-290, HIGH RISK: NATIONAL FLOOD INSURANCE PROGRAM (2015), http://www.gao.gov/highrisk/national_flood_insurance/why_did_study.

195. *See* KING, *supra* note 192, at 5 (noting that every dollar of hazard mitigation spent saves five dollars in disaster costs).

system regulating floods, set up decades earlier, incentivized increased economic losses, by paying for harm, but not preventing it. In 2014, this led to an outlay for flood damages, and thus for climate change impacts, from the federal government of over sixty-five billion dollars.[196]

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 rebuild in areas further from harm's way.[197] 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.[198] After the staggering costs and NFIP losses of Superstorm Sandy, Congress amended the whole statutory strategy to make insurance premiums more accurately reflect the risk of the climate-altered world, particularly in coastal areas.[199] However, after public outcry, this amendment to the Federal Flood Insurance Program was amended in a new bill to slow the adjustment of premium increases and incentivize better hazard mitigation.[200] The financial incentives to change the policy on government insurance in the face of changed circumstances were certainly real, and were acted upon, but even in this case, it proved difficult to change policy because of existing interests. 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.[201]

196. Doyle Rice, *Hurricane Sandy, Drought Cost U.S. $100 billion*, USA TODAY (Jan. 25, 2013, 8:34 AM), http://www.usatoday.com/story/weather/2013/01/24/global-disaster-report-sandy-drought/1862201/.

197. *See* KING, *supra* note 192, at 4.

198. Ben Jervey, *Year After Sandy, Rebuilding for Storms and Rising Seas*, NAT'L GEOGRAPHIC (Oct. 22, 2013), http://news.nationalgeographic.com/news/2013/10/131026-hurricane-sandy-anniversary-sea-level-rise-adaptation/.

199. KING, *supra* note 192, at 8.

200. Deborah Barfield Berry & Ledyard King, *House Passes Flood Insurance Bill*, USA TODAY (Mar. 4, 2014, 7:55 PM), http://www.usatoday.com/story/news/nation/2014/03/04/house-passes-flood-insurance-bill/6037775/; *see* Biggert-Waters Flood Insurance Reform Act of 2012, 42 U.S.C. §§ 4001–4130 (2012).

201. 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), http://www.eenews.net/stories/1060031287.

2. Sunset provisions

Sunset provisions, which require laws to be reauthorized after a certain time period, seem to be one way of forcing consideration of laws at regular intervals. This might allow the legal response to match the state of the physical world. Our current model of sunset provisions in law, however, is ill-suited to this paradigm. Sunset provisions often come about as a political compromise to which both sides may hope to enhance or jettison at the time of sunset.[202] Thus, rather than providing a clean slate for reconsidering changed circumstances, sunset provisions currently do little more than provide new opportunities for lobbying and revisiting policy.[203] 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.[204]

Historic use of sunset provisions is based on anticipation of policy changes or trade-offs, which undermines the core reasons for certainty and settlement in law.[205] Such provisions create economic uncertainties and inefficiencies—such as costs associated with again passing laws—while not necessarily allowing for changes in law to better mirror unexpected changes in the physical world.[206] 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.[207] Over time, these renewable energy tax credits were subject to multiple sunset provisions in 1999, 2002, 2004, 2006, 2007, 2009,

202. Paul Ohm, *The Argument Against Technology-Neutral Surveillance Laws*, 88 TEX. L. REV. 1685, 1710–11 (2010).

203. *See* Erin Dewey, *Sundown and You Better Take Care: Why Sunset Provisions Harm the Renewable Energy Industry and Violate Tax Principles*, 52 B.C. L. REV. 1105, 1120–21 (2011).

204. *Id*. at 1121; *cf.* Bruce R. Huber, *The Durability of Private Claims to Public Property*, 102 GEO. L.J. 991, 994 (2014) (examining how temporary government grants of property interest create permanent expectations).

205. *See* discussion *supra* Section II.C.

206. *See* Ohm, *supra* note 202, at 1711, 1712.

207. *See* Dewey, *supra* note 203, at 1115.

2013, 2014, and 2020.[208] Unlike many sunset provisions, one explanation of sun-setting renewable energy tax breaks relates to expected changes in future costs of technology. In this way, sunset provisions could be a tool for updating law as expectations in cost structure in the future may be different, but there is uncertainty to how different. But in truth, the many sunset provisions in this arena suggest that the real reason for the sunset provisions were that neither side could get energy policy to reflect its views entirely, so trade-offs in the form of sunset provisions were made.[209]

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 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.[210]

Thus, while sunset provisions could theoretically support flexibility, in practice they have been used to keep policy options open rather than to allow the law to respond to changing circumstances.

V. WHAT TO DO

Law tends towards staticism. There are many reasons for this, but those reasons could still be supported while recognizing that changing circumstances in the physical world ask us to re-evaluate laws stasis. What then is the 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. Proposals from the legal literature recognizing the need for legal flexibility will not be sufficient. The first part of the solution is for society to recognize the fundamental problem now lying at the heart of our legal system.

The Supreme Court's holding that the National Environmental Policy Act (NEPA) does not cover changed circumstances without "actions" shows how oblivious our statutes and court interpretations

208. *Id*. at 1127–28; Cassandra Sweet, *Wind, Solar Companies Get Boost From Tax-Credit Extension*, WALL ST. J. (Dec. 16, 2015, 7:18 PM), http://www.wsj.com/articles/wind-solar-companies-get-boost-from-tax-credit-extension-1450311501.

209. *See* Dewey, *supra* note 203, at 1141–42 (pointing out the PTC has been amended "seven times in the past fifteen years").

210. *See* Melissa Powers, *Sustainable Energy Subsidies*, 43 ENVTL. L. 211, 226–27 (2013).

are to both the fact that an altered background can change the efficiency of settled rights and the static fallback of our legal system.[211] 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.[212] 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.[213]

Within statutory schemes we have examples of new (often administrative) actions based on particular timing or triggering devices. Resource planning laws, such as the Federal Land Planning and Management Act and the National Forest Management Act, allow changes through planning periods,[214] and certain pollution laws assume that pollution sources should be re-permitted.[215] Notice-and-comment during the re-examining or re-permitting process, and if necessary, subsequent litigation, could provide the necessary mechanisms to consider the changed background. The aforementioned statutes were designed to allow alteration for updated scientific knowledge or policy changes.[216] Therefore, 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, 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

211. Norton v. S. Utah Wilderness All., 542 U.S. 55, 73 (2004).

212. 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.

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

214. 16 U.S.C. § 1604 (2012); 43 U.S.C. § 1712 (2012).

215. Clean Water Act, 33 U.S.C. § 1342(b)(1)(B) (2012); Clean Air Act, 42 U.S.C. § 7661(a)(b)(5)(B) (2012).

216. 16 U.S.C. § 1604 (2012); 43 U.S.C. § 1712 (2012).

mechanism governing revisions.[217] The example of the CZMA demonstrates that, absent specific provisions, regulatory statutes do not update automatically. These specific provisions are available in limited circumstances in the CWA,[218] the CAA,[219] and major federal planning laws, but not in the CZMA,[220] the NHPA,[221] or NAGPRA,[222] to name a few. In these cases, a necessary first step that Camacho and Glicksman call for is the substantive authority to allow for adaptation to occur.[223]

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.[224] A better option might be a statute of general applicability that provides government authorities the ability to make changes based on climate impacts.[225] 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.[226] A comprehensive review statute of policies and regulations specifically focused on background changes, due to a changing climate, will not become a tool for hindering individual agency decisions. Rather, it 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 an examination of the impact of climate change on their regulations and

217. *See supra* Part I.

218. 33 U.S.C. § 1342(b)(1)(B) (2012).

219. 42 U.S.C. § 7661(a)(b)(5)(B) (2012).

220. 16 U.S.C. § 1451 (2012).

221. 54 U.S.C.S. § 100101 (LexisNexis 2015).

222. 25 U.S.C. § 3001 (2012).

223. Camacho & Glicksman, *supra* note 132, at 713–14.

224. *Id*. at 817 (suggesting that in limited areas, however, such as major resource statutes, a statute-by-statute change is feasible).

225. Similar to how the NEPA gives authority to take action to protect the environment. *See* National Environmental Policy Act, 42 U.S.C. § 4332(A)–(B) (2012).

226. Obviously adding a "look-back" provision generally may do more harm than good. *See* Thomas O. McGarity, *EPA at Helm's Deep: Surviving the Fourth Attack on Environmental Law*, 24 FORDHAM ENVTL. L. REV. 205, 240 (2013). By linking the examination of programs to climate change, however, the law might avoid additional procedure merely for disruption's sake.

programs and report the results back to the legislature.[227] Changes in legislative governance appear to have stymied on follow-through, but the idea is promising. Similarly, at the federal level, NEPA tasked agencies with the requirement of examining their programs to understand how they might impact the environment.[228] The NEPA illustrates that such a general examination statute is possible and the North Carolina law illustrates that it can specifically focus on climate change. Staticism in law can thus be addressed by general statutory mechanisms.

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. As noted, *supra*, disruption 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 through a generally applicable statute concerning the disruptive nature of climate change. There are several examples of such laws being passed and

227. 2010 N.C. Sess. Laws 728, http://www.ncleg.net/EnactedLegislation/SessionLawsCD/SessionLaws/2010SessionLaws.pdf (stating that the Department of Administration, Department of Agriculture, Consumer Services, Department of Commerce, Department of Crime Control and Public Safety, Department of Environment and Natural Resources, etc. should review their regulatory programs to determine if they take into consideration climate change. After doing so, they need to report back to the Department of Environment and Natural Resources on how those programs consider climate change or, if they do not consider climate change adequately or at all, recommend the additions and modifications they would make.).

228. National Environmental Policy Act, 42 U.S.C. § 4333 (2012) ("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.").

proposed,[229] but 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.[230] 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.[231] Such foundational social constructs also undergird our legal system. This stability 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 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.

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

230. *See generally* Siemens, *supra* note 1 (Nietzsche believed change was the key to understanding the nature of the human condition.).

231. *Id.*