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TRICKSTER LAW:
PROMOTING RESILIENCE AND ADAPTIVE GOVERNANCE BY ALLOWING OTHER PERSPECTIVES ON NATURAL RESOURCE MANAGEMENT

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A multiplicity of anthropogenic stressors are individually and collectively making natural resources management a realm of pervasive uncertainty.[1] New and

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[1] *See* Brian C. Chaffin, Hannah Gosnell, & Barbara A. Cosens, *A decade of adaptive governance scholarship: Synthesis and future directions*, 19 ECOLOGY & SOCIETY art. 56, at 1 (2014), http://dx.doi.org/10.5751/ES-06824-190356 ("Anthropogenic global warming and accelerated rates of biodiversity loss are just two of numerous indicators that social and ecological systems do not and cannot exist in isolation, but instead exist as a complex whole, each a function of the other and expressed in a series of complex feedbacks . . . ."); Thomas Dietz, Elinor Ostrom, & Paul C. Stern, *The struggle to govern the commons*, 302 SCIENCE 1907, 1907, http://dx.doi.org/10.1126/science.1091015 ("In the absence of effective governance institutions at the appropriate scale, natural resources and the environment are in peril from increasing human population, consumption, and deployment of advanced technologies for resource use, all of which have reached unprecedented levels.").

legacy pollution—particularly the global spread of plastics[2] and persistent organic pollutants[3] and the tremendous level of nutrient loading[4]—threaten both human and non-human health as well as larger social-ecological function. Loss of biodiversity has become egregious enough to be dubbed the Sixth Mass Extinction,[5] while the impacts of climate change are driving the plethora of species that remain to shift their ranges and intermix in ways that have never occurred before.[6] More pervasively, climate change[7] and its "evil twin," ocean acidification,[8] are altering the basic conditions of planetary function; from global average and local temperatures, to ocean currents, to precipitation patterns, to

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[2] Charles Moore, "Plastic pollution," *Encyclopaedia Britannica*, https://www.britannica.com/science/plastic-pollution (last visited Jan. 21, 2019).

[3] *See generally* WORLD HEALTH ORGANIZATION, PERSISTENT ORGANIC POLLUTANTS: IMPACT ON CHILD HEALTH (2010), http://apps.who.int/iris/bitstream/handle/10665/44525/9789241501101_eng.pdf?sequence=1; Barry C. Kelly, Michael G. Ikonomou, Joel D. Blair, Anne E. Morin, & Frank A. P. C. Gobas, *Food Web–Specific Biomagnification of Persistent Organic Pollutants*, 317 SCIENCE 236-39 (13 July 2007).

[4] Will Steffen, Katherine Richardson, Johan Rockström, Sarah E. Cornell, Ingo Fetzer, Elena M. Bennett, Reinette Biggs, Stephen R. Carpenter, Wim de Vries, Cynthia A. de Wit, Carl Folke, Dieter Gerten, Jens Heinke, Georgina M. Mace, Linn M. Persson, Veerabhadran Ramanathan, Belinda Reyers, & Sverker Sörlin, *Planetary boundaries: Guiding human development on a changing planet*, 347 SCIENCE 736, 736 (13 Feb. 2015) (showing nitrogen and phosphorus pollution levels at "high risk" for the entire planet); Guy Woodward, Mark O. Gessner, Paul S. Giller, Vladislav Gulis, Sally Hladyz, Antoine Lecerf, Björn Malmqvist, Brendan G. McKie, Scott D. Tiegs, Helen Cariss, Mike Dobson, Arturo Elosegi, Verónica Ferreira, Manuel A.S. Graça, Tadeusz Fleituch, Jean O. Lacoursière, Marius Nistorescu, Jesús Pozo, Geta Risnoveanu, Markus Schindler, Angheluta Vadineanu, Lena B.-M. Vought, & Eric Chauve, *Continental-Scale Effects of Nutrient Pollution on Stream Ecosystem Functioning*, 336 SCIENCE 1438-40 (15 June 2012).

[5] *See generally* Gerardo Ceballos & Paul R. Ehrlich, *The misunderstood sixth mass extinction*, 360 SCIENCE 1080-81 (08 June 2018); Damian Carrington, "Earth's sixth mass extinction event underway, scientists warn," *The Guardian*, 10 July 2017, https://www.theguardian.com/environment/2017/jul/10/earths-sixth-mass-extinction-event-already-underway-scientists-warn; Gerardo Ceballos1, Paul R. Ehrlich, Anthony D. Barnosky, Andrés García, Robert M. Pringle, & Todd M. Palmer, *Accelerated modern human–induced species losses: Entering the sixth mass extinction*, 1:5 SCIENCE ADVANCES e1400253, DOI: 10.1126/sciadv.1400253 (19 June 2015), http://advances.sciencemag.org/content/1/5/e1400253; ELIZABETH KOLBERT, THE SIXTH EXTINCTION: AN UNNATURAL History (Picador: pb reprint ed. 2015).

[6] I-Ching Chen, Jane K. Hill, Ralf Ohlemüller, David B. Roy, & Chris D. Thomas, *Rapid Range Shifts of Species Associated with High Levels of Climate Warming*, 333 SCIENCE 1024-26 (19 Aug. 2011); Allison L. Perry, Paula J. Low, Jim R. Ellis, & John D. Reynolds, *Climate Change and Distribution Shifts in Marine Fishes*, 308 SCIENCE 1912-15 (24 June 2005).

[7] James D. Nichols, Mark D. Koneff, Patricia J. Heglund, Melinda G. Knutson, Mark E. Seamans, James E. Lyons, John M. Morton, Malcolm T. Jones, G. Scott Boomer, & Byron K. Williams, *Climate Change, Uncertainty, and Natural Resources Management*, 75:1 J. WILDLIFE MANAGEMENT 6-19 (2011).

[8] Alexandria B. Boehm, Mark Z. Jacobson, Michael J. O'Donnell , Martha Sutula, W. Waldo Wakefield, Stephen B. Weisberg, & Elizabeth Whiteman, *Ocean Acidification Science Needs for Natural Resource Managers of the North American West Coast*, 28:2 OCEANOGRAPHY 170-181 (2015).

water supply, to vegetation patterns, to marine chemistry, and much more.[9] At the same time, both the global population of humans,[10] and their consumeristic impulses,[11] continue to increase, leading footprint studies to conclude that we are collectively consuming far more than one Earth's worth of goods and services every year.[12]

Unless and until greenhouse gas concentrations in the atmosphere stabilize, we can't expect to just hunker down and survive until a "new normal" emerges. Instead, for a while, everything will be changing all the time—including the natural resources upon which all human societies depend. Welcome to the Anthropocene.

As Melinda Harm Benson and I argued in *The End of Sustainability*,[13] this new reality means that managing for "sustainable" use of natural resources will become increasingly impossible.[14] Trickster law offers a new perspective on environmental and natural resources law by combining new scientific models, adaptive governance theory, and a new cultural narrative to allow these areas of law to better cope with the realities of the Anthropocene. In particular, this essay focuses on how, by allowing room for new voices and values, trickster law can contribute to the emergence of different priorities and structures of natural resource management that promote the resilience of social-ecological systems in a changing world.

I. The New Scientific Model: Resilience Theory

Resilience theory offers a better paradigm and a different way of thinking about natural resource management than the "Balance of Nature" model that was in vogue when Congress and many states enacted most of the United States' environmental and natural resource statutes.[15] People commonly use "resilience" to invoke what theorists call *engineering resilience*—that is, the ability of a person, thing, or system to *resist* a shock or disturbance in the first place or to

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[9] U.S. GLOBAL CHANGE RESEARCH PROGRAM, FOURTH NATIONAL CLIMATE ASSESSMENT: CLIMATE SCIENCE SPECIAL REPORT 23 (2017); INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE, CLIMATE CHANGE 2014: SYNTHESIS REPORT SPM 1- SPM 31 (2015).

[10] United Nations Dept. of Economic & Social Affairs, *World population projected to reach 9.8 billion in 2050, and 11.2 billion in 2100*, https://www.un.org/development/desa/en/news/population/world-population-prospects-2017.html (21 June 2017).

[11] WorldWatch Institute, *Global Consumption Trends Break New Records*, http://www.worldwatch.org/global-consumption-trends-break-new-records (last visited Jan. 21, 2019).

[12] Global Footprint Networks, *Earth Overshoot Day: Country Overshoot Days 2018*, https://www.overshootday.org/newsroom/country-overshoot-days/ (last visited Jan. 21, 2019).

[13] MELINDA HARM BENSON & ROBIN KUNDIS CRAIG, THE END OF SUSTAINABILITY: RESILIENCE AND THE FUTURE OF ENVIRONMENTAL GOVERNANCE IN THE ANTHROPOCENE (Univ. of Kansas Press 2017).

[14] *Id*. at 45-47, 79-134.

[15] *Id*. at 56-70.

bounce back to its former state.[16] This definition of "resilience" "focuses on efficiency, constancy, and predictability—all attributes at the core of engineers' desires for fail-safe design."[17] Engineering resilience also embodies one of the underlying conceptions of nature that currently informs most U.S. natural resource law and policy[18]—an expectation that natural systems have a preferred equilibrium balance to which they will return after a shock or disturbance, and hence that preservation and restoration are rational legal and policy goals.[19] However, these two goals are becoming increasingly impossible under the cumulative and synergistic effects of the stressors that social-ecological systems currently face, especially because of climate change.[20]

In contrast, the Stockholm school of resilience theory posits that all social-ecological systems are constantly changing and that "to ignore or resist this change is to increase our vulnerability and forego emerging opportunities."[21] In 2002, Lance Gunderson and C.S. "Buzz" Holling described a four-phase infinity-loop cycle of change in ecological systems, which they termed the "adaptive cycle".[22] The four phases are rapid growth, conservation, release, and reorganization.[23] A forest can provide a good example. A young forest proceeds through rapid growth to a mature conservation phase, when large trees tie up nutrients and limit further growth in the understory. A forest fire triggers the release phase, destroying structure and releasing nutrients, and the area will reorganize and begin to grow again. All else being equal, the area is likely to regenerate a new forest that looks a lot like the last one—but maybe not.

The chaos and potential unpredictability of the release and reorganization phases of the adaptive cycle are one source of dynamism within resilience theory. To add to that dynamism, there are adaptive cycles operating at different temporal and geographic scales which interact with each other; a model of system complexity that Gunderson and Holling termed "panarchy."[24] Panarchy incorporates a systems perspective on natural resources,[25] reflecting the fact that ecological and social-ecological systems are complex adaptive systems. The

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[16] C.S. Holling, "Engineering Resilience versus Ecological Resilience," *in* NATIONAL ACADEMY OF ENGINEERING, ENGINEERING WITHIN ECOLOGICAL CONSTRAINTS 31, 33 (The National Academies Press 1996), https://www.nap.edu/read/4919/chapter/4#33.
[17] *Id*.
[18] *See id*. at 36-37.
[19] BENSON & CRAIG, *supra* note 13, at 30
[20] *Id.* at 9-10, 30-32.
[21] BRIAN WALKER & DAVID SALT, RESILIENCE THINKING: SUSTAINING ECOSYSTEMS AND PEOPLE IN A CHANGING WORLD 9-10 (Island Press 2006); Carl Folke, Stephen Carpenter, Brian Walker, M. Sheffer, T. Elmqvist, Lance Gunderson, & C.S. Holling, *Regime shifts, resilience and biodiversity in ecosystem management*, 35 ANN. REV. ECOLOGY, EVOLUTION, & SYSTEMATICS 557–581 (2004), http://doi.org/10.1146/annurev.ecolsys.35.021103.105711.
[22] WALKER & SALT, *supra* note 21, at 75-78; LANCE GUNDERSON & C.S. HOLLING, PANARCHY: UNDERSTANDING TRANSFORMATIONS IN HUMAN AND NATURAL SYSTEMS 33-35 (Island Press 2002).
[23] GUNDERSON & HOLLING, *supra* note 22.
[24] *Id.* at 72-76.
[25] WALKER & SALT, *supra* note 21, at 31.

panarchical interactions of nested adaptive cycles thus reflect the real complexity and unpredictability to natural systems, revealing an avoidable element of management chaos that current natural resources law and policy need to acknowledge and incorporate.[26] For law, panarchy means that the same management action in a system won't always generate the same response—particularly when larger scale systems, like the climate, are themselves changing.[27]

Key to this model of perpetual but complex and unpredictable change is the concept of *ecological resilience*. Ecological resilience describes the ability of a system to absorb—adapt to—shock and disturbance without crossing an ecological threshold and transforming into a different state.[28] The disturbed system may not be completely identical to the old one, but it has not yet become a completely different system. For example, wetlands can sequester toxics to a point without dying, but they are no longer pristine, and many ecosystems have lost a species or two without significant changes in function. However, at some point, disturbance or shock can overwhelm the current system and it will transform: Dump too many nutrients into a crystal clear, cold mountain lake and it will undergo eutrophication, likely becoming warm, algae-ridden, and species poor.[29] From a regulatory perspective, human activities in a system can effectively lower the thresholds for system transformation, pushing systems across those thresholds and transforming them into new states of being.[30] Resilience theory also teaches us that social-ecological systems are not nearly as knowable and controllable as U.S. law and policy often assume.[31]

II. Adaptive Governance

Adaptive governance is an important aspect of effectuating resilience theory in law and policy. Thomas Dietz, Elinor Ostrom, and Paul C. Stern are generally credited with coining the terming "adaptive governance" in 2003 to describe this new kind of environmental governance,[32] although the concept existed earlier.[33] Governance "refers to the means . . . through which collective goals are chosen, decisions are made, and action is taken to achieve the chosen goals," while "environmental governance" denotes the more specific governance mechanisms "related to society's interactions with natural systems."[34] If resilience

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[26] BENSON & CRAIG, *supra* note 13, at 61-63.
[27] *Id*. at 64.
[28] WALKER & SALT, *supra* note 21, at 62-63; Holling, *supra* note 16, at 33.
[29] WALKER & SALT, *supra* note 21, at 55-58.
[30] BENSON & CRAIG, *supra* note 13, at 58.
[31] *Id*. at 35, 45-46.
[32] Dietz, Ostrom, & Stern, *supra* note 1, at 1908.
[33] Chaffin, Gosnell, & Cosens, *supra* note 1, at 3 tbl. 1.
[34] Barbara A. Cosens, Lance Gunderson, & Brian C. Chaffin, *Introduction to the Special Feature Practicing Panarchy: Assessing legal flexibility, ecological resilience, and adaptive governance in regional water systems experiencing rapid environmental change*, 23 ECOLOGY & SOCIETY art. 4, at 3 (2018), https://doi.org/10.5751/ES-09524-230104; *see also* Chaffin, Gosnell, & Cosens, *supra* note 1, at 1 ("Broadly, environmental governance can be thought of as a 'set of regulatory

theory is a scientific approach to modeling continual change in complex ecological and social-ecological systems, then adaptive governance is the legal and policy response to that same reality—"environmental governance that allows emergence of collective action capable of facilitating adaptation to change and surprise as well as the capacity to itself evolve."[35]

While adaptive governance by definition cannot be mandated,[36] societies can enhance the chances that adaptive governance will both emerge and take root as the new governance system.[37] Folke et al.[38] provided a fairly comprehensive examination of the social dimensions of adaptive governance. They identified as key features (1) "[p]rocesses that generate learning, meaning, knowledge, and experience of ecosystem dynamics";[39] (2) real crises adaptive management; (3) "polycentric institutional arrangements, which are nested quasi-autonomous decision-making units operating at multiple scales," including bridging organizations and a redundancy of function; (4) social networks with adaptive leaders, flexible organizations, and significant trust relationships;[40] and (5) social memory, "the arena in which captured experience with change and successful adaptations, embedded in a deeper level of values, is actualized through community debate and decision-making processes into appropriate strategies for dealing with ongoing change."[41] These researchers concluded that societies that possess these features possess high adaptive capacity, allowing for both adaptability, "the capacity of actors in a social-ecological system to manage

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processes, mechanisms and organizations through which political actors influence environmental actions and outcomes' . . . . In short, environmental governance is the system of institutions, including rules, laws, regulations, policies, and social norms, and organizations involved in governing environmental resource use and/or protection, and there are a variety of different approaches." (citations omitted)).

[35] Cosens, Gunderson, & Chaffin, *supra* note 34, at 3. *See also* Chaffin, Gosnell, & Cosens, *supra* note 1, at 1 ("Given the uncertainties associated with global environmental change, including climate change and massive shifts in land use, environmental governance systems going forward must be highly adaptive. Governance systems, particularly those of top-down, state-based orientation, rarely match the relevant scale of ecological complexity, especially in the face of rapid environmental change . . . ." (citations omitted)), 4-5 (situating adaptive governance within resilience theory scholarship), 5 (noting that adaptive governance "is unanimously viewed as a system of environmental governance with the potential to mediate the complexity and uncertainty inherent in SESs [social-ecological systems] . . . .").

[36] Chaffin, Gosneel, & Cosens, *supra* note 1, at 8 (discussing adaptive governance as an emergent institution and concluding "that the social components of a SES must beadequately 'prepared' before transformation can take place").

[37] Barbara A. Cosens, Robin K. Craig, Shanna Lee Hirsch, Craig Anthony (Tony) Arnold, Melinda Harm Benson, Daniel A. DeCaro, Ahjond S. Garmestani, Hannah Gosnell, J.B. Ruhl, & Edella Schlager, *The role of law in adaptive governance*, 22 ECOLOGY & SOCIETY art. 30 (2017), https://doi.org/10.5751/ES-08731-220130.

[38] Carl Folke, T. Hahn, P. Olsson, & J. Norberg, *Adaptive governance of social-ecological systems*, 30 ANNUAL REV. ENVT. & RESOURCES 441, 445-53 (2005), http://dx.doi.org/10.1146/annurev.energy.30.050504.144511.

[39] *Id*. at 445.

[40] *Id*. at 449.

[41] *Id*. at 453.

resilience in the face of uncertainty and surprise," and potentially for transformability, "the capacity to create a fundamentally new system when ecological, economic, or social (including political) conditions make the existing system untenable."[42]

Law, of course, can play a key role in helping to ensure that the necessary social and governance conditions exist, or at least can develop, that in turn allow adaptive governance to emerge. Cosens et al.[43] have offered a set of guidelines for assessing whether a particular governance regime is primed for adaptive governance.[44] First, the structure of law and governance must be polycentric, integrative, and persistent.[45] Polycentric structures legally allocate authority to multiple entities, allowing for redundancy in function, nesting of governance, complementary levels of governance and governance foci, and subsidiarity. Therefore, the level of governance appropriate to the problem addresses that problem.[46] In terms of capacity, the governance system must have adaptive capacity, the authority and willingness to respond to change, and participatory capacity—meaning that the relevant stakeholders have both the legal right and sufficient resources to participate in decision-making.[47] Finally, the governance system must have legal processes in place to ensure legitimacy, procedural justice, and dispute resolution while at the same time achieving a problem-solving approach, the ability to balance stability and flexibility, and the capacity to reflect upon and learn from prior decisions.[48] This collection of factors ensures that the relevant governance system can adapt to a changing social-ecological system through methods and decisions that will be viewed as legitimate, inclusive, and imposing only the necessary amounts and kinds of social and economic disruption—i.e., through "good governance."[49]

Even then, however, some sort of disturbance or crisis in the system is likely to be necessary for adaptive governance to actually emerge; the governance version of the release and reorganization phases in the adaptive cycle. Cosens et al. explained that:

> A disturbance sufficient to trigger the emergence of new approaches to governance may come from an ecological or social (political or economic) crisis, whereas a governance window of opportunity is thought to occur when the appropriate combination of problem, solution, and politics intersect to make change possible . . . .[50]

III. A New Cultural Narrative: The Trickster

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[42] *Id*. at 457.
[43] Cosens et al., *supra* note 37.
[44] *Id*. at 2 tbl. 1.
[45] *Id*.
[46] *Id*.
[47] *Id*.
[48] *Id*.
[49] *Id*. at 3.
[50] *Id*.

Resilience theory and adaptive governance are not enough, alone, for law and policy to incorporate continual change and surprise into U.S. natural resources law. In addition, we need a new cultural narrative.[51] "Luckily, a different kind of narrative exists in many cultures that can far more productively frame climate change, allow for a more productive attitude toward coping with its surprises and transformations: The story of the "trickster".[52] Trickster tales can become powerful cultural narratives for dealing with a world of continual change "because they place humans in a different relationship to ecological change than the dominant US narratives do—humans are neither controlling engineers or victims of natural forces but rather components of a complex system who have a real but bounded ability to deal with its changes."[53] Specifically, as Thomas and Patricia Thornton have noted:

> The tenor and rhetoric of the prevailing discussions of climate change and the Anthropocene are at odds with an alternative heuristics circulating in many indigenous communities that are instead shaped by the shared understanding that humans are but a small part of a relational universe that cannot be fully cognized, much less managed, by any one species.[54]

Tricksters are agents of chaos and change, forces that disrupt normal expectations and sometimes violate important cultural or sacred boundaries.[55] Like ecological resilience and particular system states, "the trickster is generally neither good nor evil; he is amoral . . . simply a facet of reality, not a moral theory or prescription."[56] However, "as humans interact with the trickster and his disruptions, they learn to adapt to change to accommodate the new realities that the trickster brings, helping to ensure their own survival."[57]

While trickster stories and trickster figures exist all over the world and in most cultures,[58] anthropologists tell us that the trickster is notably, pervasively, indeed almost insistently absent from one prominent culture: the Euro-American culture of the United States.[59] This is a critical gap in cultural narratives for the Anthropocene because, among other things, trickster tales teach humans to expect the unexpected and that change—good or bad—is just a part of life. In addition, the trickster narrative connects social experience to scientific modeling, as shown

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[51] BENSON & CRAIG, *supra* note 13, at 46-49.
[52] *Id*. at 50.
[53] *Id*.
[54] Thomas E. Thornton & Patricia M. Thornton, *The Mutable, the Mythical, and the Managerial: Raven Narratives and the Anthropocene*, 6:1 ENVIRONMENT & SOCIETY 66, 68 (2015).
[55] "Tricksters," *Myths Encyclopedia*, http://www.mythencyclopedia.com/Tr-Wa/Tricksters.html (last visited Jan. 17, 2016).
[56] BENSON & CRAIG, *supra* note 13, at 51 (citations omitted).
[57] *Id*. (citations omitted).
[58] "Tricksters," *Myths Encyclopedia*, http://www.mythencyclopedia.com/Tr-Wa/Tricksters.html (last visited Jan. 17, 2016).
[59] BENSON & CRAIG, *supra* note 13, at 51 (citation omitted).

through Lance Gunderson and Buzz Holling invoking the Greek trickster god Pan to coin their term "panarchy" within resilience theory.[60]

IV. An Overview of Trickster Law

A natural resources law that thoroughly embraces resilience theory and promotes adaptive governance, within cultural narratives that also accept change—even surprising change—constitute what this essay refers to as *trickster law*. Operating through what I have elsewhere called "principled flexibility,"[61] trickster law seeks not, as current laws often do, to use natural resources to the maximum extent deemed possible and desirable, but rather to preserve and enhance the ecological resilience of desirable ecosystem states to climate change and ocean acidification. It employs a precautionary approach to human use of natural resources and seeks to minimize anthropogenic stressors, such as pollution (especially nutrients and toxics), on social-ecological systems. It is cognizant of the planet's limitations and confines human social and economic endeavors within the "safe operating space" of a functional planet.[62]

At the same time, consistent with resilience theory, trickster law acknowledges that some transformations are and will increasingly become unavoidable, especially as a result of global warming and its multi-faceted impacts. Trickster law thus encourages anticipation of, and planning for, these transformations *before* they become social-ecological crises. Moreover, it seeks to guide these transformations into new but still productive states, avoiding both ecological stagnation (like eutrophication of lakes) and social-economic collapse as the resource bases of specific communities change.

Finally, trickster law creates space for new voices and new values that can help societies cope with a changing world. As noted, adaptive governance literature stresses the importance of polycentricity and pluralism to the emergence of new and more flexible forms of governance. Thus, as a governance system, adaptive governance "requires a structure of nested institutions (complex, redundant, and layered) and institutional diversity (a mixture of market, state, and community organizations) at the local, regional, and state levels, connected by formal and informal social networks . . . ."[63] Within these social networks, moreover, it becomes "essential that a diverse array of vested stakeholders eventually participate . . . ."[64] In addition, "Those affected [must] have the right and resources to have a role in decision-making. For indigenous communities, this equates to the capacity for self-determination. Participatory capacity reduces the likelihood of marginalization of portions of society and increases the likelihood that all aspects of a system will be considered in decision making."[65]

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[60] GUNDERSON & HOLLING, *supra* note 22, at 21.
[61] Robin Kundis Craig, *"Stationarity Is Dead"—Long Live Transformation: Five Principles for Climate Change Adaptation Law*, 43 HARV. ENVTL. L. REV. 9, 63 (2010).
[62] Steffen et al., *supra* note 4, at 1.
[63] Chaffin, Gosnell, & Cosens, *supra* note 1, at 7.
[64] *Id*. at 8.
[65] Cosens et al., *supra* note 37, at 2 tbl. 1.

Allowing new voices and new perspectives into the governance space has proven quite helpful in encouraging the emergence of adaptive governance. The next section presents three examples.

V. New Voices, New Values, More Flexible Governance and Greater Resilience: Three Examples

A. Preserving Instream Flows in the American West

When Europeans began settling the western half of the United States in the 19th century, they faced the reality of pervasively arid landscapes where rivers, streams, and lakes were relatively few and farming generally impossible without irrigation. Mining, similarly, required substantial diversions of water away from waterways. As a result, all western states except Hawai'i eventually rejected the English rules of riparian water use as an adequate basis for their water law and water rights, adopting prior appropriation instead. Prior appropriation imposes a "first in time, first in right" principle that awards the strongest (most senior) water rights to the users who first apply water from a particular source to a recognized beneficial use without waste.[66]

Unlike riparianism, common-law prior appropriation accords no value to water left *in situ*. The result is that the majority of streams and rivers in the West are over-appropriated and run dry in the summer and early fall, even in the absence of drought—to the significant detriment of both aquatic ecosystems and non-consumptive uses such as recreational rafting and kayaking.[67]

Enter the tricksters. Beginning with Oregon in 1955, western states began to adopt legal mechanisms for protecting instream flow.[68] The motivation for doing so was in part economic. As the U.S. Fish & Wildlife Service recognized in 1988, "[t]he demand for instream uses of water is rapidly increasing in many States . . . as recreation and associated instream uses make significant contributions to local, State, and regional economies."[69] Oregon's early concerns, for example, derived from wanting to protect the spectacular waterfalls along the Columbia River Gorge,[70] which were and remain important and easily accessible tourist attractions just east of Portland.

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[66] Matthew J. McKinney & Jonathan G. Taylor, National Ecology Research Center, U.S. Fish & Wildlife Service, *Instream Flow Information Paper No. 18 (Biological Report 89(2))* 2 (Oct. 1988), https://apps.dtic.mil/dtic/tr/fulltext/u2/a322648.pdf.
[67] *Id*.
[68] *Id*. at iv, 3-4.
[69] *Id*. at 2 (citations omitted).
[70] *Id*. at 3.

However, nontraditional voices in western water law, including non-governmental organizations (NGOs)[71] and, increasingly, tribes, have also been critical to the expansion of instream flow protections. While most states continue to limit who exactly can hold an instream flow water right, Lynne Marie Paretchan has outlined the numerous roles that NGOs can play in helping to establish instream flow protections. In Oregon, for example, "[t]he quantity of streamflows in rivers is a primary focus for the Center for Environmental Law and Policy, Oregon Water Trust, and WaterWatch."[72] While in Idaho, "Idaho Rivers United successfully petitioned the Idaho Water Resource Board to establish minimum streamflow levels on priority streams."[73] Other NGOs, including American Rivers, California Trout, Pacific Coast Federation of Fishermen's Associations, and Trout Unlimited, focus on aquatic ecosystem and/or fish protection.[74] Trout Unlimited, as one example, has been critically important to instream flow protection in Utah and is one of the few entities that can statutorily hold instream flow rights in that state.[75] "For NGOs focusing on ecosystem protection and preservation, their work on instream flow issues is a piece of the larger puzzle. NGOs in this category include Environmental Defense, Friends of the Earth, Greater Yellowstone Coalition, The Nature Conservancy, and the Natural Resources Defense Council."[76] In California, Environmental Defense and the Pacific Coast Federation of Fishermen's Associations joined forces to monitor the Department of Interior, which has an obligation to deliver 800,000 acre-feet of water to maintain river flows for salmon and steelhead, and discovered that Interior was delivering only half of that obligation.[77] They eventually sued Interior and won, increasing stream flows for these fish.[78] Perhaps most creatively, NGOs have established water trusts:

> Water trusts operated by NGOs acquire previously allocated water rights and transfer them to an instream flow use as allowed by state statute or judicial guidelines. In states where only public agencies are allowed to hold instream flow rights, NGO water trusts can play a valuable role by acting as the broker and/or facilitator for transfers of water rights to state agencies to hold for instream flow purposes.[79]

Such trusts exist in Oregon and Washington.[80]

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[71] Lynne Marie Paretchan, *Choreographing NGO Strategies to Protect Instream Flows*, 42 NATURAL RESOURCES J. 33, 34 (2002) ("NGOs are now a major force working toward the restoration and protection of instream flows throughout the West.").
[72] *Id*. at 36.
[73] *Id*. at 37-38.
[74] *Id*. at 36-37.
[75] Paul Burnett, *Utah approves TU's first in-stream flow lease*, https://www.tu.org/blog-posts/utah-approves-tus-first-in-stream-flow-lease (Dec. 14, 2016).
[76] Paretchan, *supra* note 71, at 37.
[77] *Id*. at 39-40.
[78] *Id*. at 40.
[79] *Id*. at 41.
[80] *Id*.

Tribes can also contribute to instream flow protection, particularly when their recognized rights to water extend to fishing rights. Tribal water rights, or *Winters* rights, are a special kind of federally reserved water rights, created under federal law whenever Congress or the President reserved land for a tribal reservation. These rights are established as a matter of federal law and take as their priority date the date of the reservation. As a result, these tribal reserved water rights tend to be very senior. In addition, they also tend to be quite large, because they include enough water to make the tribal homeland livable, traditionally in the sense of providing enough water to irrigate for farming. In addition, many tribes—but especially those in the Pacific Northwest—have specific treaty rights related to fisheries that can support additional water rights as well as other legal protections.[81]

A fairly dramatic example of tribal water rights that improved instream flow is occurring in the Klamath River Basin. This basin straddles the Oregon-California border. Serious battles over water in this basin began in 2001, when a federal judge refused to allow irrigators to take water during a drought in order to protect fish in the system listed for protection under the Endangered Species Act. The ensuing history of legal battles and coalition forming are both complicated and well-studied. The legal and political dynamics changed again in 2013, when the Oregon Water Resources Department finished its Klamath River general stream adjudication and awarded very large and very senior—some dating to "time immemorial"—water rights to the Klamath Tribes.[82] These rights "provide that specific quantities of water are to be maintained in stream to provide for fisheries and other treaty resources."[83] As such, the Klamath Tribes can now direct whatever water remains in the Klamath River during a drought be used for fish—and, by extension aquatic ecosystems. This new authority is not just theoretical. Within three months of the adjudication decision, the Tribes "called" the river, insisting that other users honor their senior rights, and they have done so every spring since.[84]

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[81] *See*, *e.g.*, United States v. Washington, 853 F.3d 946 (9th Cir. 2017), *rehearing en banc denied*, 864 F.3d 1017 (9th Cir. 2017), *aff'd by an equally divided U.S. Supreme Court sub nom* Washington v. United States, 138 S. Ct. 1832 (2018) (holding that the State of Washington violated the Stevens Treaties with a number of tribes by building culverts under its roads that blocked salmon migration and hence reduced the numbers of fish available for tribal harvest).

[82] Oregon.gov, *Klamath River Basin Adjudication*, https://www.oregon.gov/OWRD/programs/WaterRights/Adjudications/KlamathRiverBasinAdj/Pages/default.aspx (last visited Jan. 24, 2019); Richard S. Deitchman, Klamath Water Rights Adjudication Milestone: Oregon Water Resources Department Submits Its Final Order of Determination to the Klamath County Circuit Court, http://www.klamathbasincrisis.org/adjudication/2013/Klamathwaterrightsmilestone_Simmons032213.htm (March 21, 2013).

[83] OPB, "Klamath Tribes Call in Their Water Rights," https://www.opb.org/news/article/klamath-tribes-call-in-their-water-rights/ (June 10, 2013).

[84] Press Release: Klamath Tribes and Irrigation Project Clarify Terms of Water Call: Klamath Falls Wells Not Affected by Tribes' Call, http://klamathtribes.org/news/klamath-tribes-of-oregon-press-release-for-immediate-release-june-13-2014/ (June 14, 2014); NBC, "Klamath Tribes make water call," https://kobi5.com/news/local-news/klamath-tribes-make-water-call-7961/ (Apr. 24,

Tribal and NGO efforts to leave water in western streams and rivers strengthens the resilience of these waterways and their ecosystems to drought and climate change. Thus, once western water law changes to recognize new values for water and the interest groups who want to promote those values, progress can be made toward a more resilient future.

B. Tribal Water Quality Standards

The Federal Water Pollution Control Act,[85] better known since its 1977 amendments as the Clean Water Act, is the nation's premier statute for protecting streams, rivers, lakes, and oceans from water pollution. However, although the statute has included states as important regulators since its first enactment in 1972, it wasn't until 1987 that Congress allowed tribes to also engage in water quality management. In the amendments that year, Congress added Section 518 to the Act, which, among other things, authorized the Administrator of the U.S. Environmental Protection Agency (EPA) "to treat an Indian tribe as a State" for purposes of administering the Act if the tribe is federally recognized and has sufficient governance capacity.[86] Such recognition can give the tribe authority to set water quality standards within its boundaries and to issue permits.[87]

As of early 2019, the EPA has recognized 60 tribes as having authority to issue their own water quality standards, but only 44 have actually done so.[88] Importantly, tribal water quality standards not only allow the tribe to extend its self-governance within its own reservation, but they give the tribe authority to affect upstream activities that can degrade water quality below those standards. For example, under Section 401 of the Act, the tribe acquires the right to certify—or, importantly, object to—any federal license or permit for any activity that might result in a discharge into regulated waters within the reservation.[89] "No license or permit shall be granted until the certification. . .has been obtained or has been waived," and "[n]o license or permit shall be granted if the certification has been denied . . . ."[90] In addition, the tribe can impose conditions on the federal permit to ensure that its water quality requirements are met.[91]

2015); Stephen Floyd, "Water call made on the Williamson," *Our Klamath Basin Water Crisis*, http://www.klamathbasincrisis.org/UK/2016/watercallonWilliamson112316.htm (Nov. 23, 2016); "Klamath Tribal chairman defends water call," *Klamath Tribes News & Events*, http://klamathtribes.org/news/klamath-tribal-chairman-defends-water-call/ (May 4, 2017); Lyle Ahrens, NBC, "Tribal water call threatens Bly water supply," https://kobi5.com/news/regional-news/tribal-water-call-threatens-bly-water-supply-79043/ (June 8, 2018).

[85] 33 U.S.C. §§ 1251-1388 (2012).

[86] *Id*. § 1377(e), as added by Pub. L. No. 100-4, § 506, 101 Stat. 76 (Feb. 4, 1987).

[87] *See id*. (referencing § 1313, which governs water quality standards, and §§ 1342 and 1344, which govern permitting under the Act).

[88] U.S. Environmental Protection Agency, *EPA Actions on Tribal Water Quality Standards and Contacts*, https://www.epa.gov/wqs-tech/epa-actions-tribal-water-quality-standards-and-contacts (as updated Nov. 20, 2018, and viewed Jan. 26, 2019).

[89] 33 U.S.C. § 1341(a)(1) (2012).

[90] *Id*.

[91] *Id*. § 1341(d).

Tribes receive protection from upstream discharges regulated through state-issued Clean Water Act permits. The permitting state must provide notice of any new permit to the downstream tribe, and the EPA, and give the tribe an opportunity to object or offer recommendations.[92] If the state does not incorporate the objections or recommendations, it must again notify both the tribe and the EPA,[93] and the tribe can appeal to the EPA to object and, if conflict persists, take over the particular permit.[94]

Tribal water quality standards often protect values, such as subsistence harvest or sacred ceremonial use of waterways, that state water quality programs do not, and hence the creation of tribal water quality standards can lead to inter-sovereign conflict. In one of the first cases centered on tribal water quality standards, for example, the downstream Isleta Pueblo set water quality standards for its portion of the Rio Grande River which were more stringent than the State of New Mexico's.[95] The tribe's standards were more stringent than the state's in part because of prevailing drought conditions, but also to protect sensitive subpopulations and to ensure water quality good enough for primary contact ceremonial use[96]—that is, "the use of a stream, reach, lake, or impoundment for religious or traditional purposes by members of the PUEBLO OF ISLETA; such use involves immersion and intentional or incidental ingestion of water."[97]

The upstream City of Albuquerque challenged the EPA's decision to approve the tribe's standards on several legal grounds. However, its primary motivation for the lawsuit was the fact that new, more stringent standards downstream led the EPA to revise the permit for Albuquerque's waste treatment facility, requiring the city to better treat its sewage before discharge.[98] The U.S. Court of Appeals for the Tenth Circuit upheld the EPA's approval against all of the city's arguments, including procedural challenges, challenges based on the Clean Water Act, and an Establishment Clause challenge to the ceremonial use standard.[99]

Five years later, the U.S. Court of Appeals for the Seventh Circuit similarly upheld the EPA against the State of Wisconsin's challenges to water quality standards promulgated by the Sokaogon Chippewa Community, also known as the Mole Lake Band of Lake Superior Chippewa Indians.[100] The reservation's water resources were critical to the Band's culture and survival; as the court explained, "the Band is heavily reliant on the availability of the water resources within the reservation for food, fresh water, medicines, and raw materials. In particular, Rice Lake, the largest body of water on the reservation, is

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[92] *Id*. § 1342(b)(5).
[93] *Id*.
[94] *Id*. § 1342(d)(2), (4).
[95] City of Albuquerque v. Browner, 97 F.3d 415, 419 (10th Cir. 1996).
[96] *Id*. at 426, 427.
[97] *Id*. at 428 (quoting the tribal standard) (internal quotations omitted).
[98] *Id*.
[99] *Id*. at 429.
[100] Wisconsin v. EPA, 266 F.3d 741, 750 (7th Cir. 2001).

a prime source of wild rice, which serves as a significant dietary and economic resource for the Band."[101] Indeed, the Band considers the waters it depends upon to be sacred.[102] While Wisconsin raised several objections to the EPA's granting of Tribes as States (TAS) status to the Band, its true concerns were more pragmatic. Specifically, the granting of TAS status and the resulting protection of the food and cultural resources of Rice Lake had "the potential to throw a wrench into the state's planned construction of a huge zinc-copper sulfide mine on the Wolf River, upstream from Rice Lake" because "the tribal water standards might limit the activities of the mine by prohibiting some or all of the discharge from the mine . . . ."[103]

The Band not only won the case but also the larger development battle. Using revenue from their casinos, the Mole Lake Band and the nearby Forest County Potawatomi Community purchased the Crandon Mine in 2003.[104] The purchase allowed the tribes to protect the area and the Wolf River in nearly its natural state, preserving both tourist income and natural resources required for cultural practices.[105]

In both of these cases, enactment and enforcement of tribal water quality standards most immediately preserved the tribes' ability to engage in their cultural traditions, many of which are sacred. In Wisconsin, they also helped to inspire more extensive landscape-scale protection of natural resources. However, these more stringent tribal water quality standards have also lessened the pollution loads that the Rio Grande and the Wolf River might otherwise have been subject to, increasing these systems' general resilience to other stressors, like climate change. In other words, by allowing tribes to participate actively in water quality management, Congress has created one form of trickster law.

C. Māori Fisheries

The story of how New Zealand came to first legally recognize and then legally settle Māori marine fishing rights is long and complicated and largely beyond the scope of this essay. However, along the way, increasing Māori involvement in coastal fisheries has expanded the mechanisms through which New Zealand protects its marine biodiversity, helping the entire nation to comply with its obligations under the Convention on Biological Diversity.

In general, New Zealand law does not allow for nuanced creation of marine protected areas (MPAs)—areas that legally protect marine life from at least some kinds of threats. For instance, in other nations, some MPAs might forbid particularly destructive forms of fishing, such as seabed trawling or blast

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[101] *Id*. at 745.
[102] U.S. Environmental Protection Agency, *Case Studies in Tribal Water Quality Standards Programs: The Sokaogan Chippewa Community* 1 (July 2006), https://www.epa.gov/sites/production/files/2014-11/documents/casestudy-sokaogon.pdf.
[103] *Wisconsin v. EPA*, 266 F.3d at 745.
[104] Press Release, Mole Lake and Potawatomi Tribes Purchase Crandon Mine (Oct. 28, 2003), http://sacredland.org/wp-content/uploads/2017/07/Crandon_Press_Release.pdf.
[105] *Id*.

fishing, while others might prohibit offshore oil and gas development. Under New Zealand's Marine Reserves Act of 1971, however, only marine reserves can be created—that is, areas where absolutely no fishing and no take of marine resources can occur and that exist almost exclusively "for the scientific study of marine life . . . ."[106] Otherwise, New Zealand's ocean territory is presumed open to fishing, which New Zealand has regulated through a series of Fisheries Acts. The Fisheries Act of 1983, for example, is known world-wide for its adoption of a fisheries quota management system, or QMS,[107] which New Zealand continues to employ.[108]

The Fisheries Act of 1996 recognizes two types of Māori-managed fishing areas which began in the late 1980s. The first, a taiapure, or local coastal area, is a coastal or estuarine area of particular importance to an iwi (tribe) or hapu (sub-tribe or large family group) for food or spiritual and cultural reasons.[109] The declaration of a taiapure[110] allows for local Māori management of fisheries and substantial input into the local fisheries regulations.[111] However, other fishers can also use the area, and commercial fishing is often allowed.[112] Ten taiapure have been established throughout New Zealand.[113] Mātaitai, in contrast, allow Māori management of customary (non-commercial) fisheries;[114] both non-Māori and commercial fishing are often excluded. There are 11 mātaitai on the North Island and 35 on the South Island.[115]

New Zealand became a party to the United Nations Convention on Biological Diversity in September 1993.[116] In pursuing its commitments under this treaty, New Zealand promulgated a Biodiversity Strategy in 2000 with goals to be met by 2020, including goals for marine biodiversity.[117] Specifically, in the

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[106] Marine Reserves Act 1971 (N.Z.), § 3(1), (2).
[107] Fisheries Act 1983 (N.Z.), pt. 2A.
[108] Fisheries Act 1996 (N.Z.), pt. 4.
[109] *Id*. § 174.
[110] *Id*. § 175.
[111] *Id*. §§ 184, 185.
[112] New Zealand Parliament, *FAQs—Frequently Asked Questions about marine reserves and marine conservation* 3 (2003), https://www.parliament.nz/resource/en-nz/49SCLGE_EVI_00DBHOH_BILL4754_1_A181798/f4ef64599b02eb7970387b5213f67454d6514d63.
[113] *See* Fisheries New Zealand, *Customary fisheries management areas*, https://www.fisheries.govt.nz/law-and-policy/maori-customary-fishing/managing-customary-fisheries/customary-fisheries-management-areas/ (last visited Jan. 27, 2019) (listing all of the taiapure and linking to the relevant documents).
[114] Fisheries Act 1996 (N.Z.) § 186; New Zealand Parliament, *supra* note 112, at 3.
[115] *See* Fisheries New Zealand, *Customary fisheries management areas*, https://www.fisheries.govt.nz/law-and-policy/maori-customary-fishing/managing-customary-fisheries/customary-fisheries-management-areas/ (last visited Jan. 27, 2019) (listing all of the mātaitai and linking to the relevant documents).
[116] New Zealand Ministry for the Environment, *Convention on Biological Diversity*, http://www.mfe.govt.nz/more/international-environmental-agreements/multilateral-environmental-agreements/convention (last visited Jan. 27, 2019).
[117] New Zealand Dept. of Conservation, *New Zealand Biodiversity Strategy 2000-2020: Theme three: Coastal and marine Biodiversity*, Objective 3.6,

ocean, New Zealand seeks to "[p]rotect a full range of natural marine habitats and ecosystems to effectively conserve marine biodiversity, using a range of appropriate mechanisms, including legal protection."[118] One action to meet this objective is to "[a]chieve a target of protecting 10 percent of New Zealand's marine environment by 2010 in view of establishing a network of representative protected marine areas," where such MPAs can include "marine reserves, world heritage sites, and other coastal and marine management tools such as *mataitai and taiapure areas*, marine area closures, seasonal closures, and area closures to certain fishing methods."[119]

Thus, taiapure and mātaitai have morphed from Māori-led forms of fisheries management into MPAs that contribute to national and international biodiversity goals. By amending New Zealand's fishery laws to allow for both increased and different Māori fisheries management, the New Zealand Parliament also incidentally allowed for non-marine reserve forms of MPAs that provide new tools to protect and manage marine species. Biodiversity protection and enhancement, of course, also contributes to the resilience of New Zealand's marine ecosystems and the coastal communities that depend upon them.

VI. Conclusion

We need a new form of law—trickster law—to allow natural resources management to keep pace with the Anthropocene and its many changes and challenges. While trickster law has a number of components, opening natural resources management to new actors and new value systems within existing governance structures can be a relatively simple way to encourage creativity and shifts in perspective that can help bring about more adaptive forms of governance, while simultaneously preventing pluralism from descending into management chaos. Prior appropriation water law absorbs instream flow and tribal water rights; the Clean Water Act absorbs a new set of sovereigns setting water quality standards through the Act's existing tools for conflict management; New Zealand fisheries law absorbs new forms of Māori management along the coast while maintaining its quota management system elsewhere.

These three examples also illustrate how the incorporation of new values into natural resource management can also effectively increase the resilience of social-ecological systems to climate change and other stressors. Often, as the examples presented here suggest, these new management approaches amount to a more precautionary approach to human use, particular in terms of reducing or preventing pollution and limiting extraction and take. However, the new actors' cultural value systems are also critical to legitimizing this new precaution, whether they be recreationally, ecologically, or culturally/spiritually motivated: The Mole Lake Band's priorities are not the same as Wisconsin's, but the public

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https://www.doc.govt.nz/nature/biodiversity/nz-biodiversity-strategy-and-action-plan/new-zealand-biodiversity-strategy-2000-2020/part-three-action-plans/theme-three/ (last visited Jan. 27, 2018).

[118] *Id*.

[119] *Id*. (emphasis added).

standard-setting process, with review by both the EPA and the federal courts, allow those different perspectives to be heard and a peaceful resolution reached, including the purchase of a proposed mine to finally end the controversy.