

HUMPTY DUMPTY AND RESTORATION POLICY

Peter Lavigne* on Restoration Policy and Recent Books and Articles on the Topic**

Writing about restoration policy is at once both simple and daunting. Simple because a survey of the growing literature on restoration policy and practices shows many common themes. Daunting because the combined projects of many brilliant minds have yet to execute restoration efforts under even a broad collection of consistent principles. Indeed, Leopold biographer and writer Curt Meine¹ suggests that we have not yet reached a point where “restoration policy” even exists. Meine notes,

We have conservation policy guided by various related paradigms—land and water protection, multiple use, sustainable yield and harvest, “reforestation,” erosion control, watershed function, etc.—and these may entail restoration of some sort, of some things, at some scales, but a comprehensive vision of restoration is not driving policy. Imagine how it would change things if the stated policy of resource agencies was to restore ecosystems.²

It is important then to define what restoration is and what it is not. We shall start with the Humpty Dumpty principle.³ Simply put, “Ecosystems, like Humpty Dumpty, are vastly easier to preserve than they are to reassemble.”⁴ Environmental restoration is, in large part, about reassembling Humpty Dumpty. Restoration is not simply about

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1. Email from Curt Meine, writer and conservation biologist (Dec. 29, 2004) (on file with author).

2. CURT MEINE, CORRECTION LINES: ESSAYS ON LAND, LEOPOLD, AND CONSERVATION (2004)

3. See Michael Black, *Can We Design Ecosystems? Lessons from the California Rivers*, INT’L J. ENG’G EDUC., Summer 2002, at 29.

4. *Id.*

recreating the past; *which past is always the question*, and perfection in re-creation, as all parents must thankfully know, eludes us mere mortals.

Restoration is also not about the continuous stream of what Michael Black calls the “tragic remedies” that accompany Pacific salmon restoration—of endless, in the end, useless technological substitutions like hatcheries for increasingly damaged and lethal ecosystems in the Sacramento River watershed.⁵ Restoration is about how to redefine development in ecological terms while remaining mindful of the consequences of visions of the world incapable of nesting with other lifeforms. Take the cleanup of brownfields, for instance. “Brownfields” is the euphemistic term for a black eye on the land, for areas of land so heavily polluted with toxic effluents of industrial processes that they are no longer suitable for any occupation or use without extensive cleanup.

Humpty Dumpty

Ecological restoration has its own version of the precautionary principle.⁶ Like the implicit lesson for the King’s soldiers and Humpty Dumpty, “we must acknowledge that it is always easier to protect ecosystems and ecological health than to restore it.”⁷ Restoration is reactive to problems and desires; positive and necessary but still reactive.⁸

So, what exactly is restoration and why would we need restoration policy? The growing literature on restoration is littered with a wide range of definitions precisely because the definition of restoration determines an equally wide range of actions in implementing restoration projects. One simple yet far reaching definition is the latest version agreed upon by the Society for Ecological Restoration: *Ecological restoration is the process of assisting the recovery of an ecosystem that has been degraded, damaged, or destroyed*. While concise it is “sufficiently general to

5. *Id.*; Michael Black, *Tragic Remedies: A Century of Failed Fishery Policy on California’s Sacramento River*, PAC. HIST. REV., Feb. 1995, at 37.

6. The precautionary principle is the ethical theory that if the consequences of an action, especially concerning the use of technology, are unknown but are judged by some scientists to have a high risk of being negative from an ethical point of view, then it is better *not to carry out the action* rather than risk the uncertain, but possibly very negative, consequences. *The Precautionary Principle*, WIKIPEDIA, THE FREE ENCYCLOPEDIA, available at http://en.wikipedia.org/wiki/Precautionary_principle (last modified Sept. 10, 2005).

7. MEINE, *supra* note 2.

8. JOHN J. BERGER, *RESTORING THE EARTH; HOW AMERICANS ARE WORKING TO RENEW OUR DAMAGED ENVIRONMENT* (1985).

allow a wide variety of approaches to restoration...."⁹ This brief definition does, however, miss a series of concepts linked in an earlier SER definition that included regional and historical context and sustainable cultural practices. The extensive accompanying primer text to the SER definition includes these concepts under the definition of reference ecosystems. That a several thousand text was judged to be necessary for a 17-word definition underlies the difficulty of defining restoration science in the absence of consensus on policy applications.

Mitigation

If, as Wildlands Project president and founding executive director David Johns says, "restoration policy [exists] to create a positive vision and it allows for nature's evolutionary potential for genetic, individual, species and cultural diversity,"¹⁰ then development of coherent restoration policy has a lot to overcome from existing policies that include statutory requirements for "mitigation."

Mitigation is most often a statute-based requirement to reduce environmental damages and/or to substitute some replacement functions of destroyed ecosystems caused by development in wetlands or other highly interactive ecosystems.¹¹ Mitigation, by its very nature, is not ecological restoration¹² but rather a commodification of the environment.¹³ Mitigation does not try to restore functional ecosystems; it merely attempts to partially "save" some existing functions, or to transfer those functions, often unsuccessfully, to other areas.

9. INT'L SCI. & POL'Y WORKING GROUP, SOCIETY FOR ECOLOGICAL RESTORATION, THE SER INTERNATIONAL PRIMER ON ECOLOGICAL RESTORATION (Oct. 2004), available at http://www.ser.org/content/ecological_restoration_primer.asp#3 (last visited Sept. 26, 2005).

10. David Johns, Lectures to classes in Leadership for Sustainability, Portland State University, Leadership in Ecology, Culture and Learning Program, Feb. & June 2005.

11. See, e.g., Thomas J. Schoenbaum & Richard B. Stewart, *The Role of Mitigation and Conservation Measures in Achieving Compliance with Environmental Regulatory Statutes: Lessons from Section 316 of the Clean Water Act*, 8 N.Y.U. ENVTL. L.J. 237 (2000); Debra L. Donahue, Comment, *Taking a Hard Look at Mitigation: The Case for the Northwest Indian Rule*, 59 U. COLO. L. REV. 687 (1988); Peter Lavigne, *Challenges in Watershed Activism: Citizen Action, Science, Politics and Controversy*, RIVER NETWORK (1994), available at <http://riversfoundation.org/rfa/resources/publications/> (last visited Sept. 23, 2005).

12. The SER Primer states that mitigation sometimes can rise to the level of restoration, but most often does not. INT'L SCI. & POL'Y WORKING GROUP, *supra* note 9.

13. ERIC HIGGS, NATURE BY DESIGN: PEOPLE, NATURAL PROCESS AND ECOLOGICAL RESTORATION 208 (2003).

Restoration Policy

As science, restoration is still new and, historically, policies toward science have nearly always followed scientific advances; so it is no surprise that restoration policy is fragmented, scattered through law and agency practice, poorly defined, and less well understood. Restoration policy (as opposed to restoration action) is the disliked cousin of a mish mash of conservation policies including occasional and hard won wilderness and other 'important area' protection; sustainable, semi-sustainable, and unsustainable resource management of fisheries, wildlife, forests, range, soil, and water; old fashioned hard core land, air, and water development; piecemeal subsidies and programs for private landowners, urban policies largely divorced from land and most especially water policy; commodity driven industrial agriculture subsidy programs; a confused forest fire policy that in fits and starts is trying to make up for a century of forest mismanagement; human population growth policy by default; and general inattention to what Professor Pramod Parajuli calls inter-generational and inter-cultural justice, diversity, and partnership.¹⁴

Though worthy of a longer discussion, the Partnership Model of Sustainability is worth brief explanation here because it has important repercussions for restoration policy and for the practice of many scientific disciplines. As Eric Higgs notes, "Restoration is about more than ecological integrity and historical fidelity; it is also about focal practice. In fact, what is so distinctive about restoration as a practice is that it builds value through participation, and in doing so strengthens human communities."¹⁵ Parajuli's model takes Higgs' notion of the integration of human communities substantially farther into the restoration policy equation.

The Partnership Model is one way to systematically measure one's environmental plans and actions within a four cornered matrix model. That model encourages conceptualizing our best practices, prioritization in sustainable development, restoration projects, and other areas of human concern. Rich with allusions to historic four cornered views including the Greek four elementals of earth air, fire, and water, or

14. Pramod Parajuli, Partnership Model of Sustainability (Nov. 2002), available at http://www.piecl.pdx.edu/research&publications/partnership_model.pdf [hereinafter Partnership Model of Sustainability]; Pramod Parajuli, *Revisiting Gandhi and Zapata: Motion of Global Capital, Geographies of Difference and the Formation of Ecological Ethnicities* [hereinafter Parajuli, *Revisiting Gandhi and Zapata*], in *IN THE WAY OF DEVELOPMENT: INDIGENOUS PEOPLES, LIFE PROJECTS, AND GLOBALIZATION* (Mario Blaser, Harvey A. Feit & Glenn McRae eds., 2004).

15. HIGGS, *supra* note 13, at 226.

the four points of the compass rose, the Partnership Model informs decisions with a matrix that includes science and ecology, as well as inter-economic partnerships with natural, economic, and social capital (trust); the seventh generation principle (planning for the effects of one's actions seven generations into the future); and what Parajuli calls "biocultural diversity."¹⁶

The concept of biocultural diversity represents in part a melding of ecological biodiversity with the concept of ecological ethnicities. Ecological ethnicities is also, in part, a rebuff to the science of anthropology and its need to often "speak for" indigenous populations. Professor Parajuli says, "The notion of ecological ethnicity refers to any group of people who derive their livelihood through day-to-day negotiation with their immediate environment...[T]hus about 500 million indigenous people constitute a crucial part—but by no means the only element—of ecological ethnicities. For example...peasants and farmers of India and Mexico are experiencing the loss of their land, seed and a rich tradition of knowledge, just as many Indigenous communities are."¹⁷

Parajuli's model proposes that the social movements that accompany site specific wisdom traditions are proposals about initiating alternative modes of production, consumption, and distribution of natural capital. In short, he writes, "they imply alternative modes of environmental transformation."¹⁸ Parajuli adds these ideas of incorporating biocultural and interspecies partnerships into design of restoration policy. These ideas work particularly well in the design of large scale restoration efforts, where they provide for more sustainable and generative long term efforts exemplified by the lessons learned in the Mattole salmon restoration work so ably chronicled by Freeman House and others in the film *Thinking Like a Watershed*.¹⁹

Restoration and Sustainability

Sustainability and restoration are terms oft interwoven and less often clearly defined. Sustainability, for me at least, includes the idea of

16. Partnership Model of Sustainability, *supra* note 14.

17. Parajuli, *Revisiting Gandhi and Zapata*, *supra* note 14, at 235–40.

18. *Id.*

19. THINKING LIKE A WATERSHED (Johan Carlisle, Mattole Restoration Council, California 1998). See also FREEMAN HOUSE, TOTEM SALMON: LIFE LESSONS FROM ANOTHER SPECIES (an excellent book that talks about the process of creating interspecies partnerships and inter-economic partnerships as the depth and breadth of the Mattole restoration grew); see especially *id.* ch. 10, Substantial and Genuine Virtue, at 175, Epilogue: The Capacity to Become Human, at 201.

sustaining biodiversity, a decent base level of quality of life for all species (humans included): potable water supply for everybody, adequate shelter, resources for resilience in the face of adversity. There are larger ethical concerns about use of resources, maldistribution of wealth, and responsibility for stewardship included in both sustainable management of new development and in restoration policy.

These are, ultimately, ethical, political, and managerial issues, none of which we deal with terribly competently as a species. More than one-sixth of the world's population does not have access to potable water on a regular basis, while the United States uses upwards of 300 times more resources than the average citizen of Bangladesh. Ethical and just distribution and conservation of resources is something modern industrial society badly bungles and a coherent restoration policy needs to take these concerns into account.

The Policy Matrix

In their useful book *Implementing Sustainable Development*, authors Cooper and Vargas are more descriptive of restoration policy challenges in specific places like Nogales, Arizona, and Nogales, Sonora, Mexico, than they are of implementing new sustainable development.²⁰ Part of the challenge of our badly fractured environmental policy matrix is defining when we are actually talking about environmental protection, restoration, or sustainable development (creation of human support systems in the context of sustainability of the Earth's ecosystem).

Seven Points for Seven Generations

The difficulty of crafting consistent and coherent restoration policy is demonstrated by what perhaps is the dominant restoration principle currently in use: avoidance of legal enforcement under various environmental laws. In many restoration policy discussions, including one I attended in Portland Oregon in June 2005, the first comment often made in response to a proposed restoration action is "that will protect us from ESA enforcement" (substitute any environmental statute for ESA if you like). It is a sad societal commentary that instead of first thinking about what techniques, actions, and processes will do the best job obtaining ecological restoration, the first response is one of minimization and avoidance rather than generation, restoration, and abundance. With

20. PHILLIP J. COOPER & CLAUDIA MARÍA VARGAS, *IMPLEMENTING SUSTAINABLE DEVELOPMENT: FROM GLOBAL POLICY TO LOCAL ACTION* (2004).

those concepts in mind, here are seven points worth considering in both design of restoration policy and in implementing restoration projects.

1. *Protection First*

We must begin by substituting the precautionary principle for the reactive policy response. Regrettably, that reactive response underlies most current restoration policy. Restoration is reactive, positive and necessary, but still reactive to degraded or degrading environments. First and foremost, we need to acknowledge the precautionary principle of restoration: it is always easier to protect ecosystems and ecological health than it is to restore it. Lots can, and has been said about this point,²¹ so less will be said here.

2. *Restoration Is Adaptive*

Restoration science is a new and quickly changing field of study; practice and management goals shift under the rubric of environmental management. Practitioners endlessly debate core questions: how and what to restore? to what previous condition? with what techniques? for what purpose? These debates are neatly summarized in a substantial and growing body of literature.²² Clearly, restoration science is a work in progress requiring monitoring; adaptive management; patience; long-term vision; sporadic funding over long periods of time; the “buy-in” of what can be multiple layers of human communities and interests; and, occasionally, over long periods of time, changing agreements on vision.

3. *Setting Policy Is Difficult*

The disparate components of adaptive restoration implementation are all items that policy makers have a tough time dealing with. The multiple variables, less predictable outcomes and uncertain costs lack the characteristics of agreement, trust, certainty and clearly

21. DAVID BROWER & STEVE CHAPPLE, *LET THE MOUNTAINS TALK, LET THE RIVERS RUN: A CALL TO THOSE WHO WOULD SAVE THE EARTH* (2000); EDWARD ABBEY, *THE JOURNEY HOME: SOME WORDS IN DEFENSE OF THE AMERICAN WEST* (1977); HIGGS, *supra* note 13; ALDO LEOPOLD, *A SAND COUNTY ALMANAC WITH ESSAYS ON CONSERVATION* (1949, 2001 Oxford illustrated ed.); CURT MEINE, *ALDO LEOPOLD: HIS LIFE AND WORK* (1951); DAVID ORR, *THE NATURE OF DESIGN: ECOLOGY, CULTURE AND HUMAN INTENTION* (2004).

22. BERGER, *supra* note 9; *RESTORING THE EARTH: HOW AMERICANS ARE WORKING TO RENEW OUR DAMAGED ENVIRONMENT* (John J. Berger ed., 1990); *ENVIRONMENTAL RESTORATION: SCIENCE AND STRATEGIES FOR RESTORING THE EARTH* (John J. Berger ed., 1990); HIGGS, *supra* note 13; *ENVIRONMENTAL RESTORATION: ETHICS, THEORY AND PRACTICE* (William Throop ed., 2000).

definable outcomes that make policy setting attractive to lawmakers and managers.

A substantial part of the difficulty of setting restoration policy is government's inflexibility, inability, or unwillingness to adapt to dynamically shifting circumstances. Agencies charged with environmental responsibilities in parallel to their primary purposes (such as power generation and distribution) are "wedded to the way they [it] usually operate[s], and cannot see beyond its walls to other ways of doing things."²³ Government performance and structures need to be reconfigured to improve their abilities to achieve both restoration for past harm and sustainable futures.²⁴

Somewhat paradoxically, institutionalization of changes in agency cultures and operations is critical to policy success. Wilcox notes, "In order to implement a new approach, the culture of that organization and others must change. The challenge of changing an entity's culture is to change the way people think and behave and to replace the inconsistent norms." Wilcox also cites a major study of forest restoration partnerships noting that "culture change occurs only after people have tried the new way and see the benefits of the new approach."²⁵ Therefore, patience and time are needed in order to achieve this...."²⁶

4. Culture and Community Go Hand in Hand with Restoration

Restoration projects almost inherently cross jurisdictional boundaries that often are at odds with existing landscapes. A rich literature and chronicle of 60-plus years of restoration experiences demonstrates over and over that local "customs and culture" inform and shape restoration policy debates (Grossman,²⁷ Gray et al.,²⁸ Baker and Kusel,²⁹ Cortner and Moote,³⁰ Kusel and Adler,³¹ Lavigne.³² Success in

23. J. Wilcox, An Examination of the Northwest Power and Conservation Council's and the Bonneville Power Administration's Fish and Wildlife Program (2004) (unpublished manuscript, on file with author).

24. HANNA J. CORTNER & MARGARET A. MOOTE, THE POLITICS OF ECOSYSTEM MANAGEMENT (1998); Wilcox, *supra* note 23, at 18-20.

25. BOB DOPPELT, CRAIG SHINN & DEWITT JOHN, REVIEW OF U.S.D.A. FOREST SERVICE COMMUNITY-BASED WATERSHED RESTORATION PARTNERSHIPS: SUMMARY, ANALYSIS, AND RECOMMENDATIONS (Center for Watershed and Community Health, Portland, Or. 2002).

26. Wilcox, *supra* note 23.

27. ELIZABETH GROSSMAN, WATERSHED: THE UNDAMMING OF AMERICA (2002).

28. UNDERSTANDING COMMUNITY-BASED FOREST ECOSYSTEM MANAGEMENT (Gerald J. Gray, Maia J. Enzer & Jonathan Kusel eds., 2001).

29. JONATHAN KUSEL ET AL., NORTHWEST ECONOMIC ADJUSTMENT INITIATIVE ASSESSMENT, FINAL REPORT (Forest Community Research, Taylorsville, CA 2002).

30. *Id.*

restoration policy requires inclusivity—creating entry for multiple and sometimes opposing interests, competing understandings of local history and culture, and extensive listening for openings to community support. These intensive efforts at the start of restoration project design ultimately will provide strong support systems for long-term implementation. As Bonneville Power Administration policy manager Jessica Wilcox says, “Strong social capital is essential to achieve effective performance for public or private problem solving.”³³

Ed Bangs, Northwest wolf restoration coordinator for the U.S. Fish and Wildlife Service puts it in this context: “You have to fully engage the public and your cooperators, and have a reputation for honest professional work—not [for imposing] personally driven agendas. Focus on interest based solutions, not dogma.”³⁴

5. Restoration Policy Must Address Both Places and Systems

Despite the lack of a coherent body of policy aimed at encouraging ecological restoration as a primary public goal, we do have some large-scale, place-based ‘restoration policy’ including the National Estuaries Program (Section 320 of the Clean Water Act) and its Northwest components in Puget Sound and the Lower Columbia River Estuary Project; and planned dam removals on the Elwha River in Olympic National Park. These are all complex ecosystem based projects and most are components of larger ecosystems rather than region-based (as in ‘the Northwest’). Hence, restoration involves both ecosystem components and ecosystem processes. Historically, policy makers found ecosystem components (*e.g.*, river estuaries) easier to deal with than the ecosystem processes inherent in large river system efforts like Columbia River watershed salmon restoration, which crosses far larger landscapes, multiple ecosystem types, and include a multitude of jurisdictional issues.

31. JONATHAN KUSEL & ELISA ADLER, *FOREST COMMUNITIES, COMMUNITY FORESTS* (2003).

32. Peter M. Lavigne, *Dam(n) How Times Have Changed...*, 29 WM. & MARY ENTL. L. & POL’Y REV. 451 (2005); Peter M. Lavigne, *The Movement for American Ecosystem Restoration and Interactive Environmental Decisionmaking: Quagmire, Diversion, or Our Last, Best, Hope?* 17 TULANE ENVTL. L.J. 1 (2003); Peter M. Lavigne, *Watershed Councils East and West: Advocacy, Consensus and Environmental Progress*, 22 UCLA J. ENVTL. L. & POL’Y. 301 (2003/2004)

33. Wilcox, *supra* note 23, at 27.

34. Emails from Ed Bangs, U.S. Fish & Wildlife Serv., Dec. 28, 30, 2004 (on file with author).

6. *Incentives Are Critical (and Primitive)*

The economics of restoration policy are still mired in the dark ages. Nearly every major restoration policy effort, including, for example, The Oregon Plan for Salmon and Watersheds; Oregon's State of the Environment Report 2000;³⁵ and California's Report to the Legislature "Addressing the Need to Protect California's Watersheds,"³⁶ among many others, call for some analysis of economic incentives and disincentives that accompany environmental and ecological problems needing restoration. Substantial analyses of economic incentives and structures for incentives have also been completed, including major compilations by Defenders of Wildlife both for Oregon and on a broader national scale.³⁷

Despite these attempts at serious analysis of restoration incentives, restoration economic policy remains scattered, piecemeal, and project by project specific, with little implementation of broad and systematic economic incentives for restoration projects. Coherent and effective restoration policy will need financially based restoration incentives throughout governmental systems (particularly in transportation budgets), revenue sources, understanding and compensation for localized revenue impacts, institutional investments, understanding of tax policy as it affects land use, and many other areas of analysis to make restoration successful over the long term.

7. *The Three Blind Mice: Monitoring, Maintenance, and Adaptation*

Related to the financial structure of restoration and the need for economic incentives is the Achilles' Heel of restoration policy and implementation—monitoring and maintenance. The devil is in the details and the details only make their appearance through long-term monitoring and adaptive maintenance. One of the major limitations of many restoration and sustainable development initiatives, for instance, the Northwest Forest Plan and its accompanying Northwest Economic Adjustment Initiative, is the parsimony of funds for monitoring and evaluation.³⁸ Those efforts showed, once again, that it is entirely possible

35. OR. PROGRESS BD., OREGON STATE OF THE ENVIRONMENT REPORT 2000: STATEWIDE SUMMARY (2000).

36. STATE WATER RESOURCES CONTROL BD., CAL. RESOURCES AGENCY, ADDRESSING THE NEED TO PROTECT CALIFORNIA'S WATERSHEDS: WORKING WITH LOCAL PARTNERSHIPS (2002).

37. SARA VICKERMAN, DEFENDERS OF WILDLIFE, STEWARDSHIP INCENTIVES: CONSERVATION STRATEGIES FOR OREGON'S WORKING LANDSCAPE (1998); SARA VICKERMAN, NATIONAL STEWARDSHIP INCENTIVES: CONSERVATION STRATEGIES FOR U.S. LANDOWNERS (1998).

38. Kusel et al., *supra* note 29.

to spend hundreds of millions of dollars to implement programs and allocate less than \$500,000 for evaluation and monitoring over ten years—to say nothing of the lack of funds for adaptive change and downstream management. Our cultural tendency is to favor action and implementation over evaluation and adaptation. Short-term horizons drive most policy decisions, giving restoration efforts no advantage over the sure-to-come three blind mice. All too often restoration efforts muddle ever onward with their tails cut off.

Conclusions for Restoration Policy

Perhaps the biggest hurdle for developing coherent restoration policy is the low level of public knowledge and understanding about basic scientific concepts, about systems approaches, and about interconnections. We live in a reductionistic, radically simplified, internally climate controlled world (how ironic in an age of global warming). Our current economic structures design for using virgin materials and creating waste rather than seeking to eliminate waste altogether. These economic viewpoints include assumptions that waste cannot be eliminated because dealing with waste is too costly, closed loop systems cannot work, and preserving or restoring something that resembles a dynamic ecosystem does not make sense.

One of the best concepts regarding sustainability, development, and restoration that I have encountered is from the Eyak Preservation Council (EPC) in Cordova, Alaska, on the edge of the Copper River delta. When people ask Dune Lankard, an Eyak Indian who is the founder of EPC, about proposed new development in the Copper River watershed, an enormous ecosystem still mostly comprised of relatively untouched wilderness lands interspersed with small, scattered villages, he likes to say, “We already think of it as very highly developed as it is.”

That is a viewpoint (implicit in the Partnership Model) that is foreign to the way we do business in this culture. It is a concept of nature extremely different than what the dominant culture “knows” about the basics of ecosystem function and how land use affects water, air, wildlife, and humans.

Restoration and sustainability policy needs to lean a great deal more toward Dune’s common sensical viewpoint. It is a perspective more in line with a generative society, a generative economy and the concepts of fecundity, richness, and diversity in ways that current concepts of sustainability or restoration do not quite evoke. That, I believe, is the big vision and the challenge for restoration policy in our society and time. Implementing restoration policy bumps up against the challenge of recognizing—then enacting—a cultural commons that

includes stewardship of the earth in a very different way than we have done for the last 2000 years.