

V. Imagining a New Architecture of Law and Policy to Support the Ecological Commons

Having introduced the Commons and explained its promise as a governance template favorable to the rights of nature and human beings, we turn now to the challenge of building an architecture of law and policy that can support it. How might law and policy recognize and support the Commons as a salutary paradigm of ecological governance?

Achieving this goal will require remodeled legal processes for both State-based and vernacular practice. Indeed the two must mutually constitute each other in an iterative upward spiral: State Law and public policy will give recognition and visibility to diverse “tribes” of commoners, and their active commoning will help regenerate the authority and reach of Commons-based law and policy. This conjoining of State Law and vernacular practice is essential if we are to rehabilitate the State as a trustee of common assets at all levels—local, national, regional, global, and the permutations among them.

We believe the basic architecture of law and policy to support commons- and rights-based ecological governance must be developed in three distinct yet interrelated fields:

1. *General internal governance principles and policies* that can guide the development and management of commons;
2. *Macro-principles and policies* that the State/Market can embrace to develop laws, institutions, and procedures friendly to the Commons and “peer governance”; and
3. *Catalytic legal strategies* that commoners (civil society and distinct communities), the State, and international intergovernmental bodies can pursue to validate protect, and support ecological commons thus defined.

Imagining a legal and policy architecture that can support rights-based ecological commons in their many varieties, secure them against enclosure, assure their responsible operation, and unleash their generative stewardship, is of course a universal responsibility of the highest order. However it is structured, an ambitious project that addresses these key issues is imperative if we are to avoid irretrievable harm to Earth’s natural (and social) environment.

We do not presume to set forth, however, a theoretically developed or comprehensive plan for a new multilateral system of governance. If history is any guide, such grand ambitions must be discussed and negotiated inclusively and over time to change minds, institutional commitments, and the course of history. This challenge is all the more pronounced because the current liberal polity is structurally biased (or simply confounded by) proposed laws, policies, and strategies that support ecological commons. Invariably, many proposals will provoke philosophical opposition and thus

require makeshift legal approaches. But as suggested in Section IV, theory must follow practice, and practice must be guided by contingent opportunities.

We therefore take for granted that commons law and policy structures are likely to emerge in irregular, unpredictable ways over time, and for this reason our orientation is more practical and improvisational than theoretical and directive. The best results are likely to emerge from on-the-ground experimentation and political struggles that can “road-test” any proposed legal and policy architecture and then expand its scope and complexity incrementally over time. An empty legal and policy formalism that nominally supports the Commons and the right to environment but fails to engage commoners on these tasks or deliver practical results is of no use to anyone. To be transformative, a new body of commons law and policy must be richly braided with vernacular practice and macro-principles. Also, policies of the State/Market must be changed to advance this process. Astute strategies that can successfully validate, protect, and support clean and healthy ecological commons for all must be devised. This will take time.

At the same time, though it is premature to declare that our ecological governance proposal will lead to a paradigm shift, we believe it has the philosophical coherence and functional heft to stimulate the dialogue that that is needed for a fruitful journey forward. The commons- and rights-based ecological governance paradigm is compelling because it comprises at once a *rich legal tradition* that extends back centuries, an *attractive cultural discourse* that can organize and energize people in personal ways, and a widespread *participatory social practice* that, at this very moment, is producing practical results in projects big and small, local and transnational. For a shift to this paradigm to take place, however, the countless commons that now exist must be seen as parts of a much larger worldview that deserves formal recognition and support by State Law and public policy. Needed is a coherent vision of State Law that can enable diverse commons-based endeavors to see themselves as part of a larger whole and begin collaborating to make it real. State Law, extending to the Commons the types of legal recognition and generous backing that the “free state” and “free market” have enjoyed for generations, could unleash tremendous energy and creativity in safeguarding and improving planetary ecosystems. It also could help to transform the State and Market in many positive ways, reducing the cronyism, corruption, and secrecy that presently mark each.

A. Internal Governance Principles of Commons

The great achievement of Nobel Laureate Elinor Ostrom and her colleagues has been to take wildly heterogeneous commons (generally small-scale ones) and develop structured, intelligent ways to assess how and why they do or do not function well. Professor Ostrom’s eight general design principles, which tend to be present to some significant degree in most successful commons, provide a valuable “beachhead” for understanding commons governance.⁴⁹⁶ Yet another key lesson from the academic literature is that much of the success of a commons depends upon contextual factors that are peculiar to a given resource, culture, political rule, legal polity, geography, or history. Universal principles therefore have limited applicability in “designing” commons.

⁴⁹⁶ See *supra* text accompanying notes 414-15.

In an attempt to deal with such variability among commons, Ostrom developed what is known as the Institutional Analysis and Design (IAD) framework, a standard research methodology for investigating commons regimes as they exist in diverse contexts and in nested, multitiered environments.⁴⁹⁷ The IAD is a *meta-theoretical* research framework for assessing variables in commons across disciplinary boundaries.⁴⁹⁸ It consists of using case studies to develop practice-based taxonomies of management approaches; identifying the most significant variables at play; and ensuring adaptations of the overall framework as new information is learned. Special attention is given to the *interplay* of “biophysical resources,” “community attributes” and the “rules-in-use,” or governance mechanisms, as they play out in “action situations,” or deliberative social spaces. Much of commons literature uses the IAD framework as a methodology to draw larger conclusions about discrete resource commons.

Among the most useful analytic concepts of the IAD framework is its differentiation of commons rule-making in three overlapping stages: (1) *operational rules* that deal with transient, everyday situations within a commons; (2) *collective-choice rules* that involve decisions about how the operational rules may be changed; and (3) *constitutional rules* that address decisions about how the collective-choice rules may be changed. These differentiations help us understand the structural dynamics within which trust, cooperation, and reciprocity are negotiated, and therefore to have a more refined understanding of how to “build and grow” a commons.

In the ensuing pages, we focus mostly on the collective-choice and constitutional rules because, in contrast to the operational rules, they have the more enduring impact on the stability and success of commons governance over time. Our purpose is not to survey the large commons literature or propose definitive rules for each and every type of commons.⁴⁹⁹ It is, rather, to build on, and extrapolate from, the analytic insights of Professor Ostrom and her collaborators to imagine policies and legal principles that could extend *existing* commons, which typically are geophysically small, to commons that might or should be *created* to cope with more complicated national and transnational ecological issues, and even global ones such as the atmosphere or the oceans. These large-scale common-pool resources entail many more complexities than small-scale ones and, furthermore, require grappling with the neoliberal global economy and political struggles to create alternatives to it. State trustee commons, for example, are nominally subject to law but are inherently creatures of politics, and therefore must be approached from a broader perspective than, say, the IAD framework or small-scale commons.

⁴⁹⁷ See Elinor Ostrom, *A Diagnostic Approach for Going Beyond Panaceas*, 104 PROC. NAT'L ACAD. SCI., No. 39, 15181 (2007).

⁴⁹⁸ Elinor Ostrom, *The Institutional Analysis and Development Approach*, in E.T. LOEHMAN & D.M. KILGOURDS., DESIGNING INSTITUTIONS FOR ENVIRONMENTAL AND RESEARCH MANAGEMENT 68-90 (1998). For an overview of how the IAD framework has been used, see GRAHAM R. MARSHALL, ECONOMICS FOR COLLABORATIVE ENVIRONMENTAL MANAGEMENT: RENEGOTIATING THE COMMONS (2005).

⁴⁹⁹ However, a useful compendium of research of diverse ecological commons can be found in CAPRI (CGIAR SYSTEMWIDE PROGRAM ON COLLECTIVE ACTION AND PROPERTY RIGHTS). RESOURCES, RIGHTS AND COOPERATION: A SOURCEBOOK ON PROPERTY RIGHTS AND COLLECTIVE ACTION FOR SUSTAINABLE DEVELOPMENT (International Food Policy Research Institute, Washington, D.C., 2010).

In our analysis of the internal governance of commons, then, we shift from small-scale commons (a realm of essentially dispassionate scientific observation) to large-scale commons (a realm where creative political struggle and moral commitment also play an important role). In sharp contrast to small-scale commons that have a great number of bounded variables, large-scale commons are driven by a messy, wide-open set of non-rational, situational, historically specific, non-replicable variables—e.g., culture, history, ideology—that are far less amenable to scientific methodologies.

With this proviso in mind, we tender the following key principles which, we believe, do or should influence the internal governance of commons, large and small.

Principles of social cooperation, trust, and problem-solving

Ostrom's eight core design principles, published in 1990, remain the most solid foundation for understanding the internal governance of commons as a general paradigm.⁵⁰⁰ In a book-length study published in 2010, examining the ability of self-organized groups to develop collective solutions to common-pool resource problems at small- to medium-scales, based on evidence derived from multiple methodologies, Poteete, Janssen, and Ostrom offer a more recent summary of the key factors in cooperation.⁵⁰¹ Ostrom summarizes the research as follows:

A large number of variables increase the likelihood that self-organization could be effective in solving collective action problems. Among the most important are the following: (1) reliable information is available about the immediate and long-term costs and benefits of actions; (2) the individuals involved see the resources as important for their own achievements and have a long-term time horizon; (3) gaining a reputation for being a trustworthy reciprocator is important to those involved; (4) individuals can communicate with at least some of the others involved; (5) informal monitoring and sanctioning is feasible and considered appropriate; and (6) social capital and leadership exist, related to previous successes in solving joint problems.

The exact structure that will enhance cooperation cannot be specified at a general level, as many specific features of a particular dilemma affect what has a chance of working. The crucial factor is that a combination of structural features leads many of those affected to trust one another and to be willing to do an agreed-upon action that adds to their own short-term costs because they do see a long-term benefit for themselves and others and they believe that most others are complying.⁵⁰²

Ostrom notes that “extensive empirical research on collective action . . . has repeatedly identified a necessary central core of trust and reciprocity among those involved that is associated with

⁵⁰⁰ See *supra* text accompanying notes 414-15.

⁵⁰¹ AMY R. POTEETE, ET AL., *WORKING TOGETHER: COLLECTIVE ACTION, THE COMMONS AND MULTIPLE METHODS IN PRACTICE* (2010).

⁵⁰² Elinor Ostrom, *A Multi-Scale Approach to Coping with Climate Change and Other Collective Action Problems*, 1 SOLUTIONS No. 2, (Feb. 24, 2010), <http://www.thesolutionsjournal.com/node/565> (accessed Aug. 2, 2011).

successful levels of collective action.”⁵⁰³ In addition, “when participants fear they are being ‘suckers’ for taking costly actions while others enjoy a free ride,⁵⁰⁴” it enhances the need for monitoring to root out deception and fraud.

Human Rights and Nature’s Rights Principles

Both human rights and nature’s rights are implicit in ecological commons governance. If any commons is to cultivate trust and reciprocity and therefore enhance its chances of stable management, its operational, collective, and constitutional rules must be seen as fair and respectful. To this end, ecological commons must embody the values of human dignity as expressed in, for ecumenical example, the Universal Declaration of Human Rights⁵⁰⁵ and nine core international human rights conventions that have evolved from it or from such of them as may be applicable.⁵⁰⁶ The very point of well-managed ecological commons is to ensure that the common-pool resource—be it local (e.g., a prairie or lake), global (e.g., the atmosphere or an ocean), or somewhere in between (e.g., a forest or river)—is kept clean, healthy, ecologically balanced, and sustainable. To the maximum extent possible, each ecological commons should make human rights and nature’s rights an explicit, integral part of its Vernacular Law system. In addition, State Law and public policy should encourage if not formally promote such rights to the maximum extent possible, including the facilitative procedural right of everyone to commons- and rights-based ecological governance capable of them.

Money and Principles for Shared Assets

A factor that often is crucial in the success of a commons is the ability of commoners to limit or ban the monetization of shared assets. Are the fish, timber, or crops produced by a commons alienable for sale in the Market and, if so, on what terms? If people can opt out of their

⁵⁰³ *Id.*

⁵⁰⁴ *Id.*

⁵⁰⁵ *Supra* note 151.

⁵⁰⁶ The Office of the U.N. High Commissioner for Human Rights (OHCHR) identifies the following instruments as the “nine core international human rights instruments” (the second and third of which, together with the 1948 Universal Declaration of Human Rights, *supra* note 151, comprise the “International Bill of Human Rights”): the International Convention on the Elimination of All Forms of Racial Discrimination (ICERD), Dec. 21, 1965, 660 U.N.T.S. 195, S Ex C/95-2, 3 **BASIC DOCUMENTS**, *supra* note 13, at III.L.1; the 1966 International Covenant on Economic, Social and Cultural Rights (ICESCR), *supra* note 283 the 1966 International Covenant on Civil and Political Rights (ICCPR), *supra* note 283; the Convention on the Elimination of All Forms of Discrimination against Women (CEDAW), Dec. 18, 1979, 1249 U.N.T.S. 13, *reprinted in* 19 I.L.M. 33 (1980) and 3 **BASIC DOCUMENTS**, *supra* note 13, at III.C.13; the Convention against Torture and Other Cruel, Inhuman or Degrading Treatment or Punishment (CAT), Dec. 10, 1984, 1465 U.N.T.S. 85; U.S. Treaty Doc 100-20; *reprinted in* 24 I.L.M. 535 (1984) and 3 **BASIC DOCUMENTS**, *supra* note 13, at III.K.2; Convention on the Rights of the Child (CRC), Nov. 20, 1989, 1577 U.N.T.S. 3, *reprinted in* 28 I.L.M. 1448 (1989) and 3 **BASIC DOCUMENTS**, *supra* note 13 at III.D.3; International Convention on the Protection of the Rights of All Migrant Workers and Members of Their Families (ICRMW), Dec. 18, 1990, G.A. Res. 45/158 (Annex), U.N. GAOR, 45th Sess, Supp No 49, at 262, U.N. Doc A/45/49 (1991), *reprinted in* 30 I.L.M. 1517 (1991) and 3 **BASIC DOCUMENTS**, *supra* note 13, at III.O.6; Convention on the Rights of Persons with Disabilities (CRPD), Dec 13, 2006, U.N. Doc. A/61/611, *reprinted in* 46 I.L.M. 443 (2007) and 3 **BASIC DOCUMENTS**, *supra* note 13, at III.E.4; International Convention for the Protection of All Persons from Enforced Disappearance (CPEd), G.A. Res. 61/177 (Annex), at 408, U.N. GAOR, 61st Sess, Supp No. 49, vol. I, U.N. Doc A/61/49 (Dec. 20, 2006), *reprinted in* Int’l. Hum. Rts. Rep. 582 (2007) and 3 **BASIC DOCUMENTS**, *supra* note 13, at III.K.5.

commons obligations by “buying” their way out, or by selling community assets at the expense of the community, it begins to erode the community by casting others as “suckers.” Relationships of trust and reciprocity will flourish best□ and make a commons more likely to succeed□ when money does not compromise the integrity of relationships and community.

This is not to say that the resources of commons can never be monetized, just that any engagements with markets must be strictly controlled to preserve the sense of fairness that is critical to a commons’ social cohesion.⁵⁰⁷ In traditional commons, commoners have use-rights to a shared resource for subsistence or household purposes, but not for commercial, profit-making purposes. Where commercial gain is permitted, it is generally in ways that are carefully stipulated and for renewable units of a resource, and not exploitation of the capital asset itself; furthermore, the ethic of the Commons generally seeks to prevent whatever money-making that does occur from poisoning community relationships.

The basic point is that commoners should have collective control over the surplus value that they create collectively. Internal relations should not be cash-driven or market-mediated (except with explicit consent of commoners and clear rules for personal use and alienability). Such oversight of the marketization of common resources helps assure that a richer palette of human motivation and community commitment can flourish, and that a beggar-thy-neighbor individualism and profit-seeking does not drive out cooperative impulses. No one wants to be a sucker.

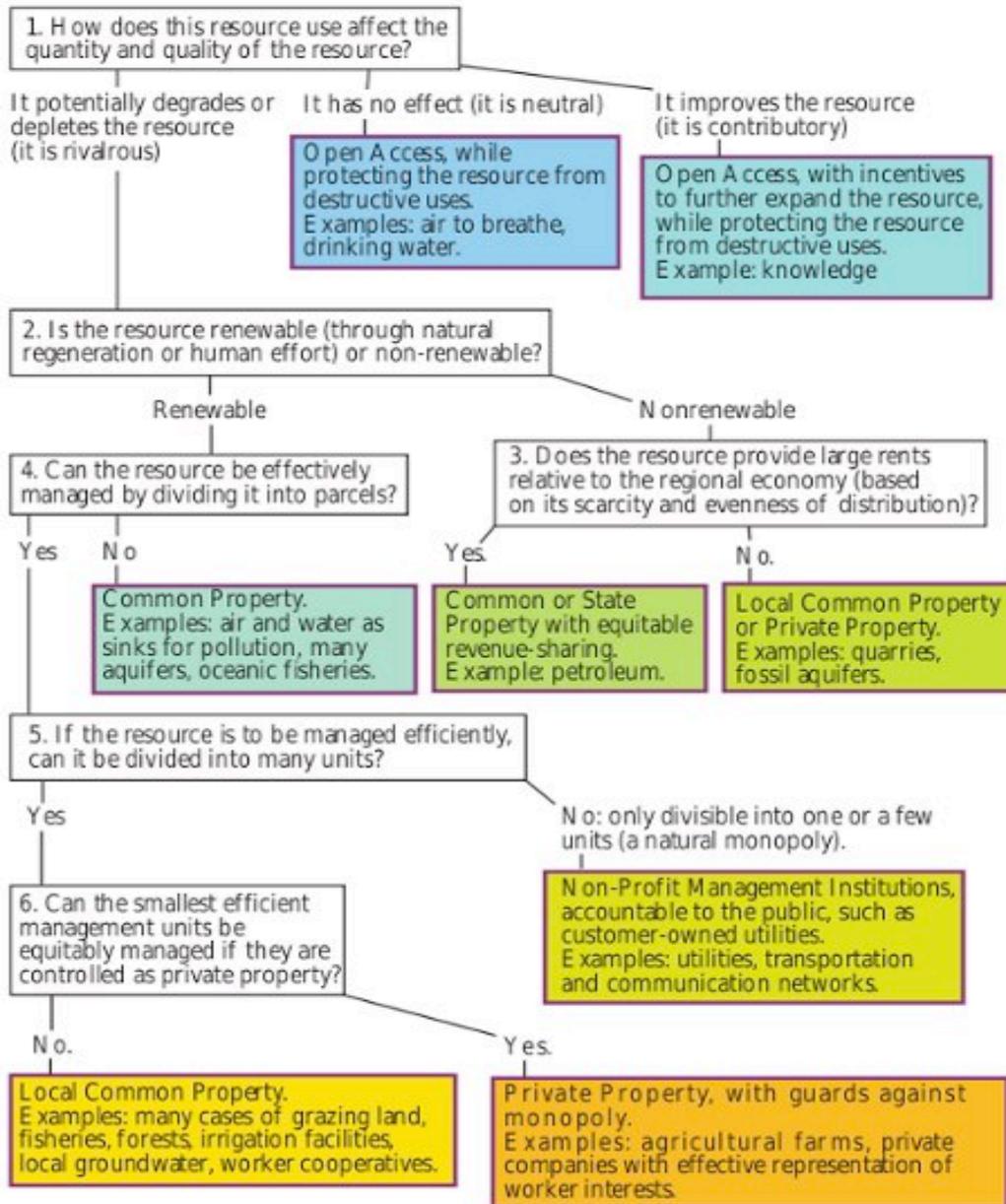
Property Rights Principles

Related to the protocols for handling money in a commons is the proper allocation of property rights. Although we are accustomed to thinking of property rights as unitary bundles of rights that authorize absolute individual dominion over a given resource, in fact property rights can be collectively owned and apply to an indivisible collective resource. They also can be divided into highly specific parcels of access and use rights. An obvious but often-overlooked point is this: *property rights are not self-evident and do not inhere in the resource itself.* They reflect social and political priorities that may or may not be fair, functional or ecologically appropriate. Natural resources have a “life of their own” apart from the property regimes that may be superimposed on them; they are severable from the legal regime used to manage them.

In other words, the structure of collective property rights is important not only in assuring internal fairness within a commons, but also in structuring the ways in which people use—and therefore protect—a natural resource. Choosing the most appropriate configuration of property rights for a given ecological resource helps assure its sustainability.

⁵⁰⁷ For example, free software communities allow programs developed through software commons—and any ancillary services such as consulting—to be sold in the Market, but since the program code is available also for free, community relationships remain more or less intact. For more on the problems and benefits of paying developers in volunteer free and open source projects, see Posting of Benjamin Mako Hill, *Financing Volunteer Free Software Projects*, to Advogato.org, <http://www.advogato.org/article/844.html> (June 10 2011, 11:08pm UTC). Similarly, in ecological commons care must be taken to regulate how the fruits of the commons may be sold in the market lest some participants in the commons over-exploit the resource for personal gain, a form of free-riding that lessens the shared commitment to commoning.

How, then should property rights be structured for shared resources? In the figure below, geographer Wolfgang Hoeschele offers a decision-tree chart for choosing property



Scarcity, Abundance, and the Commons: In order to promote abundance, it is necessary to adapt property rights to each type of resource use. In most cases, this involves some kind of common property. For more details, see Wolfgang Hoeschele, 2010, *The Economics of Abundance*, Gower Publ.

rights regimes that will maximize fairness and minimize the scarcity of a natural resource.⁵⁰⁸ The chart reflects certain commons-friendly criteria in determining what particular property rights regimes and institutional structures should govern different classes of ecological resources. Non-renewable, rivalrous resources such as oil and minerals, for example, are best managed through “Common or state property with equitable revenue sharing,” Hoeschele argues, because such resources produce large rents and have regional economic impact.

A commons-based approach to property rights and institutional control is attractive because it is structurally committed to managing resources in ways that minimize social inequities and ecological harm. A corporation or industry has every incentive to monopolize ownership and control to the detriment of everyone else; they are in the business of creating “chokepoints” (proprietary products, copyright and patent restrictions, market-power advantages, branding dominance, etc.) to create artificial scarcity and discourage competition.⁵⁰⁹ Why, then, should business enterprises, which do not create the minerals and other resources of nature, have privileged, free, or tax-subsidized access to the gifts of nature? If all human beings have a moral entitlement to the Earth’s natural wealth, as even political philosopher John Locke acknowledged, private exploiters of common wealth should pay a fair rent to use it.

Unfortunately, the State has a long history of giving politically connected industries privileged access to our common assets, without fair payment of rents. An important legal strategy for regenerating the Commons is to establish new institutional regimes that charge fair-market rates for the use of the Earth’s resources, where appropriate and ecologically sustainable. Rents should be charged for everything from depletable minerals, the catch from renewable fisheries and forests, and the dumping of pollution into “unowned” spaces such as the oceans and atmosphere. Commons activist Peter Barnes has argued, for example, that polluters should have to pay rent for the right to emit pollutants into the atmosphere. The waste-absorption capacities are finite; and, in any case, who owns the sky? We all do.⁵¹⁰

Control and Subsidiarity Principles

The scale of a commons matters, particularly when its (physical) resources are rooted in a local geography. Unlike markets, in which corporate growth and consolidation are seen as “natural” behaviors, commons have a “natural” tendency to remain discrete and closely tethered to specific resources. After all, at the local level at least, one’s identity and aspirations are bound up with one’s proximity and control of the shared resource, e.g., food, water, or landmarks. Consolidation of

⁵⁰⁸ WOLFGANG HOESCHELE, *THE ECONOMICS OF ABUNDANCE: A POLITICAL ECONOMY OF FREEDOM, EQUITY AND SUSTAINABILITY* 149 (2010). A discussion of the chart is found at pages 150-65. The chart is available also at http://p2pfoundation.net/Choosing_the_Right_Form_of_Common_Property (accessed Aug. 4, 2011).

⁵⁰⁹ HOESCHELE, *supra* note 508, offers an excellent account of how markets artificially create scarcity in their business models as a necessary step in commoditizing resources.

⁵¹⁰ BARNES, *supra* note 218.

shared resources into a single institutional entity can erode personal affiliation and commitment—the “social capital”⁵¹¹—that makes for a well functioning commons.

Thus, commons governance by default should aspire to devolve to the lowest possible level, per principle known as subsidiarity, as explained in Section IV.⁵¹² Besides bolstering the internal robustness of a commons, local control and subsidiarity can have many economic benefits. They can lower the transport costs of trade external to the region (and thus the ecological footprint). They can insulate localities from the predations and fickle swings of global markets. And they can capture the positive externalities of locally cooperating and trading enterprises, and thereby enhance regional resilience. The principle of “comparative advantage” proclaimed by economist David Ricardo is logical only if one ignores the ecological and social externalities associated with a market transaction. Once actual non-market costs are re-integrated into the analysis, and the non-market human satisfactions of localism are counted, the “commons advantage” becomes more evident, if not compelling.

B. Macro-Principles and Policies to Guide the State/Market in Supporting the Commons Sector

The governance of a traditional commons does not depend upon the State/Market except for the latter conceding its existence. But often even that is not forthcoming because the State/Market is predisposed to enclose commons in order to monetize its resources and consolidate State/Market power. Traditional commons therefore remain vulnerable and in need of affirmative protection by State Law and public policy.

For larger-scale commons-pool resources—national, regional, global—the State must play a more active role in establishing and overseeing commons. The State may have an indispensable role to play in instances where a resource cannot be easily divided into parcels (the atmosphere as a waste sink, oceanic fisheries) or where the resource generates large rents relative to the regional economy (e.g., petroleum), as Professor Hoeschele noted. In such cases, it makes sense for the State to intervene and devise appropriate management systems. *State trustee commons*, as we call them, typically manage hard and soft minerals timber, and other natural resources on public lands, national parks and wilderness areas, rivers, lakes and other bodies of water, State-sponsored research, and civil infrastructure, among other things. In such instances, the State claims to act as a trustee on behalf of commoners.

When a commons is administered by the State as trustee for the citizenry, a very different matrix of power, politics, and management arises than is present in traditional commons. There is a deep structural tension between commoners and the State/Market in the administration of collective assets because the State has strong economic incentives to forge deep political alliances with the

⁵¹¹ Although the term “social capital” is widely used by social scientists, it is profoundly misleading about the inner logic and dynamics of social community. Intensive use of “social capital” does not deplete it (as the term “capital” implies). Rather, it enlarges it. In social relationships, the principle of “the more, the merrier” applies, as Professor Carol Rose puts it in her essay on “the comedy of the commons.” See *supra* note 287, at 141. Once we escape the economic lens, it is easier to see these self-reinforcing social dynamics of commons.

⁵¹² See *supra* text accompanying and following note 427.

Market. As a result, the State/Market often chooses to advance its matrix of interests (privatization, commoditization, globalization) despite the adverse consequences for commoners. Any successful regime of commons law must therefore recognize this reality and take aggressive action to ensure that the State/Market does not betray its trust obligations, particularly by colluding with market players in acts of enclosure.

The legal details for assuring the integrity of State trustee commons will naturally vary from one resource-domain to another. By way of general orientation, however, we offer the following eight macro-principles and policies to guide State policy relative to the Commons sector. While we do not presume them to be exhaustive, these tenets do suggest a normative framework that can be applied to all ecological commons and, indeed, the entire Commons sector.

1. *Commons Governance as a Practical Alternative*

The Commons is a system of governance by which communities of varying sizes and kind assert their commitments to manage shared resources, allocate them fairly and preserve them unimpaired for present and future generations. When the nature of resources so require, the State shall act as a trustee for commoners to protect and maintain their common assets.

2. *The Earth Belongs to All*

The services and infrastructure of Earth necessary for present and future humans and other beings to be fully biological and social creatures shall be governed as an ecological commons either through State trustees, traditional commons, or acceptable hybrids.

3. *State Chartering of Commons*

As warranted, governments may authorize responsible parties to manage a commons as deputized trustees when stewardship by identifiable commoners can be shown to serve the general public.

4. *State Trustee Commons*

The State is sometimes needed to serve as a trustee of certain common pool resources belonging to the commoners (the public or a defined community) of present and future generations, often due to the size, geographic scope, or market value of such resources. To this end, the State must create transparent, accountable management systems, under State Law, to ensure that commons entrusted to it are adequately protected and that beneficiary interests are well-served. Commoners' rights shall not be alienated or diminished except for the purpose of protecting the Commons for future generations.

5. *The State's Duty to Prevent Enclosures of Commons Resources*

The State has an affirmative duty to prevent enclosures of commons and commons resources because commons serve the needs of basic provisioning, social equity, and ecological protection in ways the State and Market do not or cannot. To this end, it shall formally recognize commons and commons resources and, as warranted and desired by commoners, enable their responsible management through State Law, public policy, and

resources. These duties apply especially to subsistence and indigenous commons that have long preceded States and are vital to people's cultural identities.

6. *Precautionary and "Polluter Pays" Principles*

Private property owners and commercial activity shall exercise maximum caution not to externalize damage, risks, or costs onto the Commons. The precautionary principle is a useful guide for protecting the Commons for present and future generations in this regard. If harm nonetheless occurs, the polluter—not the commoners—shall pay and remedy the harm. Financial compensation shall not be deemed as an equivalent valuation of the ecological resource, however, because monetary value is not the same nature's value.

7. *Private Property and Commons*

All systems of private property must affirmatively serve the common good, particularly ecological and human well-being. As warranted by circumstances, therefore, legal limitations on private property may be asserted to ensure the long-term viability of ecological systems. These shifts of private privilege versus collective and ecological need may come through changes in property law, tort law, diverse environmental laws, and/or the power of eminent domain (the "taking" of private property for a public use and subject to payment of just compensation). Ultimately, even private property and markets are subject to the exigencies of the common good.

8. *The Human Right to Establish and Maintain Ecological Commons Designed for Environmental and Social Well-Being*

Given the recurrent, demonstrated failures of the State and Market to protect the Commons, commoners shall have the fundamental human right, sanctioned by national and international law, to establish and maintain commons to protect their vital ecosystem resources. The State shall facilitate such commons-based management as part of its larger mission to assure ecological sustainability, nourish communities, and enhance human life and dignity.

The foregoing tenets, which reflect fragments of law, policy, and vernacular practice that come down to us from many sources, constitute important guideposts for defining and developing a law of the ecological commons.⁵¹³ They represent a synthesis of key normative principles of governance of ecological commons, which may be operationalized in different ways in different societies, but which nonetheless insist upon the prioritization in all ecological commons of environmental sustainability, human rights, personal participation and responsibility, transparency and accountability, social equity, and intergenerational benefit.

The good news is that the liberal State offers a serviceable if limited framework for pursuing many types of commons-based solutions. But building within this framework requires that we re-

⁵¹³ Most of these tenets were derived from a set of recommendations authored by Carolyn Raffensperger, Burns H. Weston, and David Bollier in *Climate Legacy Initiative, Recommendation No. 1* ("Define and Develop a Law of the Commons for Present and Future Generations") in WESTON & BACH, *supra* note 22 at 63-64.

conceptualize the neoliberal State/Market as a “triarchy”—the *State/Market/Commons*—which realigns authority and provisioning in new ways.⁵¹⁴ The State maintains its commitments to representative governance and management of public property just as private enterprise continues to own capital to produce saleable goods and services in the Market sector. But the State must shift its focus to become a “Partner State”⁵¹⁵ not just of the Market sector but also of the Commons sector, and ensure its health and continuing well-being and thereby the health and well-being of nature and society.

A Partner-State would assume, among other things, the active obligation of helping to promote peer governance in multiple societal contexts (e.g., in ecosystems, cyberspace, education, local communities). As Michel Bauwens, founder of the Peer to Peer Foundation, explains:

Rather than seeing itself as sovereign master, the State must be seen as embedded in relationships, and as in need of respecting these multiple relationships. This is probably best translated by the concept of multistakeholdership. We can probably expect that the nation-state, along with the newly emerging sub- and supraregional structures will continue to exist, but that their policies will be set through a dialogue with stakeholders. The key will be to disembody the state from its primary reliance of the private sector, and to make it beholden to civil society, i.e. the Commons, so that it can act as a center of arbitrage. Despite the recent greater subsumption of the state to private interests (in the neoliberal era)—which of course has never been total since the balance of forces is not based on a complete defeat of the citizenship—many supraregional institutes, and in particular non-state governance institutions such as the standards bodies, but also policy-making at the U.N., already exhibit many features of multistakeholdership.⁵¹⁶

Of course, this vision will require us to revise some deeply held prejudices about the proper role of the State relative to the economy and the environment.

Free-market doctrine holds that the State should refrain from “intervening” in markets. But in actual practice, as we know well, the State is extensively involved in shaping and subsidizing markets, and especially in helping or acquiescing in companies’ enclosures of the Commons. The State provides politically important industries with free and discounted access to public resources, regulatory privileges, research subsidies, tax breaks, special legal immunities and protections, and much else, based on the assumption that greater Market activity will enhance the common good. This is a dubious proposition, of course, when so much of Market growth is systemically *diminishing* the value of non-monetized common wealth such as oceans, the atmosphere, biodiversity, and other

⁵¹⁴ The term “triarchy” is Michel Bauwens’, who expounds on the topic at the P2P Foundation blog, at <http://blog.p2pfoundation.net/the-new-triarchy-the-commons-enterprise-the-State/2010/08/25> (accessed Aug. 4, 2011). Peter Barnes has also been an early expositor of the Commons sector, especially in his *CAPITALISM 3.0: A GUIDE TO RECLAIMING THE COMMONS* (2006).

⁵¹⁵ The term “Partner State” is the creation of Michel Bauwens, *supra* note 514.

⁵¹⁶ Michel Bauwens, *Peer Governance as a Third Mode of Governance*, June 9, 2010, <http://blog.p2pfoundation.net/peer-governance-as-a-third-mode-of-governance/2010/06/09> (accessed Aug. 5, 2011).

ecosystem services, not to mention health, education, employment, and other indicia of human welfare. Indeed, as we proffered in Section II, the State allied with the Market is actually in the business of abridging or shrinking the right to a clean and healthy environment.

The first imperative for the State must be, therefore, to stop colluding with industry in giving away the public's common wealth in its many forms⁵¹⁷ and enter into a new Partner State social contract with civil society (the commoners). The *first principle* for the Partner State must be: Stop enclosures of the commons. Its *second principle* must be: Serve as a conscientious trustee of collective wealth.

Beyond these basic injunctions, the Partner State has many constructive roles to play in the development of a robust Commons sector.⁵¹⁸ It can and must adopt legal principles that explicitly protect common assets and commoning,⁵¹⁹ and it can and must provide legal authorization for establishing new types of commons institutions (although without directly managing them). Centuries ago, the State came up with the innovative idea of chartering corporations as collective enterprises to serve public purposes. Today, using the same rationale of advancing the public good, the State can and should empower the establishment of commons-based institutions: a different sort of institutional vehicle for advancing the public good, environmentally and otherwise.

Of course, supporting the Commons sector would represent a significant shift in focus and process for the bureaucratic State, which is accustomed to issuing regulations and delivering program-based services to passive citizen-consumers (especially in the case of Market failures). Despite its manifest problems and attempts to eradicate it or significantly improve its performance, the bureaucratic State remains entrenched the world over.

It may be countered that bureaucracy, despite its limited competence, is simply an inexorable reality of a large, complex, technological Market society. Yet in a sense that is precisely the point: The planetary ecosystem and human rights can no longer survive government bureaucracy and conventional politics as the means to control Market excesses. The State/Market's propensity to over-exploit resources and commoditize everything can no longer be sustained. It is destroying the Earth's natural systems and shattering human communities.

Is there a serious alternative? We believe there is, and that the Commons is part of it. A hint of a possible direction can be seen in the so-called Blue Labour movement in the United Kingdom, which, dissenting from its liberal allies, wants changes in *how* government attempts to help

⁵¹⁷ See, e.g., BOLLIER, *supra* note 2; RAJ PATEL, THE VALUE OF NOTHING: HOW TO RESHAPE MARKET SOCIETY AND REDEFINE DEMOCRACY (2010); JAMES RIDGEWAY, IT'S ALL FOR SALE: THE CONTROL OF GLOBAL RESOURCES (2004); JENNIFER WASHBURN, UNIVERSITY INC.: THE CORPORATE CORRUPTION OF HIGHER EDUCATION (2005).

⁵¹⁸ Bauwens, *supra* note 514.

⁵¹⁹ To some commoners, "common assets" is an oxymoron because it implies a proprietization of resources that is alien to the commons. To the extent that one accepts the idea of "state-based commons," however, or commons that have regulated intercourse with markets, "common assets" is a useful term.

people meet their needs.⁵²⁰ Blue Labour calls for “a new politics of reciprocity, mutuality and solidarity” inspired by economist Karl Polanyi and opposition to neoliberalism and globalization. It actually makes an ontological critique of the State/Market that the Commons is well-equipped to address. Writes Labour Party activist Jon Wilson:

The free market and the centralized, statistically-obsessed State try to subordinate the local peculiarities of life to universal values, whether those values are established by the price mechanism or [even] a language of universal rights. In reality our lives only make sense within concrete contexts and relationships. If the market or centralized State annihilate those local contexts, life literally loses its meaning. . . . The problem with the liberal idea of the identical, relation-less self-determining individual is not that it is bad (although it is that) but that it is a false description of the way human beings act.⁵²¹

Many liberal internationalists scoff at the aspirations of those who seek stronger autonomy, tradition, and meaning through localism; to them, it smacks of conservative parochialism and a regression to tribalism over universal rights. But it is precisely the failure of the liberal State and international bodies to fulfill their stated commitments to universal human (and ecological) rights that has engendered cynicism about State governance, as Wilson’s alert implies. What confidence can be put in a high-minded commitment to principles that in reality are only selectively and irregularly applied—empty commitments that are embraced or disregarded as it suits the passing political convenience?

The deeper skepticism, in any case, is whether a governance system espousing universal rights is capable of making good on those rights in people’s particular local contexts. Does the governance system inspire deep allegiance and meaning? Does it meet people’s everyday needs? “Ideologies, however appealing, cannot shape the whole structure of perceptions and conduct unless they are embedded in daily experiences that confirm them,” the late historian Christopher Lasch once wrote. And the core problem may be that liberal universalism—yoked as it has been to the State/Market and abstractly expressed—is not generally perceived as a personal or local phenomenon. This may help explain why it often has trouble securing the allegiance of “the street,” or at least of religious fundamentalists and racial and ethnic bigots who see political opportunity in pitting “the local” against larger principles of law and justice.

One of the most important challenges facing global governance in the future, we believe, is to devise better ways to integrate the language of universal rights with local, lived experience so that the former is more than an abstraction mouthed by remote politicians, judges, and lawyers. State support for the Commons is an attractive solution because it provides a realistic way to link universal legal principles with lived experience. Indeed, a Commons sector could be the basis for a political culture dedicated to universal human and ecological rights.

⁵²⁰ See *Blue Labour*, at https://secure.wikimedia.org/wikipedia/en/wiki/Blue_Labour (accessed Aug. 5, 2011).

⁵²¹ Jon Wilson, *Blue Labour Realism*, OPENDEMOCRACY.NET (June 14, 2011), <http://www.opendemocracy.net/ourkingdom/jon-wilson/blue-labour-realism> (accessed Aug. 5, 2011).

From this perspective, we also believe the Partner State could work with a fledgling Commons sector to develop a new constellation of self-organized, bottom-up governance systems that can evolve their own locally appropriate expertise, rules, and relationship-driven solutions. The particulars would of course vary from one resource domain to another; from one locality or region to another; and from one State system to another. But at bottom the State would assume a different role, guided by the principles enumerated above. Instead of administering universal programs with little regard for local context or the personal participation of citizens (the liberal approach), or abandoning a government role altogether because it amounts to “paternalism” and the “nanny-state” (the conservative approach), the State would adopt policy structures that invite and support commons-based approaches that enable new forms of participation, responsibility, and self-organized governance. The State would establish, for example, basic governance protocols—legal, technical—that authorize and assist commoners in coming up with management solutions that work best for them and a given resource. The principles of polycentrism and subsidiarity would help assure that the most appropriate tiers of government would take on differential roles, but with the end result that commoners proximate to the resource or problem would have the greatest discretion in fashioning management schemes.⁵²²

Some commons can and will thrive if there is minimal State oversight and they are left essentially alone to do what they do best (though with clear legal authorization from the State and basic performance parameters). No experts or politicians were necessary to instruct indigenous peoples how to devise traditional commons in rural Asia, for example, or farmers to launch Community Supported Agriculture projects, or programmers to design GNU Linux and other breakthrough free/open source software programs. Many commons self-organize on their own, without much or any government supervision. Such commons niches could become much more expansive and robust, however, if they enjoyed a more formal rapprochement or *modus vivendi* with the State. It is important that the State recognize the value-proposition of the Commons as a governance paradigm, and be willing to provide adequate legal recognition and resource-support to it, without overbearing supervision.

A vivid historical model for Partner State support of the Commons can be seen in the role played by the Pentagon’s DARPA (Defense Advanced Research Projects Agency) in creating the Internet—e.g., developing a set of minimalist technical protocols known as TCP/IP⁵²³ which, along with supportive regulation, enabled extremely diverse computer networks to connect with each other on one single system, the Internet. The TCP/IP protocols amount to a governance architecture, a set of shared rules that enable collective action. The beauty of the architecture is that each node of the network is free to self-implement and innovate within the overarching framework of minimalist, collective standards.

⁵²² A likely problem, at least initially, would be the inclination of national governments to displace its obligations onto lower levels of government, without providing adequate legal authority or support, all the while cloaking such action in high-minded reformist rhetoric. Such subterfuges would have to be challenged.

⁵²³ TCP/IP stands for “Transmission Control Protocol/Internet Protocol”; see *Internet Protocol Suite*, WIKIPEDIA.ORG, https://secure.wikimedia.org/wikipedia/en/wiki/Internet_Protocol_Suite (accessed Aug. 5, 2011). Besides TCP/IP, there were important regulatory protocols that facilitated the Internet’s growth, such as telecommunications regulations. See JANET ABBATE, *INVENTING THE INTERNET* (2000).

This might be restated as: *The distributed creativity of commoners is empowered through minimalist design principles at the center*,⁵²⁴ and the model might be called: *State governance in the service of commons formation and stewardship*. This mode contrasts sharply with conventional public administration, which tends to centralize authority, expertise, and decision-making at the expense of local control and capacity.

Commons scholar James B. Quilligan notes that public administration generally seeks “the greatest good for the most people”—a worthy ambition, to be sure. But too often it has resulted in lowest-common-denominator, one-size-fits-all regimes that may not serve anyone well. It focuses on abstract, universal “clients” and has few ways to host participatory co-production and co-management to serve needs defined by the “clients” themselves. Predictably, conventional top-down administration is usually more mindful of its own institutional self-interests (reputation, political support, revenues, etc.) than the on-the-ground needs of the people or ecosystems being served. Ivan Illich spent much of his life documenting dehumanizing and ineffective results when societal problems are defined by institutional “experts” as “needs” that require professional interventions.⁵²⁵ People are objectified and dispossessed, and their human dignity and agency diminished.

The Partner State would strive to advance a different approach. It would seek to enable people to have real—not just nominal—opportunities for interaction, participation, and responsibility to craft solutions appropriate to their self-defined needs. In supporting commons, the Partner State would likely enable decision-making that takes account of people’s actual needs and their neighborhoods, local economies, historical traditions, and natural landscape and climate.⁵²⁶ Writes Quilligan: “[W]hen consumers are co-producers of the goods and services they receive and organize, their practical and applied knowledge are embodied directly in their commoning. As co-producers, the motivations, knowledge, and skills of resource users become part of the production praxis, leading to new ways of interacting and coordinating social and economic life.”⁵²⁷

⁵²⁴ This same design concept was also responsible for the World Wide Web. The hypertext transfer protocol (HTTP) invented by Tim Berners-Lee established a shared governance protocol for Web communication. This in turn unleashed an explosion of self-organized digital commons (as well as business models “built atop” this commons-based technical and social infrastructure). Critically, the “policy protocols” were as simple and limited as possible. To be sure, supplementary laws have been needed for privacy, security, and so forth, but the basic design rules enable countless self-regulating commons to arise on a new platform, the Web.

⁵²⁵ See IVAN ILLICH, *DESCHOOLING SOCIETY* (1971); *TOOLS FOR CONVIVIALITY* (1973); *MEDICAL NEMESIS* (1982).

⁵²⁶ Trent Schroyer puts it well: “In so far as the actual forms of material provisioning vary, so the substantive rationality of specific orders of life differ. The ideal and material are always unified in so far as people meet their needs within a specific environmental context and to which they are oriented by their culturally acquired competences and stocks of knowledge, and are part of a human group that has a shared concept of the good life. Meeting their substantively defined ‘needs’ requires solutions of specific technical problems of means, not problems defined exclusively in terms of price or the maximizing of economic goals. . . . Application of formal economizing principles to non-market oriented life orders is economic in that it produces knowledge that is coercive to indigenous practices in so far as it disvalues and displaces social solidarities and embedded knowledge.” TRENT SCHROYER, *supra* note 31, at 33-34.

⁵²⁷ James B. Quilligan, *Social Charters: Praxis of the Commons* (unpublished essay, on file with the authors).

Additionally, the Partner State could feasibly advance “biophilic design” or “ecological design,” a holistic, place-based approach in technology, production and usage that emulates natural processes.⁵²⁸ Such approaches are not incompatible with market activity, but they do imply a rejection of centralized provisioning of technology and infrastructure, which tend to be relatively more brittle, costly and unreliable. Industrialized models of provisioning seek to consolidate and streamline production and distribution, all in the name of efficiency, whereas ecological commons with biophilic design seek to fortify natural diversity and local stability. What neoliberal economics regards as inefficient and redundant in ecological commons, commoners regard as essential to resilience, robustness, and durability.

To the outdated 20th Century mind, schooled in traditional, top-down bureaucratic control, decentralized commons are counter-intuitive at best and incomprehensible at worst. Commons do not conform to principles of mechanistic, “rational” order and do not exhibit linear causality. They are subject to too many incalculable variables, and in ways that blithely transgress established political boundaries (local, national, regional, global). Yet successful commons are actually more stable, resilient, and self-healing than command-and-control systems precisely because they are nested within a dynamic, living ecosystem of players. They enjoy an “invisible means of support” whose subtleties and time-horizons are not evident to the positivist, instrumentalist mind. Ecological commons are also more stable because they are rooted in familiar local circumstances, and therefore are more insulated from the vagaries and manipulations of global markets, whose chief motive is not long-term stewardship, but monetization of the local resource. The local embeddedness of commoners give them a sophisticated knowledge of native resources and context that often is invisible to scientists, companies, and public agencies accustomed to thinking in abstract, universal terms.

The Partner State has a keen incentive to support Commons governance. With many more richly nuanced, self-correcting feedback loops than markets, commons are more capable of rapid, self-healing action. As we noted in Section III, markets are designed to over-rely on price as an exclusive indicator of value and ignore externalities as much as possible (lest they be forced to internalize those costs to the detriment of their bottom lines). Because they tend to be committed to a fuller spectrum of (non-monetized) value and because many are local, commons are more willing and able, by contrast, to internalize costs that markets typically try to displace onto nature and future generations. Their cultural commitments are able to guide and stabilize resource management; and their rich histories, traditions, and ethical norms are valuable sources of moral guidance, wisdom, and flexibility, all on a decentralized scale. Large-scale commons will have different social dynamics than smaller ones, of course, but they can advance collective interests and

⁵²⁸ See, e.g., JANINE M. BENYAS, *BIOMIMICRY: INNOVATION INSPIRED BY NATURE* (2002); JOHN H. CLIPPINGER, *THE BIOLOGY OF BUSINESS: DECODING THE NATURAL LAWS OF ENTERPRISE* (1999); IAN MCHARG, *DESIGN WITH NATURE* (1969); DONELLA H. MEADOWS, *THINKING IN SYSTEMS: A PRIMER* (2008); DAVID ORR, *THE NATURE OF DESIGN: ECOLOGY, CULTURE AND HUMAN INTENTION* (2004); NIKOS A. SALINGAROS, *TWELVE LECTURES ON ARCHITECTURE: ALGORITHMIC SUSTAINABLE DESIGN* (2011); SIM VAN DER RYN & STUART COWAN, *ECOLOGICAL DESIGN* (1996).

perform other functions familiar to commons such as subsistence support, reductions in inequality, and social cohesion.⁵²⁹

The social/moral gyroscope of traditional commons is most evident among indigenous peoples, who tightly integrate governance, culture and ecosystem needs. Such governance is able to express and enforce an ethic of “enough,” unlike the market ethic which presumes (and celebrates) limitless appetites that are never satiated—the “hungry ghost” phenomenon.⁵³⁰ The Partner State may see the technocratic virtues of relying upon commons, but it may not appreciate that its support of commons could also help address, in piecemeal, project-driven ways, some of the deeper pathologies of market culture and modernity. Unlike legislatures and bureaucracies, for example, properly constituted commons are more capable of declaring certain resources to be off-limits to the market or usable only under controlled, stipulated terms. Instead of making social reconstruction and local self-determination dependent upon market growth (no growth, no social well-being), the Commons integrates these social goals into the very process of commoning. Examples include community forests, regional water supplies, local food systems, and coastal fisheries. The establishment of commons does not eliminate political maneuvering, competition, and anti-social behaviors, but it does create institutional and social frameworks that can contain such energies and channel them in more constructive ways than, say, laissez-faire markets or State/Market alliances.

In a world with a flourishing Commons sector, the State’s role changes. As Michel Bauwens puts it:

On the one hand, market competition will be balanced by co-operation, the invisible hand will be combined with a visible handshake. On the other hand, the state is no longer the sovereign authority. It becomes just one participant among others in the pluralistic guidance system and contributes its own distinctive resources to the negotiation process. As the range of networks, partnerships, and other models of economic and political governance expands, official apparatuses remain at best first among equals. The state’s involvement would become less hierarchical, less centralized, and less directive in character. The exchange of information and moral suasion become key sources of legitimation and the state’s influence depends as much on its role as a prime source and mediator of collective intelligence as on its command over economic resources or legitimate coercion.⁵³¹

⁵²⁹ Two such large-scale commons in the United States are the Alaska Permanent Fund and U.S. Social Security system.

⁵³⁰ Christopher Alexander’s classic work on “pattern languages” in architecture is a contemporary example of how about profound forms of order—aesthetic, spiritual, cultural, functional—that have manifested themselves over time through cooperative experimentation and reflection. See CHRISTOPHER ALEXANDER, SARA ISHIKAWA & MURRAY SILVERSTEIN, *A PATTERN LANGUAGE: TOWNS, BUILDINGS, CONSTRUCTION* (1997, 25th printing). The essential point is that these other values must be integrated into the governance and design of a system as a way to surmount the commodity fetishism and market values that otherwise prevail.

⁵³¹ Michel Bauwens, *Peer Governance as a Third Mode of Governance*, June 9, 2010 (drawing upon peer governance scholar Bob Jessop), <http://blog.p2pfoundation.net/peer-governance-as-a-third-mode-of-governance/2010/06/09> (accessed Aug. 5, 2011).

Moving from a world dominated by the State/Market to one of the Partner State and peer governance would entail a considerable transformation, of course. Some catalytic legal strategies are therefore necessary to help propel this effort—the focus of our concluding subsection.

C. Catalytic Legal Strategies

So how might we institute (consistent with the principles and policies enumerated above for internal commons governance and external State guidance) catalytic strategies of law and policy that could advance commons projects as a matter of enforceable State Law?

State Law alone is not enough to make a commons successful, of course, but in our largely State-centric world order, its authorization is usually necessary for any projects that have national or transnational impact. If there is to be a viable Commons sector that can challenge the excesses of the State/Market and press for sane ecological practices, State Law must somehow find a *modus vivendi* with commoners (i.e., civil society) and their Vernacular Law systems.

Let us start by frankly acknowledging that constructing legal frameworks for protecting the Commons as commons is mostly uncharted territory. While there are any number of State-administered programs that serve the public interest, few if any recognize the Commons as a distinct governance paradigm and value-proposition. Any rights that may exist are attached to citizens as individuals (who, in a well-functioning democracy, have the primary right to petition their government); they are not rights *guaranteed to commoners as such* to exercise some meaningful measure of direct responsibility and control over shared, defined resources.

Our purpose in urging greater delegation and devolution of State governance to commons—illustrative of the Partner State relationship—is to empower cooperating individuals to participate in the governance of shared ecological resources *as a matter of law*. By authorizing diverse forms of distributed (i.e., decentralized and quasi-autonomous) commons working at numerous levels and sometimes working in collaboration with the State, the State can “provide for the common welfare” in ways that neither the State nor the Market working alone can. By carving out legal frameworks that provide recognized “open spaces” for commons governance, the State can leverage the energies and innovation of commoners to address ecological needs. A flourishing Commons sector can also temper the State’s broad delegations of authority via corporate chartering that has resulted in so much environmental abuse (among other anti-social behaviors).⁵³²

Of course, a significant challenge—perhaps *the* most significant challenge—is the liberal polity’s indifference or hostility to most collectives (corporations excepted). This means that commoners must use ingenious innovations to make their commons legally cognizable and protected. For this reason, our methodology in proposing policy structures that can affirmatively support the formation and maintenance of commons sensitive to ecological and human rights has been to build on concrete projects and precedents that are based on “real world” experience.

⁵³² See Program on Corporations, Law and Democracy (POCLAD), <http://www.poclad.org> (accessed Aug. 6, 2011). On the history of corporate chartering, see RALPH NADER ET AL., *TAMING THE GIANT CORPORATION: HOW THE LARGEST CORPORATIONS CONTROL OUR LIVES* (1976).

The legal strategies described below are drawn from a number of exemplary commons models and supportive bodies of existing law. Since legal regimes vary immensely around the world, however, our proposals should be understood as general approaches that obviously will require modification and refinement for any given jurisdiction. We start first with commons that entail minimal entanglement with the State and move on to ones that have greater state involvement, concluding with State trustee commons, State rentals of commons, and the daunting challenges of establishing new sorts of multilateral commons institutions for the atmosphere, oceans, and other global commons.

1. *Vernacular-Law Commons*

This is the classic, default way for a commons to operate: a collective asserts its community rules and norms in its management of resources, and sanctions those who may violate them. This is a traditional and often-effective form of Vernacular Law, as our notice of “micro-law” and other variants has shown.⁵³³ Peer sentiment, pressure, and sanctions can define and stabilize a community and unite its members in working together to protect the resources of a commons. This is how, indeed, most subsistence commons have functioned over time, without exogenous institutional “back up” by the State or civil-society institutions. Such commons can be self-policing and stable without the kind of external authority that Hobbes erroneously theorized was essential to restrain barbarism in a “state of nature.”⁵³⁴

Contemporary examples of using peer sentiment to encourage cooperation abound. A good example is the use of peer norms by *electric utilities* to incentivize and shame rate-payers into reducing their usage of electricity and gas. A 2008 study showed that utility customers are more likely to reduce their consumption when they are informed about the actual conservation habits of the majority of their neighbors than when they are being exhorted to conserve.⁵³⁵ In a completely different arena, the *Open Knowledge Foundation* in the U.K. has developed the Panton Principles, a series of public criteria for assessing whether scientific data is legally “open” and shareable. Institutions that meet the designated criteria can legally claim adherence to the Panton Principles and its halo of social esteem.⁵³⁶

⁵³³ See *supra* Section III.B.

⁵³⁴ An external civil authority may be necessary to help *scale* the size of social cooperation in a commons but not necessarily, as peer-based cooperation on the Internet demonstrates. In any case, as archeologists and neuro-scientists have shown, the cooperative impulse appears to precede the rise of civil institutions and law.

⁵³⁵ Jessica M. Nolan et al, *Normative Social Influence Is Underdetected*, 34 PERSONALITY AND SOCIAL PSYCHOL. BULL., NO. 7, at 913 (July 2008). Using such finding, an electricity and gas provider in the Northeast United States National Grid has expanded its program to inform homeowners on their monthly statements how their energy usage compares to their neighbors. See Jim Witkin, *Utilities Finding Peer Pressure a Powerful Motivator*, N.Y. TIMES, Feb. 22, 2010, <http://green.blogs.nytimes.com/2010/02/22/utilities-finding-peer-pressure-a-powerful-motivator/> (accessed Aug. 2, 2011).

⁵³⁶ See Panton Principles website at <http://pantonprinciples.org> (accessed Aug. 6, 2011). See also Open Data Commons website at <http://www.opendatacommons.org/guide> (accessed Aug. 6, 2011).

The point is that social norms can be a very effective and efficient way of encouraging positive behavior and cooperation in ways that precede or complement formal legal requirements. Indeed, the rules of social etiquette and State Law itself would not work at all if they did not comport with the basic sentiments of Vernacular Law. But as a voluntary enterprise constrained only by social approval or opprobrium, community norms are also limited instruments of enforcement. They may or may not be adequate to protect an ecological commons.

2. Develop “Private-law Work-arounds”

Devising ingenious adaptations of private contract and property law is a potentially fruitful way to protect commons. The basic idea is to use conventional bodies of law serving private property interests, but by inverting their purposes to serve collective rather than individual interests. The most famous example may be the *General Public License*, or GPL, which is a software license devised by Richard Stallman and the Free Software Foundation in 1986 to ensure that any code contributed to a software commons cannot be legally privatized and must remain always legally free to modify, copy, and share.⁵³⁷ Copyright owners can choose to attach the GPL to their software to guarantee that the code and any subsequent modifications of it will be forever free for anyone to use. The GPL was a seminal legal innovation in helping to establish commons for software code.

Drawing inspiration from the GPL is *Creative Commons*, a nonprofit organization that devised a series of free, standardized public licenses that enable copyright holders to ensure that their works may be copied, modified, and shared, as stipulated by six basic licenses.⁵³⁸ Users affix the licenses to their copyrighted works, whether they be text, music, video, or any other content, and in so doing make their work legally capable of being shared and re-used in online digital commons.

Essentially, both the GPL and CC licenses turn copyright law on its head. The GPL has enabled the rise of GNU Linux, the popular computer operating system, and literally thousands of free and open source software programs, because the GPL assures volunteer-programmers that their work will not be privately appropriated but will remain in the Commons instead. Similarly, the CC licenses enable creative works to escape automatic and strict copyright protection (which, for works created today, would be locked up until approximately the year 2152) and instead make the works shareable on stipulated terms. These copyright-based licenses have been critical to the formation of commons of digital content, which are now a significant productive and cultural force on the Internet. More than seventy nations have adapted the CC licenses to their legal jurisdictions to date, and an estimated 400 million online artifacts are now shareable under CC licenses.⁵³⁹

The GPL and CC licenses are not special cases. Both have been emulated by other creative sectors. Richard Jefferson of *CAMBIA*, a nonprofit research institute in Australia dedicated to “open source biology,” has created an open platform for the sharing of biological research by

⁵³⁷ See GNU General Public License at the Free Software Foundation website, <http://www.gnu.org/licenses/gpl.html> (accessed Aug. 6, 2011); see also CHOPRA & DEXTER, *supra* note 250; ANDREW M. ST. LAURENT, UNDERSTANDING OPEN SOURCE & FREE SOFTWARE LICENSING (2004).

⁵³⁸ For more on the licenses, see <http://creativecommons.org/licenses> (accessed Aug. 6, 2006)

⁵³⁹ See CREATIVE COMMONS, THE POWER OF OPEN (2011), <http://thepowerofopen.org> (accessed Aug. 6, 2011).

creating shareable research tools (patented and then given open licenses) to assure that any research produced by using the tools will be available to all.⁵⁴⁰ *Science Commons*, a project started by Creative Commons, has created a private-law innovation, CC0 (CC Zero), which creates legal and technical protocols for the scientific community to develop its own reputation-based system for sharing data.⁵⁴¹

These digital tools for sharing are significant for ecological commons for two reasons. First, digital networking infrastructures are increasingly becoming the platforms upon which political and social governance occur. The configuration of these platforms, especially via software design, therefore has political and social implications for how people may manage resources and interrelate to each other. “Code is law,” as Professor Lawrence Lessig famously declared.⁵⁴² Second, as we explained relative to eco-digital commons in Section IV, digital systems are increasingly being integrated into ecological monitoring, management, and rules-enforcement, so the structure of the systems (open/closed, commons/proprietary) can have far-reaching “constitutional” implications.

Beyond these “side door” uses of private-law work-arounds to help ecological commons, such work-arounds also can directly establish ecological commons. Perhaps the most pervasive is the community land trust. Like the GPL and CC licenses, conservation trusts do not provoke hostility from private property devotees because the trusts are the voluntary and consensual choice of property owners. No one is coerced by the State to dedicate her/his private property to collective or intergenerational interests.⁵⁴³

A number of examples of eco-minded trusts serving the interests of indigenous peoples and poorer countries rely upon private-law work-arounds to property and contract law. The *Global Innovation Commons* developed by entrepreneur/activist David C. Martin and described in Section IV is a massive international database of lapsed patents that enables anyone to manufacture, modify, and share ecologically significant technologies.⁵⁴⁴ The *Heritable Innovation Trust*, also developed by Martin, uses contract law to help indigenous cultures protect their traditional knowledge commons in the face of trade conventions that subvert their control.⁵⁴⁵ The *Traditional Knowledge Digital Library*

⁵⁴⁰ See CAMBIA website, at <http://www.cambia.org/daisy/cambia/home.html> (accessed Aug. 6, 2011).

⁵⁴¹ The peculiar nature of data makes it very complex and legally inappropriate to attempt to make it proprietary via copyright law (and thus, by transference, shareable via Creative Commons licenses). See *CC0 FAQ*, on the Creative Commons website at http://wiki.creativecommons.org/CC0_FAQ (accessed Aug. 6, 2011).

⁵⁴² LAWRENCE LESSIG, *CODE AND OTHER LAWS OF CYBERSPACE* 20 (1999). Lessig writes, at 20: “There is regulation of behavior in cyberspace, but that regulation is imposed primarily through code. What distinguishes different parts of cyberspace are the differences in regulations effected through code. In some places life is fairly free, in other places controlled, and the difference between them is simply a difference in the architectures of control—that is, a difference in code.” Lessig does not mean to imply that code alone is law, of course, but that code in the digital age is a powerful new modality of law—one that obviously intersects with other modalities of law, most notably State Law, Market governance and social norms.

⁵⁴³ There is an ironic edge to this claim, however, because much of the growth of conservation trusts has been fueled by sizeable tax incentives that taxpayers underwrite.

⁵⁴⁴ See *supra* note 466 and accompanying text.

⁵⁴⁵ See Heritable Innovation Trust website at <http://www.heritableinnovationtrust.org> (accessed Aug. 6, 2011).

works within the framework of patent law to assure that formally registered traditional knowledge will be treated as a protected commons. It is a database of public-domain medical knowledge that can be used to document a specific body of traditional knowledge as “prior art,” and therefore render it ineligible for patents and available to commoners. The Library seeks to thwart a practice often known as “biopiracy,” in which multinational corporations assert patent ownership over ethno-botanical or agro-biological knowledge that has customarily been freely shared.

Property law professor Carol Rose has called commons that leverage property and contract law to serve collective interests “property on the outside, commons on the inside.”⁵⁴⁶ It is an apt description of the general category of private-law work-arounds.

3. Localism and Municipal Law as a Vehicle for Protecting Commons

Some of the most innovative work in developing ecological commons (and knowledge commons that work in synergy with them) is emerging from local and regional circumstances, particularly municipal governments and activists. The reason is simple: the scale of such commons makes participation more feasible and the rewards more evident. Local commons are also attractive because they provide practical opportunities to *reduce consumption* and thus the demands on natural systems.⁵⁴⁷ Here, we reference some of the more imaginative movements and projects now underway.

Perhaps the most salient projects are part of a burgeoning “re-localization movement” in the U.S. and U.K. that are attempting to bolster local self-sufficiency. As one Bay Area group describes it, re-localization is “the process by which a region, county, city or even neighborhood frees itself from an overdependence on the global economy and invests its own resources to produce a significant portion of the goods, services, food, and energy it consumes from its local endowment of financial, natural, and human capital.”⁵⁴⁸

⁵⁴⁶ Rose, *supra* note 484, at 155.

⁵⁴⁷ Jeffrey Sterling proposes new sorts of “demand-side reduction cooperatives” in local communities as practical ways to reduce consumption: “The basic idea is that siloed supply side companies are not in the business of reducing demand; they are in the business of increasing supply which damages the environment and is not sustainable. Creating community-run demand side reduction coops (that are voluntary) will make a community resilient, sustainable and will create work for community members. Having a community-owned [Internet] cloud will make the integration of demand side reduction services into the life of a community possible. Also establishing performance based contracts where demand reductions are measured will make it possible for demand side reduction services to be cash flow positive because demand reduction decreases the need for supply which keep the money in the community. Among Sterling’s examples: Catching rainwater in cisterns for graywater and freshwater supply that eliminated the need for the next groundwater well or dam. Superinsulating all homes in a community to reduce the number of new powerplants or a new gas pipeline. Creating a smart microgrid that will provide peaking power megawatts as an independent power producer and provide solar collectors for peak cooling as well as battery backup storage and essential power to computers in the home.” *Quoted at* <http://blog.p2pfoundation.net/a-sustainability-proposal-demand-side-reduction-cooperatives/2011/07/26> (accessed Aug. 6, 2011).

⁵⁴⁸ J. TALBERT ET AL., BUILDING A RESILIENT AND EQUITABLE BAY AREA: TOWARDS A COORDINATED STRATEGY FOR ECONOMIC LOCALIZATION (2006), *also available at* <http://www.regionalprogress.org> (accessed Aug. 6, 2011). *See also* ROB HOPKINS, THE TRANSITION HANDBOOK: FROM OIL DEPENDENCY TO LOCAL RESILIENCE (2008).

The *Transition Town* movement is the most visible and organized re-localization effort, with self-organized groups in more than 300 towns, mostly in the U.K., Ireland, Canada, and the United States. These groups are actively taking steps to mitigate the anticipated disruptions of Peak Oil and climate change.⁵⁴⁹ They are attempting to promote permaculture, rebuild local infrastructures with ecological design principles, cultivate local provisioning of food, build renewable fuel sources, and insulate their communities from the vagaries of the global economy and technologies. The movement frankly admits: “We truly don’t know if this will work. Transition is a social experiment on a massive scale. What we are convinced of is this: If we wait for governments, it will be too little, too late. If we act as individuals, it’ll be too little. But if we act as communities, it might just be enough, just in time.”⁵⁵⁰

Local commons are playing significant roles in re-imagining the food production and distribution systems. *Community-Supported Agriculture* (CSA) farms have grown tremendously over the past twenty years in the U.S. as a way for consumers and farmers to deal directly and share the economic risks and the social pleasures that come from a commons-based market. Part of a larger movement to revamp local food systems and culture, CSAs and their members share a commitment to wholesome, pesticide-free food, and the local landscape, economy, and community.⁵⁵¹ The *Slow Food* movement is an international movement that “unites the pleasure of food with responsibility, sustainability and harmony with nature,” according to Italian Carlo Petrini, the founder and president of Slow Food International (SFI). This global, grassroots movement has over 100,000 members organized in 1,300 “*convivia*,” or local chapters, which are committed to “practice small-scale and sustainable production of quality foods.”⁵⁵²

Another type of local commons that is surging in visibility is the *community forest* in which self-organized local groups, sometimes with the participation of local governments, buy and manage large tracts of forest land for the benefit of the community. Commoners share in the management, decision-making, and benefits of the forest, such as recreation, ecosystem protection, nature education, community-building and selective timber-harvests. Forest commons are pervasive in poorer, rural countries. “[I]n the developing world, nearly 145 million hectares are communally administered and an additional 180 million hectares are owned by communities and indigenous groups,” according the India-based publication, *Common Voices*.⁵⁵³ Community forests are growing in popularity in developed countries as well,⁵⁵⁴ in part because

⁵⁴⁹ See https://secure.wikimedia.org/wikipedia/en/wiki/Transition_Towns#cite_note-14 (accessed Aug. 6, 2011).

⁵⁵⁰ See Transition Network website, <http://www.transitionnetwork.org/support/what-transition-initiative> (accessed Aug. 7, 2011).

⁵⁵¹ See <http://www.localharvest.org/csa> (accessed Aug. 7, 2011).

⁵⁵² See <http://www.slowfood.com> (accessed Aug. 7, 2011).

⁵⁵³ Foundation for Ecological Security, *An Introduction to Forest Commons*, 3 COMMON VOICES 5 (2011), also available at <http://iasc2011.fes.org.in/common-voices-3.pdf> (accessed Aug. 12, 2011).

⁵⁵⁴ For example, the town of Gorham, New Hampshire, manages a community forest of 4,900 acres; Grand Lake Stream, Maine, has a 340,000-acre forest; both towns have year-round populations of about 150 people. See TRUST FOR PUBLIC LAND, COMMUNITY FOREST COLLABORATIVE, COMMUNITY FORESTS: A COMMUNITY INVESTMENT STRATEGY

they engage people in everyday stewardship of their local resource and offer an attractive way to re-imagine ecological governance beyond the options available via the State or Market.⁵⁵⁵

Community Environmental Legal Defense Fund (CELDF), previously noted in our discussion of Nature's rights,⁵⁵⁶ is a project that helps local communities assert local, democratic self-control over community resources threatened by large corporations such as big-box retailers and natural gas drillers.⁵⁵⁷ Special attention is paid to how to use municipal ordinances, home rule charters and other legal strategies to preserve local governance over things that matter to the community. The *Institute for Local Self-Reliance* provides a range of innovative strategies and working models for local self-sufficiency.⁵⁵⁸ The *Foundation for the Economics of Sustainability* is a major resource on locally based ecological economics.⁵⁵⁹ The City of Linz, Austria, is notable for announcing its intention of becoming the first "regional information commons" by using the Internet to make local information and creative works as open, accessible and shareable as possible. The city government aims to transform city politics, governance and culture by building a vast ecosystem of open-information commons, which would enable new types of commons-based ecological practices.⁵⁶⁰

4. Federal and Provincial Governments as Supporters of Commons Formation and Expansion

The next higher stages of government can and should play supportive roles in developing the Commons sector, much as they reflexively attempt to support market activity. State and national governments usually have commerce departments that host conferences, assist small businesses, promote exports, and so on. Other government programs may provide generous R&D support for market activity.

We already have noted Professor Carol Rose's analysis of how the managed commons can produce a "comedy of the commons,"⁵⁶¹ not a tragedy, because the principle of "the more, the merrier" in a commons generates greater collective value than private ownership or markets might produce. This analysis is confirmed as well by an analysis by Professor Brett M.

(Aug. 2007), also available at http://www.northernforest.org/data/uploads/docs/Community_ForestsA_Community_Investment_Strategy.pdf (accessed Aug. 7, 2011).

⁵⁵⁵ *Id.*

⁵⁵⁶ See *supra* notes 167-170 and accompanying text.

⁵⁵⁷ See Community Environmental Legal Defense Fund website, <http://www.celdf.org/index.php> (accessed Aug. 7, 2011).

⁵⁵⁸ See Institute for Local Self-Reliance website, <http://www.ilsr.org> (accessed Aug. 7, 2011)..

⁵⁵⁹ See Foundation for the Economics of Sustainability, <http://www.feasta.org> (accessed Aug. 7, 2011)..

⁵⁶⁰ Open Commons Region Linz <http://opencommons.public1.linz> (accessed Aug. 7, 2011); David Bollier, *The City of Linz: Pioneers a Regional Information Commons*, <http://bollier.org/city-linz-pioneers-regional-information-commons> (accessed Aug. 7, 2011).

⁵⁶¹ Rose, *supra* note 287. See also *supra* note 484.

Frischmann of the economic rationale for treating infrastructure as commons.⁵⁶² Although the institutional schemes for treating “environmental infrastructure” as “regulated semicommons” can be quite complicated and hybrid, as Frischmann explains,⁵⁶³ the essential point deserves emphasizing: Given the value-proposition of the Commons, it often makes much more economic and ecological sense for government to support “commons development” so that the benefits can be shared by all rather than privatized by a few.

One likely objection is that the benefits of commons cannot be easily measured and plugged into the kind of cost-benefit analyses that economists regard as “hard proof” of benefit. Studies of the quantitative and monetary benefits of “nature’s services” may quell some objections, but ultimately an observer must come to accept the *qualitative* benefits of commons as an epistemological reality. Commons routinely have publicly beneficial “spillover effects” that are subtle and diffuse in impact; subject to long time-horizons; and difficult to track in cause-and-effect ways.

Additionally, national and subnational governments can help build *trans-local structures* that can federate local- and subnational state-based commons and thereby amplify their impact. Locally oriented commons such as *Community Supported Agriculture* (CSAs) and the *Slow Food* movement could greatly have greater impact if government were to help them reach out to companion commons in other localities, enabling them to reap the positive externalities of mutual association. The power of such mutual support can be seen in the development of the *System for Rice Intensification* commons mentioned in Section IV, a self-organized international network of rice farmers whose collaboration has spawned innovative, ecologically responsible ways of improving crop yields.

Trans-local collaboration of commons has a particularly promising future now that the Internet is becoming ubiquitous, even in rural areas of poor countries. When local commoners involved in agriculture, sustainable forestry, or seed-sharing, can link up with international commoners in the same field, all sorts of innovative ecological practices can emerge and be improved upon and propagated rapidly. Some excellent examples of this can be seen in work done by the groups such as *Appropedia*, a website/wiki in which local actors collaborate in developing solutions for sustainability, poverty reduction and international development using appropriate technology;⁵⁶⁴ the *Global Villages Network*, which uses networking technologies to

⁵⁶² Brett M. Frischmann, *An Economic Theory of Infrastructure and Commons Management*, 89 MINN. L. REV. 4 (April 2005), also available at http://papers.ssrn.com/sol3/papers.cfm?abstract_id=588424 (accessed Aug. 7, 2011).

⁵⁶³ In practice, the dominant approach in the environmental area is a mixed strategy that regulates some uses and sustains a commons for others. In essence, environmental infrastructure resources often are sustained through complex institutional arrangements that form something akin to semicommons property regimes, although often through regulatory regimes rather than pure property regimes. This approach to constructing semicommons (1) assigns and regulates private rights (access, use, exclusion and/or exchange) for certain fields of use, such as diversion for industrial purposes; (2) defines commons in terms of community rights (access and use) for certain fields of use, such as recreational use; and (3) sustains the integrity of the resource for nonhuman users and future generations. Brent M. Frischman, *Environmental Infrastructure*, 35 ECOLOGY L. Q. 102 (2008), also available at http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1123732 (accessed Aug. 7, 2011).

⁵⁶⁴ See http://www.appropedia.org/Welcome_to_Appropedia (accessed Aug. 7, 2011).

help local communities address local development and improve their lives;⁵⁶⁵ and *Akvo.org*, which works transnationally to promote new water and sanitation projects at the local level.⁵⁶⁶

5. Strengthen the Public Trust Doctrine

The State often functions as a public trustee for present and future generations, or some designated subsets of them. We call this a stewardship *public trustee commons* as a way to emphasize that the resources belong to the people, not the government. A State trustee commons is a hybrid commons, as noted in Subsection 6 of Section IV. It does not exemplify the classic structures and relationships of a traditional commons described by Ostrom *et al.*, particularly in its scale and bottom-up management. Yet it is legally intended to serve many of the same functions, to wit, stable stewardship of the resource, equitable access and benefits to commoners, transparency and accountability, and the sanctioning of transgressors against the commons.

The State's role as a trustee of the Commons is often mandated by the *public trust doctrine*, a legal principle that goes back to time immemorial, but more reliably to the Roman Empire.⁵⁶⁷ The public trust doctrine formalizes the idea that a society's governing bodies have an affirmative duty to protect natural resources for the health and well-being of present and future generations. The doctrine has traditionally applied to rivers, the sea, and the coastal shoreline, protecting such activities as navigation, fishing, and recreation. The idea is that the unorganized public has sovereign ownership interests, over and above those of the State itself. The State may hold the legal title to the land or water, but the public is the beneficial owner. As a trustee, the State must exercise the highest duty of care in managing property that is necessarily held in common by all. This means, among other things, that the State may not sell or transfer common property to other parties.

In the United States, the courts have long recognized the public trust doctrine as a means of ensuring that the government protect public assets for present and future generations. When the Illinois legislature tried to transfer ownership of shoreline property along Lake Michigan held in public trust by the State of Illinois, the U.S. Supreme Court issued a landmark ruling in 1892—*Illinois Central R. Co. v. Illinois*⁵⁶⁸—prohibiting such a transfer as unconstitutional. The salience of the public trust doctrine grew in the 1970s in response to an influential law review article on the public trust doctrine by Professor Joseph Sax.⁵⁶⁹ Paradoxically, judicial interest in the public trust doctrine waned in heyday of the environmental movement, in the 1970s, largely because the enactment of numerous environmental statutes of sweeping scope eclipsed interest in a common-law doctrine. The courts have not significantly developed the public trust doctrine over the past four decades.⁵⁷⁰

⁵⁶⁵ See <http://www.globalvillages.org> (accessed Aug. 7, 2011).

⁵⁶⁶ See <http://www.akvo.org> (accessed Aug. 7, 2011).

⁵⁶⁷ Charles F. Wilkinson, *The Headwaters of the Public Trust: Some Thoughts on the Source and Scope of the Traditional Doctrine*, 19 ENVTL L. 425, 429 (1989).

⁵⁶⁸ 146 U.S. 387 (1892).

⁵⁶⁹ Joseph L. Sax, *The Public Trust Doctrine in Natural Resource Law: Effective Judicial Intervention*, 68 MICH. L. REV. 471 (1970).

⁵⁷⁰ “The trust concept has remained underdeveloped in at least six respects. First, it has primarily evolved within the courts, having less of a presence in the other two branches of government. Second, it has been applied primarily to

This does not mean that the scope of the public trust doctrine could not be significantly expanded. Professor Mary Christina Wood, a leading scholar of the doctrine, argues persuasively in her **forthcoming** book *Nature's Trust*, that the courts can and should apply the public trust doctrine to a far broader array of natural resources, including protection of the Earth's atmosphere.⁵⁷¹ She believes the courts could justifiably apply the public trust doctrine to

the full “ecological res,” including the atmosphere, air, soils and forests—all of which carry as much importance as water resources to human survival and civilization. Failure to recognize these natural resources as assets in the trust simply perpetuates a misguided assumption underlying much of environmental law today—that natural assets are capable of severance and partition. In arguing for a holistic approach to the scope of protected assets, the discussion aims to align environmental legal doctrine with the ecological realities of Nature.”⁵⁷²

The enactment of numerous environmental statutes, Wood points out, does not mean that the public trust doctrine is inoperative, but it does require that courts step up and recognize the ancient provenance and purpose of the doctrine, construe it as having the stature of a constitutional principle, and apply its principles to contemporary public needs, namely, planetary survival. Wood writes that the doctrine “is most appropriately viewed as a fundamental, organic attribute of sovereignty itself,” and that the “beneficiary class” that is covered by the doctrine includes not just the present generation but future generations.⁵⁷³ It expresses the idea that the State has intergenerational responsibilities, something that native nations for millennia have practiced and many religious traditions honor by calling on humans to act as stewards of Creation's doing.

By seeing the State as a trustee of the Commons, we can entertain a more constructive array of State management options, such as the innovative commons trusts mentioned below in

state government. Third, it has been interpreted as applicable to primarily water and wildlife resources rather than the full span of natural resources. Fourth, it has never been infused into the statutory and regulatory structure that now dominates the field of natural resources law. Fifth, it has not been invoked to define transboundary responsibilities for common resources (like the oceans and atmosphere) in which many states or nations have interests. And sixth, it has not been linked to other important societal realms, such as the economic and moral realms.” Mary Christina Wood, *supra* note 222, at 66.

⁵⁷¹ MARY CHRISTINA WOOD, *NATURE'S TRUST: ENVIRONMENTAL LAW FOR A NEW ECOLOGICAL AGE* (**forthcoming from Cambridge University Press in 2012**); see also Mary Christina Wood, *Atmospheric Trust Litigation Around the World*, in FIDUCIARY DUTY AND THE ATMOSPHERIC TRUST (Ken Coghill, Charles Sampford, & Tim Smith eds., forthcoming from Ashgate Publishing-Australia in **Jan. 2012**); _____, *Atmospheric Trust Litigation*, in CLIMATE CHANGE READER 1018 (W.H. Rodgers, Jr. & M. Robinson-Dorn, eds., 2011).

⁵⁷² Wood, *supra* note 222, at 89.

⁵⁷³ *Id.* at 69, 71. “The role of natural resources in realizing the perpetual human self-interest does not diminish over time, because the fabric of ecology is as vital to each future generation as it was to each past generation, though the modes of resource utilization may change over time. From this it can be surmised that any government deriving its authority from the people never gains delegated authority to manage resources in a way that jeopardizes present or future generations or diminishes the people's use of resources that have public benefit. The trust's attribute of sovereignty, then, is fundamentally one of limitation, not power, organically comprised as a central principle of governance itself.”

Susbections 7, 8 and 9. However, a prior political hurdle is the capture of State administrative and legislative bodies by special interests, which forces us to ask the question: *How can the State be made to uphold its public trust responsibilities?*

The first, most obvious approach is through judicial enforcement of the public trust doctrine and, we urge, a more muscular interpretation of the doctrine to address contemporary environmental realities, such as the deterioration of the atmosphere. This requires more concerted test cases and “judicial education” to bring the public trust doctrine to the fore.⁵⁷⁴ One such attempt, the U.S.-based *Atmospheric Trust Litigation* project, has organized a series of fifty federal and State lawsuits that seek a declarative judgment affirming the applicability of the public trust doctrine. The lawsuits also seek injunctive relief that forces the U.S. federal and state governments to reduce carbon emissions in fulfillment of their duty to protect the Earth’s atmosphere.⁵⁷⁵ Atmospheric protection may be the most urgent potential application of the public trust doctrine, but consistent with the analysis set forth by Wood and others, the doctrine could and should be applied to other ecological systems—the oceans, wetlands, forests, species habitat, and more. The public trust doctrine offers a powerful, venerable legal tool to uphold the principle that the State must act as a conscientious trustee of ecological commons.

6. State Trustee Commons

State trustee commons—some established pursuant to the public trust doctrine, others established by statute—are generally administered by government agencies, as overseen by the legislature. They attempt to protect a specified realm of common assets through regulatory programs and enforcement. Prominent examples include national parks, forestry, fisheries and wildlife management, wilderness protection, and wetlands management. Some state trustee commons oversee the leasing of public assets such as land containing oil, groundwater supplies, minerals, timber and grasslands for cattle-grazing. There are many other State trustee commons that do not involve natural resources (such as federally financed research, databases and information, the Internet, federal highways, museums, etc.), but we will focus here on those involving ecosystem resources.

The recurrent problem with State trustee commons is the “fox in the chicken coop” scenario: regulated industries have captured the leadership and policymaking of agencies, effectively neutering or countermanding their statutory missions to protect the common wealth. In the United States at least, the very centralization of authority in federal agencies that is intended to make decision-making more expert and consistent has instead provided rich opportunities for political cronyism, corruption, and “split the difference” stewardship of common assets. Even sincere, well-intentioned, politically committed agency leaders find it difficult to overcome the innumerable impediments to good regulation contrived by recalcitrant legislators and regulated industries.⁵⁷⁶

⁵⁷⁴ Regarding *necessary* judicial education, see Joseph H. Guth, *Law for the Ecological Age* (Background Paper 11), in WESTON & BACH, *supra* note 22, Appendix I.

⁵⁷⁵ The Atmospheric Trust Litigation, the brainchild of Professor Mary Christina Wood, is being coordinated by Our Children’s Trust, a nonprofit organization, <http://www.ourchildrenstrust.org> (accessed Aug. 7, 2011).

⁵⁷⁶ McGarity, et al., *supra* note 193. See also notes 194 and 195 for further references on the failures of the regulatory state.

Reforming the administrative State is well-nigh impossible given the larger political priorities of the State/Market. There are two possible responses: (1) intensify citizen pressures on regulatory agencies to carry out their statutory obligations (which may be deficient in the first place) through research, standard-setting and enforcement; and (2) devise new structural roles for administrative agencies that leverage commons-based solutions. Option 1 has been the centerpiece of the environmental movement for the past generation, and it has yielded, as noted earlier, irregular and dwindling results, if not outright failure. Regulatory watchdogs clearly need to continue their Sisyphean work, but if we are ever going to get ahead of the curve of relentless environmental decline, structural changes will be essential. We therefore propose, in the following Subsections 7, 8 and 9, several structural changes that would make administrative agencies more effective, reliable trustees of the Commons.

7. *Eco-digital Innovations: Crowdsourcing, Participatory Sensing, Wikis and More*

In the 20th Century, the administrative State “hollowed out” democratic participation by centralizing authority and implementation and relying upon political appointees and scientific experts. Such decision-making has actually served to exclude citizens from participating in regulation and ensured that regulated industries would have privileged access and influence over policy and enforcement. Fortunately, various digital networking technologies now make it possible to reinvent the administrative process so it can be more transparent, participatory and accountable.

In Section IV, we noted a number of important crowdsourcing and participatory sensing innovations.⁵⁷⁷ Government-hosted wikis are another vehicle for eliciting public sentiment and suggestions in ways that can materially affect policy outcomes.⁵⁷⁸ The State of Florida recently posted a special software on a website and invited the public to suggest how the state’s electoral districts should be redrawn.⁵⁷⁹ This public participation is coming *before* the maps have been drawn, so citizens are not simply commenting after-the-fact on proposed maps. This kind of “distributed participation” through Internet technologies is a way of citizens pressuring the State to respond to public opinion.

The U.S. Patent and Trademark Office in 2009 established an expert network called Peer to Patent that “harnesses citizen-experts to improve patent quality by helping identify prior art relevant to pending patent applications.”⁵⁸⁰ The effort is part of a much larger dynamic of using open

⁵⁷⁷ On the meaning of “crowdsourcing,” see <http://en.wikipedia.org/wiki/Crowdsourcing> (accessed Aug. 30, 2011). For more on crowdsourcing, see *supra* note 253 and *infra* note 581.

⁵⁷⁸ On the meaning of “wikis,” see <http://en.wikipedia.org/wiki/Wiki> (accessed Aug. 30, 2011).

⁵⁷⁹ See Greg Allen, *Florida Begins Redistricting Hearings* (National Public Radio broadcast, June 23, 2011), *transcript available at* <http://www.npr.org/2011/06/23/137376145/politics-embroil-floridas-redistricting-hearings> (accessed Aug. 8, 2011); Amateur software applications such as “Dave’s Redistricting,” at <http://gardow.com/davebradlee/redistricting/launchapp.html> (accessed Aug. 8, 2011) are democratizing the ability to map legislative districts, which in turn is providing heightened public visibility and accountability for that highly politicized process.

⁵⁸⁰ See <http://www.peertopatent.org> (accessed Aug. 8, 2011).

platforms to capture the “wisdom of the crowd” to serve larger societal purposes. The Smithsonian Institution is now using social media, such as its Smithsonian Commons project, to encourage free and unrestricted online sharing of Smithsonian resources and social networking as a way to enhance the museum’s mission.⁵⁸¹ This resembles the pioneering “Clickworkers” initiative launched by NASA in 2000 to recruit volunteers to classify the craters of Mars, now carried on by its “Be a Martian!” website.⁵⁸² In Colorado, “collaborative conservation” has enabled farmers, industries and households to save water and help protect endangered fish in the Upper Colorado Basin, using a broader range of recovery tools that would otherwise have been available under traditional regulation and the Endangered Species Act.⁵⁸³

At the moment, “virtual commoning” innovations are highly eclectic and irregular. But they point to some compelling new ways of rehabilitating administrative regulation and engaging citizens to play direct, collaborative roles in monitoring and managing ecological resources. Crowdsourcing and “virtual participation” platforms quicken people’s sense of affiliation, responsibility, and stewardship, and produce more informed, democratically responsive policy.⁵⁸⁴ By leveraging such participation, the State could do a better job of carrying out its public trust and statutory responsibilities.

8. Establish Commons Trusts to Manage Common Assets and Distribute Revenues

Commons scholar Peter Barnes has pointed out that the trust is a familiar legal form that can serve as a template for designing new sorts of commons institutions.⁵⁸⁵ The trust is to the Commons as the corporation is to the marketplace, he has written: “The essence of a trust is a fiduciary relationship. Neither trusts nor their trustees may ever act in their own self-interest; they’re legally obligated to act solely on behalf of beneficiaries.”⁵⁸⁶ Barnes continues: “Trusts are bound by numerous rules, including the following: Managers must act with undivided loyalty to beneficiaries.

⁵⁸¹ For example, the museum is using crowdsourcing to help identify unknown people in archival photos and to solve curatorial mysteries. Elizabeth Olson, *Smithsonian Uses Social Media to Expand Its Mission*, N. Y. TIMES, Mar. 10, 2011, also available at https://www.nytimes.com/2011/03/17/arts/design/smithsonian-expands-its-reach-through-social-media-and-the-public.html?_r=1 (accessed Aug. 8, 2011); see also Smithsonian Commons Wiki at <http://smithsonian-webstrategy.wikispaces.com> (accessed Aug. 8, 2011).

⁵⁸² “Virtual Volunteering” is a growing phenomenon. See https://secure.wikimedia.org/wikipedia/en/wiki/Virtual_volunteering (accessed Aug. 8, 2011). NASA’s current website for “clickworking” is its “Be a Martian” website, at <http://beamartian.jpl.nasa.gov/welcome> (accessed Aug. 8, 2011).

⁵⁸³ John Loomis, *Collaborative Conservation: Endangered Fish Recovery in the Upper Colorado Basin*, Portland State University, <http://www.youtbue.com/watch?v=zJsdZ4ukMJs> (Internet video, accessed Aug. 8, 2011).

⁵⁸⁴ Professor of Psychology Tim Kassar at Knox College, has studied extensively the need for personal and social changes to meet ecological challenges. He writes: “A growing body of psychological research suggests that if these efforts incorporated more knowledge about human identity (including our values, our sense of social identity, and the ways we cope when threatened), greater progress towards a more sustainable (and socially just) world might be forthcoming.” Tim Kassar, *Human Identity and Environmental Challenges*, lecture available at <http://www.pdx.edu/sustainability/events/tim-kasser-lecture-human-identity-and-environmental-challenges> (accessed Aug. 8, 2011).

⁵⁸⁵ BARNES, *supra* note 514, at ch. 6 (“Trusteeship of Creation”).

⁵⁸⁶ *Id.* at 83.

Unless authorized to act otherwise, managers must preserve the corpus of the trust. It's okay to spend income, but not to diminish the principal. Managers must ensure transparency by making timely financial information available to beneficiaries.”⁵⁸⁷

A number of state-sanctioned common assets trusts manage revenues on behalf of commoners, and a number of new ones have been proposed in recent years. The *Alaska Permanent Fund*, created by the Alaska state legislature in 1980, diverts a royalty on all oil drilled on state lands to the Fund, which then distributes dividends to all Alaskan households each year—usually on the order of \$1,500 per household—from its \$32 billion endowment.⁵⁸⁸ *Social Security* is an inter-generational risk-insurance commons that serves commoners as a quasi-independent trust. The *Land and Water Conservation Fund* is a state-sanctioned trust that channels offshore oil and gas drilling revenues to acquire land for parks, forests and open spaces and to develop recreational projects.⁵⁸⁹

The “stakeholder trust” is a legal regime that could be adapted to ensure that the public receives its due entitlements from the Market exploitation of natural resources (in cases where Market use of the resource is appropriate and sustainable). Currently, the U.S. government leases access to public lands (for mineral extraction, oil, timber, and cattle-grazing) and ocean fisheries, but the revenues collected are grossly lower than open markets would pay for similar resources and the revenues do not begin to compensate for the ecological harm and over-use that occurs.⁵⁹⁰ In a few cases, the government holds auctions for the use of common assets, such as telecom companies’ use of the electro-magnetic spectrum for wireless services, and polluters’ use of the sky to get rid of sulfur dioxide and nitrogen oxide. Other common assets, such as the broadcast airwaves and the atmosphere (as a repository for pollution), are treated as “free” resources that industry may use without payment.

In all of these cases, and others, commons trusts may be a suitable vehicle for capturing revenues generated from common assets and channeling some portion of them to the public directly. For example, to help control carbon emissions and prevent global warming, Peter Barnes has proposed a U.S.-based *Sky Trust*—also known as “cap-and-dividend.”⁵⁹¹ This scheme auctions pollution rights to industry and places the revenues in a trust fund owned by all citizens. Over time, the Sky Trust would distribute dividends to everyone, much as the Alaska Permanent Fund does. The beauty of the system is that it would use market incentives to discourage pollution, reward those who reduce their carbon use, and help consumers offset higher prices.

⁵⁸⁷ *Id.*

⁵⁸⁸ For quick insight, see *Alaska Permanent Fund*, WIKIPEDIA.ORG, http://en.wikipedia.org/wiki/Alaska_Permanent_Fund (accessed Feb. 28, 2011).

⁵⁸⁹ See U.S. Forest Service, Land and Realty Management website at <http://www.fs.fed.us/land/staff/LWCF/index.shtml> (accessed July 29, 2011).

⁵⁹⁰ BOLLIER, *supra* note 2, at ch. 6 (“The Abuse of the Public’s Natural Resources”).

⁵⁹¹ See Cap and Dividend website at <http://capanddividend.org> (accessed Aug. 8, 2011).

There are other trust-based proposals. A number of environmental economists have proposed the establishment of a global *Earth Atmospheric Trust* based on the Sky Trust idea.⁵⁹² An *Ocean Trust* has also been proposed that would rely upon the public trust doctrine.⁵⁹³ A charitable trust model has been proposed for genomic biobanks, which are large-scale databanks of biologic specimens and medical information used in pharmacogenomic research.⁵⁹⁴

One of the most ambitious new proposals to apply trust principles to manage commons is legislation calling for the creation of a *Vermont Common Assets Trust*. The law seeks to declare that certain natural resources within the state's borders are common assets that belong to all citizens of the state.⁵⁹⁵ The Trust's foremost duty would be to protect designated common assets for present and future generations. Where appropriate, the Trust would generate revenues from leasing those assets (such as selling water extraction rights to bottlers or timber-harvesting rights). The money would not flow through the legislature, but would be managed directly by the Trust. The legislation would also expand the scope of the public trust doctrine. Instead of covering just navigable waters and shorelines, the public trust doctrine would explicitly apply to "undisturbed habitats, entire ecosystems, biological diversity, waste absorption capacity, nutrient cycling, flood control, pollination, raw materials, fresh water replenishment systems, soil formation systems, and the global atmosphere." It would also apply to "social assets such as the Internet, our legal and political systems, universities, libraries, accounting procedures, science and technology, transportation infrastructure, the radio spectrum and city parks."

Finally, it is useful to entertain the model of State trusts that provide direct services and financial benefits. A great example is the North Dakota State Bank, which takes a stake in loan packages and so reduces the levels of risk that private, commercial banks must assume.⁵⁹⁶ It also

⁵⁹² Peter Barnes et al., *Creating an Earth Atmospheric Trust: A System to Control Climate Change and Reduce Poverty*, 319 SCIENCE 724 (Feb. 8, 2008).

⁵⁹³ Peter H. Sand, *Public Trusteeship for the Oceans*, in TAFSIR MALICK NDIAYE & RÜDIGER WOLFRUM, LAW OF THE SEA, ENVIRONMENTAL LAW AND SETTLEMENT OF DISPUTES: LIBER AMICORUM 521 (2007).

⁵⁹⁴ David E. Winickoff, J.D. & Richard N. Winickoff, M.D., *The Charitable Trust as a Model for Genomic Biobanks*, 349 NEW ENG. J.MED. No. 12, 1180 (Sept. 18, 2003).

⁵⁹⁵ The legislation, H. 385, Gen. Assem., 2010-2011 Sess. (Vt. 2011) is available at <http://www.leg.state.vt.us/docs/2012/bills/Intro/H-385.pdf> (accessed Aug. 8, 2011); see also David Bollier, *The Vermont Common Assets Trust*, Mar. 10, 2011, <http://bollier.org/vermont-common-assets-trust> (accessed Aug. 8, 2011)..

⁵⁹⁶ See Bank of North Dakota website, <http://www.banknd.nd.gov> (accessed Aug. 8, 2011). Although the State earns about 0.25 percent less interest on funds deposited in the Bank of North Dakota than in commercial banks, it does not pay state or federal taxes. Nor does it pay deposit insurance; essentially the State of North Dakota is the guarantor of funds: a great way for taxpayers to leverage their collective equity for collective benefit. (If government is going to act as a guarantor for banks, why not reap some margin from doing so to benefit the general public?) Because the Bank of North Dakota is not obliged to maximize returns for private investors, but to serve the common good—within the bounds of responsible banking practices—it can spend time and energy trying to make deals work rather than summarily rejecting them as too risky or not lucrative enough. After all, the bank realizes that putting together a successful loan package could have enormous effects on community development—something that is lesser priority for commercial banks. As a result, the Bank of North Dakota is often willing to take extra steps to try to make local development projects work. In 2009, the Bank of North Dakota had profits of \$58.1 million (on a loan portfolio of \$2.67 billion), which was the sixth consecutive year of record profits. Over the past decade, the bank has channeled about \$300 million

makes direct loans to South Dakota farmers, students, and businesses at reasonable rates, and it acts as the repository for the funds administered by all North Dakota state agencies. The Bank got its start in 1919 when out-of-state bankers and grain dealers were manipulating markets and credit to farmers in the state, hurting the ability of farmers to buy and sell crops and finance farm operations.

9. State Chartering of New Types of Commons Trusts

Rather than rely exclusively upon centralized bureaucracies to monitor environmental quality and enforce laws—an approach that has yielded disappointing results—an attractive alternative is for the State to charter new types of commons trusts. The trusts may go by different names and have different delegations of authority, but the basic idea is for commoners to act as stewards for designated resources, for both their own benefit and the wider public's, and to work as partners with the State in protecting common-pool resources.

A classic example is the *acequias* sanctioned by the State of New Mexico, as described in Section IV.⁵⁹⁷ The New Mexico state government authorizes indigenous peoples to manage their own *acequias* with designated water allocation rights. This delegation of stewardship empowers distinct communities to manage their own water resources responsibly. Grounded by deeply rooted traditions and cultural practice, *acequias* have been able to prevent over-exploitation of scarce water supplies and and assure a rough social equity in allocations.

Critics may argue that *acequias* and other indigenous commons are special cases, because they draw upon centuries-old traditions and practices that are alien to modern-day citizens. In a way, however, that is precisely the point: to try to emulate and develop modern-day analogues of indigenous commons by working through formally sanctioned “commons trusts.” Professor Mary Christina Wood notes how Native Americans have entered into a variety of fruitful partnerships with the conservation land trust movement, with benefits to both parties. Ordinary citizens and environmental groups are pleased to be preserving more land from development, and the Native organizations are happy to use conservation easements and other private-law tools as ways to “regain access to cultural resources and apply management expertise to land from which tribes have been excluded for generations,” Wood explains.⁵⁹⁸

The partnerships can be seen as crucibles for forging a new land ethic based on active commoning. Wood writes:

Land trusts often lack a cultural and historical relationship to the lands they conserve, and their management does not encompass any religious or spiritual approach to Nature. Moreover, their market approach to conservation, combined with their neutral demeanor

to the state treasury, where it supplements the budget of the state government. See David Bollier, *Why Not State Banks?*, February 26, 2010, at <http://bollier.org/why-not-state-banks> (accessed Aug. 12, 2011); Barbara Dudley, *The State Bank Solution*, THE NATION (June 27, 2011), at 19.

⁵⁹⁷ See *supra* note 438 and accompanying text.

⁵⁹⁸ Wood & Welcker, *supra* note 442, at 373, 398.

toward the development industry, reinforces the social acceptability of viewing land as a market asset and exploiting it for profit.

. . . [By contrast, tribes] are positioned to spread their own land ethic when they return as trustees of aboriginal lands. . . . The consistent expression of intergenerational responsibility and stewardship obligations towards Nature, grounded in timeless cultural practices, has the potential to proliferate a type of respect that is still foreign to the majority society. . . .⁵⁹⁹

Wood points out that the abiding challenge is to find ways to demonstrate how humans can live in a symbiotic relationship to the land, something that Native Americans, through their spiritual relationships to aboriginal land, have been able to achieve. “A generalized land ethic of the kind Aldo Leopold espoused,” Wood writes, “is often not enough to overcome a community’s entrenched outlook on private property rights. By bringing spiritual, cultural and historical context to threatened resources through a uniquely Native worldview, tribal trustees may be able to spread a reverence for Nature, a will for conservation and a penchant for natural abundance that the mainstream environmental movement has not yet been able to achieve.”⁶⁰⁰

The point of commons trusts is to grow a participatory culture of stewardship that can persist and cherish the resources that need to be protected. State Law must find ways to support vernacular community practice. What’s happening on the ground, in everyday life, in a specific location, among people who love that place, is a strong base from which to grow a sustainable land ethic. In the case of Native Americans, the idea of the land trust works well—despite its grounding in the liberal polity of individualism and private property rights—because the trust is based on the kind of stewardship principles that lie at the heart of tribal aboriginal management.

While *acequias* and land trusts are notable forms of commons trusts, others deserve to be studied further and emulated. There are a number of Commons/State partnerships that combine the best of State authority with commons-based participation. The Adirondack Mountain Club, for example, has close working relationships with the U.S. Forest Service in the management of its land and hiking trails. The Alpine Stewardship Volunteer Program works to protect alpine vegetation and the Trail Stewardship program maintains more than 3,500 miles of the Appalachian Trail.⁶⁰¹ In New York City, a group of citizens entered into a partnership with the city government to preserve and maintain an elevated trestle structure that had once carried freight trains; they turned it into a lovely elevated park, High Line Park, and formed a commons-like nonprofit, Friends of the High Line, which is responsible for 70 percent of the park’s budget and actively maintains it.⁶⁰² Of course, partnerships such as these have not only great potential for empowering citizens, they also can make it easy for the State to shirk its budgetary responsibilities. Voluntarism and philanthropy can easily become a subterfuge that allows the cutting of social services budgets to be disguised as a

⁵⁹⁹ *Id.* at 428.

⁶⁰⁰ *Id.*

⁶⁰¹ See <http://www.outdoors.org/volunteers/information/information-alpine.cfm> (accessed Aug. 8, 2011).

⁶⁰² See <http://www.thehighline.org> (accessed Aug. 8, 2011).

high-minded way of helping people (as exemplified in the United States, for example, by President George H.W. Bush’s “Thousand Points of Light” campaign).

Beyond voluntarism, commons trusts can be imagined as significant forms of commons governance. James B. Quilligan has proposed the idea of a “social charter” as a means by which producer/consumers can enter into co-governance of a resource with or without the formal authority of the State. Quilligan writes:

A *social charter* is a formal declaration which outlines the rights and incentives of a community—involving both local jurisdictions and the multijurisdictional environment—in the supervision and protection of a common resource. The charter describes patterns of relationships between the resources and its users, managers and producers, allowing them all an opportunity to voice the mutual interests and responsibilities emerging from their rights to these common goods. The social charter empowers a geographical group and a broader association of stakeholders to hold a commons in trust for its beneficiaries, thereby safeguarding these vulnerable resources from the growing pressure to exploit them.”⁶⁰³

As a practical matter, the State may well object to social charters that flout its established authority, a problem for which commoners have little redress. Or the State could try to co-opt social charters, using them to mask State control. As Quilligan notes: “Social charters generated by states often disempower those who use and manage a local commons. They put the locus of power in government and function more as a complaint mechanism or quality control procedure than as a means of honoring the rights of people to their commons.”⁶⁰⁴ But such co-optation of State chartering need not be inevitable, particularly if there is a well-organized group of commoners eager to assume certain responsibilities.

A number of American states have been introducing new forms for *corporate charters* for socially beneficial purposes.⁶⁰⁵ Surely innovative charters for commons-based initiatives deserve serious exploration as well. The point is to legitimize the idea that commoners can and should come together to create their own governance mechanisms.

⁶⁰³ Quilligan, *supra* note 527.

⁶⁰⁴ *Id.*; see also http://p2pfoundation.net/Social_Charters_FAQ (accessed Aug. 8, 2011).

⁶⁰⁵ Maryland, New Jersey, Virginia, and Vermont have authorized people to create a “Benefit Corporation,” which does not require the corporation to make profitability its fiduciary priority; companies are authorized to combine the profit motive with the goal of making “a positive impact on society and the environment.” Jamie Raskin, *Plan B for Corporations*, THE NATION, June 27, 2011, at 14. In 2008, the Vermont legislature formally conferred “legal personhood” on online communities that wish to form limited-liability partnerships. The law enables people to come together as virtual businesses, with dispersed partners who may live anywhere, and avoid the usual requirements that the company host in-person board meetings, maintain a physical office, and file paper documents with the state. See David Bollier,

10. *New Types of Multilateral Institutional Frameworks that can Manage Certain Global Common-pool Resources*

The existing multilateral system that privileges national sovereignty, neoliberal policy, and private (i.e., corporate) property rights is unlikely to curb growth, respect biophysical limits, and make good on the human right to a clean and healthy environment. This would violate its deepest structural imperatives.

The dead-end approach of current multilateral governance can be illustrated by the ways in which it approaches, say, protection of the Amazon's rain forests, often cited as the "lungs of the world." The prevailing worldview prompts us to ask, "Well, who really *owns* the Amazon, anyway?" Is it the indigenous peoples who live there? The provincial governments for those domains? The Brazilian government? The nations of the world who have a stake in a healthy atmosphere? Or all of humanity, now and in the future? The premise of an "ownership framed" question preordains the plausible solutions, all of which must first conform to basic premises of the status quo: national sovereignty, commodification of nature, progress through maximum production. No wonder that "jurisdictional disputes" come to the fore; the question "Who owns X?" virtually dictates the response.

A commons perspective offers a way to reframe the issue ("Who Owns Nature?") and open up a richer set of practicable responses. When the preservation of ecological resources is made the overriding concern, around which the political economy and governance must be subordinated, the point of governance is no longer about establishing exclusive sovereignty over a territory or resource. The concern becomes, rather, how to establish stable, harmonious terms of interdependence and stewardship for a holistic, indivisible system upon which all parties depend. It is an archaic, anthropocentric conceit that we should try to establish bright-line boundaries that parcel out control over an indivisible "resource" among different claimants, each of whom then enjoys rights of absolute dominion. Such a claim is dangerously impractical when living on an ecologically interdependent planet.⁶⁰⁶

Far more rational and realistic, ecologically speaking, is to establish a commons governance system that establishes the terms of sufficiency for each "node" of a multi-tier commons system (local, national, regional, global and points in between), and then tries to create and share positive externalities among them. In such a governance structure, once basic sufficiency for a given commons has been met each commons node has incentives to share expertise, spillover ecosystem benefits, technology-transfers, and the like. But this can occur only if the framing of governance moves from *ownership* to *stewardship*. Ownership presumes a right of sovereign dominion over nature, including the right to commodify it, as well as the severability of elements of nature from the planetary whole. Both are dangerously antiquated ideas. By contrast, stewardship presumes an

⁶⁰⁶ Interestingly, the idea that *healthy relationships* might be more important than *individual property rights* seems to be taking hold among many museums in the U.S. and Great Britain with respect to ancient artifacts that imperial powers seized in the 19th and 20th Centuries from Greece, Italy, Peru and other nations. As museums repatriate iconic artifacts in response to lawsuits and public pressures, they are finding that titular ownership in a globalized art world may be less important than maintaining give-and-take relationships with other museums that make it easier to borrow artworks and collaborate in mounting exhibits. A lesson for ecological governance?

interdependency among people, and with nature, and implies respect and obligations to be paid to everyone today and future generations. It also is consistent with the essence of human rights, in general, and the right to environment, in particular.

This re-framing does not solve the dilemma, of course. The key collective-action challenge remains: How to establish a default commitment to a system of commons-based global governance when the perceived gains from private “defections” remain so large and when existing State/Market commitments are so entrenched? Perhaps it will take an abrupt ecological catastrophe to shock the corporate and political guardians of the State/Market into realizing that self-serving postures and beggar-thy-neighbor claims are producing a tragedy of the Market—sub-optimum if not destructive collective performance—and that new types of international collaboration are essential. The fact remains, however, that the invention of new multilateral norms, institutions, and procedures to protect the integrity of natural systems—of life on Earth—is one of the most if not *the* most necessary and urgent issues facing humankind.

Yet, if history is any guide, even catastrophes seem unlikely to jolt the guardians of the State/Market system into abandoning an imploding, dysfunctional system of governance; the impetus for a political transformation is not likely to emerge from the State/Market itself.⁶⁰⁷ It will need to come, rather, from the commoners themselves, whose advocacy and working alternatives will be the seedbed for more expansive, innovative forms of multilateral governance.

We do not at this time have a sweeping blueprint for a new multilateral system of ecological governance, arguably the most daunting collective-action problem that humankind ever has confronted. Developing such a system will require expertise, intellectual exchange, and social engagement beyond the capacity of any two individuals. However, we do have strong convictions about three key design principles that, in our view, should guide the development of any new multilateral systems.

- *New policies and practices must foster the interdependency of States among one another and with nature.*

Much as global trade policies and institutions are structured to facilitate commercial interdependencies among States, so we need to foster new multilateral policies, institutions, and practices that foster interdependency in environmental stewardship. Such ideas run against the grain of the neoliberal polity, of course, as seen in such failures as the Kyoto Protocol and the Copenhagen climate change summit. Aggressive environmental cooperation threatens the core priorities of the State/Market agenda.

⁶⁰⁷ Consider how the financial industry continues to pursue the same risky and predatory business practices that, in recent years, nearly destroyed the global economy, and with the full approval of the State. Indeed, even at this writing there is no guarantee that such a disaster will be averted.

However, attempts to nurture a new transnational ethic of environmental stewardship must start somewhere. One of the most prominent is the Earth Charter,⁶⁰⁸ a “people’s charter” that sets forth “fundamental ethical principles for building a just, sustainable and peaceful global society in the 21st century.”⁶⁰⁹ The Charter was finalized in 2000 after ten years of worldwide discussion and adopted by 4,500 organizations, including many governments. Its Preamble states:

We stand at a critical moment in Earth's history, a time when humanity must choose its future. As the world becomes increasingly interdependent and fragile, the future at once holds great peril and great promise. To move forward we must recognize that in the midst of a magnificent diversity of cultures and life forms we are one human family and one Earth community with a common destiny. We must join together to bring forth a sustainable global society founded on respect for nature, universal human rights, economic justice, and a culture of peace. Towards this end, it is imperative that we, the peoples of Earth, declare our responsibility to one another, to the greater community of life, and to future generations.⁶¹⁰

More recently, the proposed Universal Declaration of the Rights of Mother Earth, which emerged from the People’s Conference in Bolivia in 2008, is an attempt to extend the ethic of interdependency to Mother Earth itself.⁶¹¹ The Declaration notes that “[w]e, the peoples and nations of Earth . . . are all part of Mother Earth, an indivisible, living community of interrelated and interdependent beings with a common destiny.”⁶¹²

Beyond the symbolic and norm-changing value of such declarations, it is important to develop actual governance systems, in whatever limited forms, that can demonstrate the functional value of new collaborative governance. One way to do this is to empower commoners to act as trustees of a given natural resource for their own benefit as well as for stipulated larger interests of humanity and Mother Earth—and then develop administrative and legal linkages between these commons and larger international legal institutions. A good example is the Potato Park in Peru, a *sui generis* legal regime that gives indigenous tribes explicit stewardship rights over a wide variety of rare potatoes considered to be part of the agro-ecological landscape and tribal culture.⁶¹³ A specified region has been designated an Indigenous Biocultural Heritage Area, which enshrines an holistic, community-led, and rights-based approach to conservation while protecting and enhancing local

⁶⁰⁸ Adopted at The Hague by the Earth Charter Commission, June, 29, 2000, available from the Earth Charter Commission at <http://www.earthcharter.org> (accessed Aug. 8, 2011), reprinted in 5 BASIC DOCUMENTS, *supra* note 13, at V.K.2a.

⁶⁰⁹ See the Earth Charter Initiative website at <http://earthcharterinaction.org> (accessed Aug. 12, 2011).

⁶¹⁰ [Http://earthcharterinaction.org/content/pages/Read-the-Charter.html](http://earthcharterinaction.org/content/pages/Read-the-Charter.html) (accessed Aug. 12, 2011).

⁶¹¹ See *supra* note 141 and accompanying text.

⁶¹² *Supra* note 141.

⁶¹³ See Alejandro Argumedo, *The Potato Park, Peru: Conserving Agrobiodiversity in an Andean Indigenous Biocultural Heritage Area*, in PROTECTED LANDSCAPES AND AGROBIODIVERSITY VALUES (T. Amend, et al. eds., 2008). See also the Satoyama Initiative to United Nations University Institute of Advanced Studies, The Ayllu System of the Potanto Park, Cusco, Peru (May 3, 2010), <http://satoyama-initiative.org/en/case-studies/americas/agriculture/ayllu-system> (accessed July 30, 2011).

livelihoods and biocultural diversity. Management practices in the Potato Park are based on the traditional knowledge and cultural practices of indigenous Peruvians. Such a scheme empowers local and regional commoners with direct responsibilities and entitlements, and preserves their cultural traditions and livelihoods as well. But the regime also serves the larger interests of the world in preserving the ecological biodiversity of the region (especially of the potatoes), preventing biopiracy, and enabling managed scientific access to noteworthy plants.⁶¹⁴

Another innovative governance idea, proposed by the Government of Ecuador, aims to create a U.N.-administered trust to protect a region renowned for its biodiversity and containing huge supplies of untapped oil, which is also home to a number of indigenous peoples living in voluntary isolation. Under the Yasuni Ishpingo Tambococha Tiputini (ITT) Trust Fund initiative, the government of Ecuador plans to renounce the exploitation of the oil and preserve the lands of the Yasuni National Park intact, if industrialized countries contribute at least half the market value of the oil into a special trust fund to be administered by the United Nations Development Programme (UNDP).⁶¹⁵ Revenues from the trust fund would be used to support renewable energy sources, reforestation, and social development within Ecuador. The plan represents a huge financial sacrifice for the Ecuadorian government, which depends upon oil for half its tax revenues and 20% of its GDP. Yet the Ecuadorian government recognizes the long-term importance of protecting the remarkable natural biodiversity within its border. It also believes that the world should share the burden in helping to reduce the release of additional carbon into the atmosphere.

Within the dominant economic framework, Ecuador's aversion to drilling the oil is compared to a "beggar sitting on a gold sack."⁶¹⁶ The Yasuni-ITT initiative is an attempt to re-conceptualize the very idea of "wealth" by developing a new ethic and relationships with nature. The basic idea is to treat nature as a subject in relationship to humankind, and not merely an insensate object to be exploited. "This is the core of Nature's Rights," explains Alberto Acosta, Economist at Facultad Latinoamericana de Ciencias Sociales (FLACSO) and the former President of the Constituent Assembly of Ecuador; "[w]e have to stress over and over again that human beings cannot live apart from Nature."⁶¹⁷ The Yasuni ITT trust is an attempt to go beyond the rhetoric of such claims by advancing a specific administrative and legal system that embodies a different notion of prosperity and progress. "Wealth and well-being cannot be defined any longer as the accumulation of material goods," as Acosta puts it.⁶¹⁸

⁶¹⁴ A related example is the collaboration between Native Americans and land trusts, often with the help of state governments, in re-introducing sustainable management of land, wildlife, and bodies of water, as described above in Subsection V.C.9.

⁶¹⁵ Ecuador Yasuni ITT Trust Fund: Terms of Reference (July 28, 2010), http://yasuni-itt.gob.ec/wp-content/uploads/tr_english.pdf. (accessed Feb. 25, 2011).

⁶¹⁶ An anthropocentric observation first made by Alexander von Humboldt, a German naturalist and geographer (1769-1859), but echoed by many political and corporate leaders in the centuries since. Cited by Acosta, *supra* note 95.

⁶¹⁷ *Id.*

⁶¹⁸ *Id.*

Acosta has called the Yasuni-ITT Initiative a new way to imagine a global commons of interdependent participants, and also a new way to re-align relationships among the industrialized nations and poorer nations. The richer countries of the global North “have a huge ecological debt to the world’s poorest countries,” he said, citing the history of colonialism and imperialism, and the \$90 billion in environmental damage that British Petroleum, Chevron, and Texaco has inflicted on Peruvian lands.⁶¹⁹ The Yasuni-ITT Initiative, he said, offered a practical scheme for exercising “co-responsibility in protecting the Amazon.”⁶²⁰ That is why the tagline for the proposal (which still is seeking full funding) is “An opportunity to rethink the world.”

The Yasuni-ITT initiative gives us a glimpse into how we might construct a multilateral system of interconnected “nested commons” at different scales (local, provincial, national, regional, global). But there are others, such as the Global Innovation Commons of patent-free technologies having ecological value, the Earth Atmospheric Trust, and the Ocean Trust—all mentioned above.⁶²¹ The limited history of commons-based legal systems for Antarctica, the oceans, and space also provide some templates for future innovation.

One familiar legal principle that could be pressed into service to promote joint stewardship of global ecosystems is the public trust doctrine. In a series of lawsuits known as Atmospheric Trust Litigation, plaintiffs are seeking to force the U.S government to reduce carbon emissions into the atmosphere.⁶²² Under the public trust doctrine, the lawsuits argue, the State is “a sovereign trustee of natural resources with an organic fiduciary obligation to protect the atmosphere in order to ensure the survival and prosperity of present and future generations of citizen beneficiaries. Positioned along with other sovereigns, government is co-tenant of the atmosphere and therefore holds a correlative duty to prevent waste to the asset.”⁶²³ This is a significant legal claim because co-tenancy makes all nations, as sovereigns, jointly responsible for protecting a common asset, the atmosphere. As the lawsuit states, “[C]o-tenants have a right against other co-tenants for waste and for failure to pay necessary expenses [in protecting an asset].” Thus one nation could sue another for a breach of its fiduciary obligations under the public trust doctrine.

These are the types of legal innovations, by no means exhaustive, that must be pursued to establish interdependent governance. The first hurdle to overcome is the idea that we can avoid such governance.

⁶¹⁹ Remarks by Alberto Acosta at the International Commons Conference, Berlin, Germany, Nov. 2, 2011, as reported in David Bollier, *The International Commons Conference: An Interpretive Summary*, at 8-9, http://www.boell.de/downloads/economysocial/ICC_report--Bollier.pdf (accessed Aug. 8, 2011).

⁶²⁰ *Id.*

⁶²¹ *See supra* (and respectively) notes 544, 592, and 593 and accompanying texts.

⁶²² *See supra* note 556 and accompanying text.

⁶²³ Wood, *Atmospheric Trust Litigation*, *supra* note 571.

- *Develop a scheme of nested and/or networked commons that can work dynamically together*

A central problem with existing international environmental and human rights law—the right to environment included—is its dependence on a territorially-based, consensual system of global governance in which rigid State sovereignties are empowered, essentially alone, to make the legal and political decisions about problems that international environmental and human rights law are supposed to solve. Another is that, however high-minded their rhetoric, these State sovereignties typically act tenaciously in their own self-interest, generally perceived in neoliberal economic terms, with little to no regard for the ecological and social needs of the wider community of which they are a part. If, however, our planet is to survive in a manner truly hospitable to life upon it, international environmental and human rights law—indeed, national and international law in general—must change. Law as a creature of sovereign hierarchies must adapt to a world of interdependent, interpenetrating networks, both ecological and social.

Over the past twenty years, the Internet has significantly dissolved institutional and geographic boundaries, making them far more porous, if not indefensible. This poses serious challenges to conventional forms of law, not just in terms of geographic control, but equally in terms of maintaining legitimacy and efficacy. Standard forms of law are often too remote and detached from on-the-ground moral, socioeconomic, political, and cultural realities, especially when seen against the many nimble Internet communities that have outflanked stodgy government bureaucracies and politicians (e.g., the Arab Spring, the WikiLeaks disclosures of U.S. government cables, etc.).

When law is controlled mostly by elite policymakers and administered through arcane and often corrupt legal systems even as open networks enable a divergent public narrative to emerge, citizens understandably become cynical about formal law. They are not truly agents of its creation and interpretation, even in nominal democracies. And when they do become engaged, perhaps as a result of crisis or demagoguery, there may not be vehicles for implementing government laws and policies. Professor Ostrom put it this way after winning her Nobel Prize: “I’m not denigrating that officials can do something very positive, but what we have ignored is what citizens can do, and the importance of real involvement by the people involved, as opposed to just having somebody in Washington or at a far, far distance, make a rule. How does that get all the way down to management of forests, fisheries, irrigation systems, etc.? So we have to look from the ground up.”⁶²⁴

A new system of multilateral ecological governance, therefore, must re-imagine the role of the State and multilateral institutions and their policy priorities. This requires the development of a new vision of societal “development” beyond maximum capital accumulation and economic growth. A vision of the “good life” beyond material acquisition and an economics of sufficiency must be developed. This will of course entail profound shifts in all aspects of life over many years, and realignments of international political relationships. As Ecuador’s Alberto Acosta has put it: “The

⁶²⁴ Press conference with Professor Elinor Ostrom at Indiana University, Oct. 12, 2009, following the announcement of her shared award of the 2009 Nobel Prize in Economic Sciences, carried live via satellite and stream lived on the Internet at <http://broadcast.iu.edu/ceremon/Nobel> (accessed Aug. 21, 2011).

impoverished and structurally excluded countries must, on one hand, try to find options for a decent and sustainable lifestyle, which do not represent a caricatured re-issue of the western way of life.”⁶²⁵ Acosta continued: “While, on the other hand, the ‘developed’ countries will have to solve the growing problems of international unfairness that they have caused and, particularly, incorporate criteria of sufficiency into their societies before attempting to support, at the expense of the rest of mankind, the logic of efficiency understood as permanent accumulate of material possessions.”⁶²⁶

The State must move from serving as the sovereign master of a closed, hierarchical system to the light-touch host of an open, diverse network. In other words, *there must be means for the agency of commoners at lower levels of governance to be expressed rapidly, dynamically and interactively at the higher macro-levels levels of law*. This capacity is important for the quality of information, the flexibility and speed of response, and the overall legitimacy of international governance, ecological and otherwise. A model for such transnational networked collaboration is the rapid response of health researchers and public health agencies to the outbreak of the SARS virus in 2002.⁶²⁷ Networked collaboration was widely seen as essential to the quick containment of an infectious disease that otherwise had catastrophic potential; one can only wish that such fierce cooperation could animate efforts to reduce carbon emissions into the atmosphere.

If online networks could knit together diverse commoners and make them a visible and coordinated political force in international legal fora, it becomes more possible to make law conform more closely to vernacular morality and practice, and to change the political climate for new initiatives. In the world of ecological design, there is a term to describe how natural phenomena at very different spatial scales interconnect. “Nature’s processes are inherently *scale linking*, for they intimately depend on the flow of energy and materials across scales,” write Sim van der Ryn and Stuart Cowan.⁶²⁸ “The waste oxygen from blue-green algae is absorbed by a blue whale, whose own waste carbon dioxide feeds an oak tree. Global cycles link organisms together in a highly effective recycling system crossing about seventeen tenfold jumps in scale, from a ten-billionth of a meter (the scale of photosynthesis) to ten thousand kilometers (the scale of the Earth itself).”⁶²⁹

⁶²⁵ Acosta, *supra* note 619.

⁶²⁶ *Id.*

⁶²⁷ During the SARS outbreak, the World Health Organization convened regular teleconference meetings that allowed more than a dozen national public health agencies and leading medical laboratories to share information with each other rapidly. This collaborative approach enabled medical authorities to identify the virus and develop diagnostic tests and treatment regimes in a matter of weeks, not months, as would have been required had national health systems worked independently of each other. For a case-study of this success, see DR. STEPHEN S. MORSE, INTERNATIONAL RELATIONS AND SECURITY NETWORK, SARS AND THE GLOBAL RISK OF INFECTIOUS DISEASES (2006), *also available at* http://kms1.isn.ethz.ch/serviceengine/Files/ISN/18142/ipublicationdocument_singledocument/42a87936-86b3-4e4b-94e1-bdbbccceb27c/en/casestudy_emerging_disease.pdf (accessed Aug. 31, 2011); *see also* Peter J. van Baalen & Paul C. van Fenema, *Instantiating Global Crisis Networks: The Case of SARS*, 47 DECISION SUPPORT SYSTEMS, no. 4, 277 (Nov. 2009).

⁶²⁸ RYN & COWAN, *supra* note 528, at 33.

⁶²⁹ *Id.*

Taken as a metaphor, if not a functional template, national and international law must devise new forms of scale linking to overcome the structural frictions and missing feedback loops that make existing institutions so ineffective. The Vernacular Law of commons at all levels needs to be integrated into the actual formulations of national international law. The obvious vehicle for re-imagining new types of scale-linked multilateral institutions is the Internet. While software platforms are just one channel among many in political relationships, they are also constitutive in the ways in which they can structure relationships, communication, and implementation. Properly designed platforms could enable the emergence of new voices and venues for consensus-building in multilateral governance. By allowing information and participation to flow from the bottom-up, from diverse levels and locations, the overall system of governance would be more capable of addressing the myriad, distributed complexities of ecosystem problems.⁶³⁰ The principles of polycentrism and subsidiarity could be designed into such a system.

Admittedly, what we propose is a general concept, not an implementation. But the virtue of such a system of networked multilateral governance is that it could help us get beyond the dysfunctional premises of the current system, provide new platforms for commoners to represent their ecological and human rights interests, and thereby help make governance more aligned with ecological (and social) needs.

□ *Human rights must be an integral aspect of multilateral ecological governance*

We have argued previously that human rights, both substantive and procedural, are an indispensable element in the governance of any one commons. Likewise they are necessary in the design and operation of multilateral ecological governance wherein the State, the Market, and the Commons work together to safeguard and enhance the ecosystems upon which all life depends. Indeed, international governance of the ecosystem complexities that now confront all of humankind cannot be solved without the flows of information and participation that human rights principles help assure.

Central to such governance, therefore, just as in the design and governance of individual commons, must be a commitment to all the values of human dignity as expressed in the Universal Declaration of Human Rights and the nine core international human rights conventions that have evolved from it or such of them as may be applicable.⁶³¹ Also central must be recognition and validation of the right to environment as traditionally (derivatively, autonomously) and expansively (procedurally) espoused, as applied to unborn future generations, and as represented in the entitlement of all persons to serve as trustee surrogates on behalf of the rights of Mother Nature. Likewise the multilateral design must recognize and validate our proposed right of everyone to commons- and rights-based ecological governance, and at all levels of social organization.

⁶³⁰ One vision of governance has been put forward by Christian Arnsperger in an essay, *Fostering New Governance Through Participatory Coordination and Communalism*, on P2P Foundation website, at http://p2pfoundation.net/Six_Framework_Conditions_for_Global_Systemic_Change (accessed Aug. 30, 2011)

⁶³¹ See *supra* notes 505 and 506 and accompanying texts.

This is not a matter merely of preference. It is a matter of necessity. Without rights, there is no guarantee of justice. Without *these* rights, there is no guarantee of environments that can sustain life on earth.