

2007

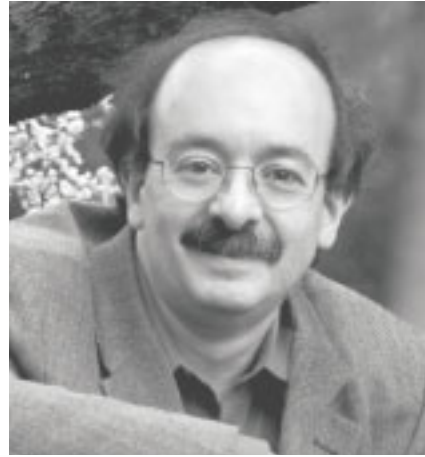
Blue Planet Prize

Professor Joseph L. Sax (USA)

Professor Emeritus,
University of California, Berkeley

Dr. Amory B. Lovins (USA)

Chairman and Chief Scientist,
Rocky Mountain Institute

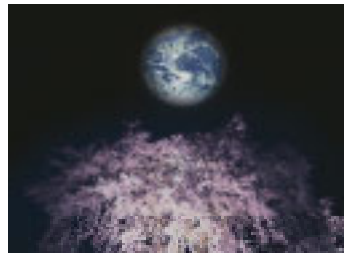


SYMPOSION:

*On this blue planet, The planet we live in
Harmony of life so grandeur Plays the
melody so deep in wisdom.*

*When have we human beings become so
forgetful To listen to the wisdom Of our
nature And negligent in caring for other
lives. We a tiny member on this planet
Needing care and affection, Became
ignorant to join the chain of infinity To
sustain to live together.*

*We hope this film Can play its part In
reawakening people's awareness Of our
planet, the blue planet That tells us the
importance Of all the lives And to lend
an ear To the tune of wisdom of nature.*



Selected from the Slide Show Presented at the Opening
of the Awards Ceremony



His Imperial Highness Prince Akishino congratulates the laureates



Their Imperial Highnesses Prince and Princess Akishino at the Awards Ceremony



Hiromichi Seya, Chairman of the Foundation delivers the opening address



Dr. Hiroyuki Yoshikawa, Chairman of the Selection Committee explains the rationale for the determination of the year's winners



Mr. J. Thomas Schieffer, Ambassador of the United States of America to Japan, congratulates the laureates

The prizewinners receive their trophies from Chairman Seya



Professor Joseph L. Sax



Dr. Amory B. Lovins

The prizewinners meet with the press prior to the awards ceremony



Blue Planet Prize Commemorative Lectures

Profile

Professor Joseph L. Sax

Professor Emeritus, University of California, Berkeley

Education and Academic and Professional Activities

1936	Born in Illinois
1957	A.B., Harvard University
1959	J.D. University of Chicago
1962-66	Professor of Law, University of Colorado
1966-86	Philip A. Hart Distinguished University Professor, University of Michigan
1976	Environmental Quality Award, U.S. E.P.A
1977	Elizabeth Haub Award, Free Univ. Brussels
1984	Wm. O. Douglas Legal Achievement Award, The Sierra Club
1985	Environmental Law Institute Award
1986-present	James H. House & Hiram H. Hurd Professor (emeritus), School of Law (Boalt Hall), University of California (Berkeley)
1994-96	Counselor to the Secretary of the Interior, Deputy Assistant Secretary of the Interior
2004	Distinguished Water Attorney Award

(As of June, 2007)

Professor Sax was born in Illinois, U.S.A. in 1936. After graduating from Harvard University, he earned the degree of Juris Doctor from the University of Chicago in 1959. He taught law at the University of Colorado from 1962 to 1966 and then he moved to the University of Michigan, where he became the Philip A. Hart Distinguished University Professor. He joined the Boalt faculty of the University of California at Berkeley in 1986, and at present is the House & Hurd Professor of Environmental Regulation, Emeritus.

In the mid-1960s, series of lawsuits were raised against pesticide spraying encouraged by Rachel Carson's "*Silent Spring*" although all lawsuits were wholly unsuccessful. Professor Sax observed that the laws themselves rarely contained environmental protections, and was drawn to the area and further engaged himself in the field of environmental law. In 1969, he learned of a lawsuit opposing the construction of an apartment building along the bank of the Potomac River in Washington, DC The basis for the suit was the public trust doctrine, and here he found the legal basis to advance environmental conservation causes.

Michigan Environment Protection Act which was adopted in 1970 and known as the "Sax Act" was drafted by Professor Sax and was groundbreaking in that it authorized environmental citizen suits and ensured standing in environmental litigation by stating "any person, partnership, corporation, association, organization or other legal entity may maintain

an action in the circuit court for the protection of the air, water and other natural resources and the public trust therein from pollution, impairment or destruction." A primary feature of the law was its recognition that every person is legally entitled to the benefits of legal protection against pollution and other environmentally destructive activities, and that the courts were to be empowered to grant relief against such activities.

The "Sax Act" later became the model for similar statutes in more than a dozen other states.

In 1970, Professor Sax published "*The Public Trust Doctrine in Natural Resource Law: Effective Judicial Intervention*." This landmark article argued that the U.S. courts has the authority and responsibility to prevent legislatures and administrative agencies from damaging, selling, or giving away environmental features, such as coastlines and wetlands, that were entrusted to the ownership of the people as a whole. More than any other work in the history of environmental law, this article has been cited countless times as the leading discussion of the public trust principle, and it has initiated an entire literature on the limits of governments in America to damage environmental resources held in trust for all people.

Professor Sax served as Deputy Assistant Secretary of the U.S. Interior Department and as legal counsel to the Secretary, Bruce Babbitt between 1994 and 1996, and internationally, he has been active and contributed in helping governments, and multilateral organizations (such as the U.N. agencies) improve the role of environmental law in contending with continuing ecological degradation, pollution, and diminishing water and natural resources stocks. He authored books on environmental law issues and is the author of about 150 law review articles. He has also published many magazine articles, newspaper essays, and reports emphasizing the need for improving environmental protection. He did more than write. He led the creation of the Environmental Law Institute, and the launch of the Environmental Law Reporter.

In seeking to explain the appropriate limits of private property, and the legitimate interests of the public, Professor Sax has in recent years sought to draw provocative analogies between the need to protect the natural world's treasures, and the well-accepted understanding of the need to protect cultural treasures, such as great works of art and historical and archaeological resources. He has therefore written about "cultural property" as another example of the need for a public trust concept, and to illustrate the importance of appreciating the limits of what can be claimed in the name of private property.

Professor Sax has been and still is the leading environmental law scholar in the United States and the world, and he has repeatedly created new legal innovations to expand the realms of environmental and natural resources protection laws, and has directly or indirectly influenced the ideas of scholars in many other countries. He has also been actively involved in public affairs as they relate to environmental protection and conservation issues, and contributed to the world.

Essay

An Environmental Agenda for Our Time

Professor Joseph L. Sax

Where do we go from here? If we are to make real advances in protecting the natural heritage that time has passed down to us, one central element of our agenda must necessarily be a re-conception of the meaning and content of landownership. A transformative legal change is required, and so long as courts and lawmakers, and the scholars who influence them, cling to the proposition, “what is the land but the profits thereof”, we will not effect that transformation.

The need to re-conceive land law does not require a repudiation of the importance of using land to meet the needs and interests of human communities. So the question is what would an environmentally appropriate land system look like?

I suggest the following five approaches as an outline that can help move us toward a new way of thinking about land, landowners, and the public.

First, we have a theoretical legal precedent very close to hand that can be very helpful: the legal status of water. Nearly 100 years ago, the U.S. Supreme Court famously observed, “there [cannot] be said to arise any ownership of [a navigable] river. . . . Ownership of a private stream wholly upon the lands of an individual is conceivable; but that the running water in a great navigable stream is capable of private ownership is inconceivable.”¹ The reason, of course, is that great rivers and the sea have always been understood to provide vital services that the community as a whole needed, and to which, therefore, the community as a whole must have an entitlement. The notion of the sea as common property traces at least back to Roman law,² and the idea that water as a vital resource cannot be privately owned but remains the property of the people, subject only to use-rights or usufructs. Water, since it is a vital resource, as the Supreme Court of Colorado observed as long ago as 1882, is governed by the law of “imperative necessity.”³

As we now see land—in the context of climate change, as vital for biodiversity protection, as a continuum with other land and with its adjacent waters, rather than a collection of independent fenced squares—it looks much more like the waters that have earned universal recognition as incorporating an elemental public entitlement to which private uses must necessarily accommodate.

Second is the question what is need to assure that we do not continue to diminish biodiversity, to generate destructive rising sea levels, or to destroy a sustainable economy. But for a long time we believed—wrongly as it turned out—in the inexhaustibility of the globe’s resources, and in a promise of technology to replace what was destroyed, a promise that it could not adequately fulfill. We also knew less once than we do now about resources such as wetlands (which we called swamps), and about the role of land as habitat, a word that was not even a part of our vocabulary until recent decades. What is new is our understanding that the existing system of laws about land and about ownership is not producing and protecting

adequately what we need and are entitled to expect of it.

Third, the changes that are needed can and should be made in ways that facilitate the continued production of goods and services that are required to serve a prosperous human community. A first principle would be that the public holds an entitlement to the natural services provided by land, and that a landowner has no proprietary right to diminish or destroy those services, but that proprietary uses for human benefit are appropriate and lawful to the extent that they are compatible with minimization of loss of biodiversity, and with promotion of sustainable use of natural resources. This principle must underlie our system of land laws.

Fourth, we now know a good deal about how to shape land use to produce the goods and services we need, and simultaneously to protect our natural patrimony. There are many well-known practices that can and should be implemented in support of a land law suitable to an effective environmental agenda, and there is a substantial literature on the subject.⁴ Among the most familiar practices are avoidance of development in wetlands, along shorelines, and in flood plains; identification and protection of wildlife corridors; identification of valuable undeveloped areas, and institution of land use practices that maintain such places to the maximum extent practicable, including clustering of development away from sensitive areas; forestry and agricultural management practices calculated to maximize sustainable use; restoration of mined areas to re-initiate natural services from those areas; and protection and restoration of instream flows and riparian areas. We know how to restore upstream eroded meadowlands to hold more spring waters, as an alternative to building new dams and reservoirs.⁵ There are also well-established techniques for restoration of severely-altered ecosystems that can restore endemic species and, at least to a significant extent, natural processes—even in the most ecologically troubled places.⁶

In addition to restrictive practices, we should not hesitate to offer positive incentives to landowners to utilize environmentally appropriate methods—such as tax benefits and subsidies to encourage new practices that maintain or restore degraded terrain. Such incentives can be particularly valuable during transitional periods, and help to avoid unfairness or excessive burdens on owners who find themselves caught in transitional regulatory situations, using such devices as a more flexible and positive approach than using property doctrines to shape land use.⁷ A mixture of public incentives along with regulation that incentivizes private actors to be innovative and to behave adaptively is the most productive approach.

Having said this, I want to emphasize the continued need for public funding to support and sustain restoration of already-degraded areas, the usefulness of private philanthropic purchases of critical tracts, and the central importance of public lands that embrace pristine or near-pristine areas, which, though not sufficient, have a vital role to play. Both extreme positions that only purchase of private rights, or only regulatory action without any payments or subsidies to landowners and water users are mistaken. We need both approaches.

Implementation of these approaches would go far toward encouraging disinvestment and non-investment by high-risk investors in sensitive areas, and instead encourage investment in lands and waters that can be utilized non-destructively.

Fifth, and finally, changing the rules is essential, but that change can only be fully effective as landowners move on to see themselves as custodians for the community, and for

the future, as well as for their own benefit. This may seem a form of wishful thinking, but there is a parallel worth pondering, that of art collectors holding famous works who, though using the works for their own benefit and pleasure, also see themselves as participants in the safeguarding of a common heritage and routinely loan their property to public institutions, and make them available to students and scholars, so that they serve as private property imbued with a public interest.⁸

Moreover, there is no way to avoid a new way of thinking if we really intend to make biodiversity protection a serious goal of land use. If we look at land as habitat, we must then ask, who owns biodiversity? It's not a question our legal system is structured to ask. I suppose the answer is everybody and nobody. One way of thinking about it is as an unprotected common superimposed on privately owned land. We can all agree it's a good thing and it deserves as much protection as we can manage to provide it. We would then have to agree that its protection depends on the maintenance of adequate, viable habitat. And that such places consists very largely of privately owned land.

So we find ourselves in unfamiliar territory. There is something very important to us all collectively. But we don't own it. It inheres in, and depends on, something called habitat (which is also un-owned as such). Habitat inheres in land, which is owned, and which we have always believed owners could generally use as they wished, which largely involved destroying its value for that service. So it seems that the public has a legitimate stake in the way in which owners use land, even though the owner isn't doing anything that has traditionally been thought of as outside his private domain and therefore as unpermitted. These are thoughts honorable landowners will sometime have to ponder.

I close with two brief statements that I made in 2005 at the IUCN Academy meeting in Sydney in 2005:

First, "It is a chastening fact that the phrase 'rights of the public' is as rare as an endangered species in American environmental jurisprudence, as rare as the phrase 'rights of the private property owner' is commonplace."

And second, "That no one has a property right to destroy the benefits of a natural system" may seem obvious, yet its opposite has been the unarticulated watchword of the developmental economy's property system for some 300 years. It's time for a change.

References

1. United States v. Chandler-Dunbar Co., 229 U.S. 53, 62, 69 (1913); affirmed in United States v. Willow River Power Co., 324 U.S. 499, ___ (1945).
2. [cite Inst. Of Justinian].
3. Coffin v. Left Hand Ditch Co., 6 Colo. 443, ___ (1882).
4. E.g., Richard L. Knight & Courtney White, Conservation for a New Generation: Redefining Natural Resource Management (2009); Joshua H. Goldstein et al., Business Strategies for Conservation on Private Lands: Koa Forestry as a Case Study, 103 *Proc. U.S. Nat'l. Acad. Sci.* 10, 140 (2006); Stacy M. James, *Bridging the Gap between Landowners and Conservationists*, 16 *CONSERV. BIOL.* 269 (2002); Mari N. Jensen, *Can Cows and Conservation Mix?* 51 *BIOSCIENCE* 85 (2001).
5. Dana M. Nicholds, "Meadow Restoration May Be Inexpensive Method for Water Storage", Stockton, CA Record, Mar. 14, 2011. This is a project of the National Fish and Wildlife Foundation, a quasi-private

organization created by Congress.

6. In the U.S., a good example is California's Bay-Delta ecosystem. See, e.g., Ellen Hanak, et al, *Managing California's Water: From Conflict to Resolution* (Public Policy Institute of California, 2011), ch. 5, "Reconciling Ecosystems: Reversing Declines in Native Species". See generally, Michael Rosenzweig, *Win-Win Ecology, "How The Earth's Species Can Survive in the Midst of Human Enterprise"* (Oxford Univ. Press, 2003).
7. Joseph L. Sax, "Land Use Regulation: Time to Think About Fairness", 50 *Nat.Res.J.* 455 (No. 2, Spring, 2010).
8. I have tried to draw this parallel in a book entitled *Playing Darts With A Rembrandt* (University of Michigan Press, 1999).

Lecture

The Unfinished Agenda of Environmental Law

Professor Joseph L. Sax

The field of environmental law is young. Not even four decades have passed since the basic laws for protection of air and water, and for environmental assessment, began to be enacted in the industrialized nations. Obviously much has been accomplished in that relatively short time. Today I would like to talk about what remains to be done in terms of the law's role in safeguarding our environmental heritage. Before turning to that matter, however, and because many of you are not specialists in this field, I would like to make a few preliminary observations about the role of the legal system more generally.

The primary tasks of the law are basically three-fold:

- (1) to establish rules to govern daily social intercourse in commercial areas such as contract, and to protect property and bodily security against unwanted intrusions;
- (2) to replace anarchy and self-help with the rule of law; and
- (3) to articulate and safeguard basic human rights in order to protect the individual against over-reaching by the state. In this latter category we find essential individual rights like free speech, freedom of religion, and basic protections for those accused of wrongdoing. More recently, there has been growing recognition of what are sometimes called positive human rights, such as the right to an education, to decent housing, to a living wage and healthful working conditions, and to basic medical care.

Where in this pantheon does one find the role of environmental law? In its formative stages, it developed primarily to bring certain traditional protections such as nuisance and trespass law to bear on hazards generated by modern industrial society. For example, though law had always protected the physical integrity of the individual against unwanted invasions, contamination of rivers and the ambient air presented new harms in new forms. Pollution was often caused by many different dischargers, and its damages frequently did not appear until many years later.

Traditional legal notions, such as causation and proof of harm, all had to be revised to take account of the complex nature of contemporary environmental contamination. Among these revisions, one of the most important was the recognition that a preventive strategy was necessary, since the law usually provided only money damages after harm had been done. This meant a need to set emission standards, to deal with scientific uncertainty about risk, and to engage with the perplexing issues raised by what is now called the "precautionary principle." The adaptations made to traditional legal concepts such as nuisance, to take account of these

new elements, were among the first important achievements of environmental law.

But environmental law has also had to pioneer in another much less conventional area. The most familiar example is biodiversity protection. This problem does not arise in the form of an invasion of any individual's established legal right, and it does not involve any conduct traditionally viewed as wrongful. For example, farmers cultivating their fields to produce agricultural products may be destroying valuable habitat, and contributing to the decline in species diversity. Moreover, unlike health-endangering pollution, many people (even today) do not see diminishing biodiversity as a serious problem for the planet, and sometimes especially where obscure species with strange-sounding names are involved-do not perceive it as a problem at all.

When conduct involves neither familiar rights or wrongs, and presents no imminently obvious peril, controlling it presents a distinctive challenge for the legal system: How does one bring such a problem within the ambit of rights that people can understand, and that the system can accommodate.

As we began to grapple with issues like loss of biodiversity, we sought out a precedent based on something that has virtually disappeared from the modern world: the law of the commons¹, where everyone in a community had a stake, for example, in the maintenance of a forest's productivity for the collection of firewood, or for hunting, but no one bore individual responsibility for protecting the forests' continued capacity to be productive. In such settings, both the rights and the benefits were collective; they belonged to people not as individuals but as members of a community. Of course, commons were a feature of traditional societies, where people thought more of themselves as members of a community than as autonomous individuals. Moreover, in such relatively stable societies people knew what was required of them; they did what had been done traditionally, what their forbears did going back countless generations.

The maintenance or restoration of habitat is obviously a commons problem, but with some unique features in the contemporary world. For one thing, the land that comprises habitat is no longer held in common; it has been divided up into separately owned tracts. And the notion of common responsibility for maintaining productivity (traditional uses and limitations known to all, and incumbent on all) has virtually disappeared from our consciousness. In its place has arisen individually-owned property and the entitlements that go with it. And, of course, modern property law was devised not to assure the maintenance of biodiversity, but to promote productivity in the sense of maximizing the economic benefit that could be achieved by an individual proprietor.

The case of species loss is illustrative. Species require habitat. But habitat fits no conventional legal concept. Landownership bears no relation to the essential habitat of any species. Wildlife species are usually unowned and un-possessed, and endemic plant species are often competitors with more immediately profitable crops. Most species have no economic value to those who own the lands that are their habitat, though they may be of extraordinary value for research that ultimately generates important scientific and technological advances. Moreover, indigenous species are often seen as obstacles to conventional land uses: wolves or bears as predators on domestic livestock; wetlands denizens as a problem for land filling and

development; prairie or forest as an impediment to modern agriculture.

This history has generated a particularly difficult jurisprudential challenge for modern environmental law. It has been obvious for some time that we were losing biological diversity at a rapid and increasing rate, and on a number of fronts. As rivers were dammed up for hydro power and for irrigation and municipal water supply, spawning grounds and habitat for indigenous species of fish were extirpated. The demand for wood products saw the decimation of forests, first in the temperate zones, and then in tropical areas. Mineral exploitation had similar impacts, and population growth and urban development, like agriculture before it, has converted vast areas of habitat, both uplands and wetlands, and generated a steady decline in biological diversity. All this, of course, is very well known. What is perhaps less well understood is how poorly prepared our legal system was to address these issues: we faced a commons problem in a non-commons world.

In an article some years ago², I noted that our laws relating to natural resources such as land and water have evolved over the past several centuries almost exclusively to promote what I called the transformative economy. That economy, I said, "builds on the image of property as a discrete entity that can be made one's own by working it and transforming it into a human artifact. A piece of iron becomes an anvil, a tree becomes lumber, and a forest becomes a farm. The law treats undeveloped land as essentially inert. The land is there, it may have things on it, or in it, but it is in a passive state, waiting to be put to use. Insofar as it is 'doing' something for example harboring wild animals or indigenous plants-the conventional law considers such functions expendable. Indeed, getting rid of the natural, or at least domesticating it, was a primary task of modern society. For most of the modern era, land and water have been employed essentially to end the existence of natural systems. Land has been fenced to exclude or extirpate wildlife so it could support domesticated grazing animals, agriculture, mining, and human settlements.

By contrast, any notion of the importance of protecting biodiversity builds on what may be thought of as the economy of nature, as contrasted with the transformational or developmental economy. In the economy of nature, land is not a passive entity waiting to be transformed by an owner. Nor is the world composed of distinct tracts of land. Rather the ecological perspective views land as a system defined by function, not by man-made boundaries. Land is already at work performing important functions in its unaltered state. Forests regulate global climate, marshes sustain marine fisheries, and prairie grass holds the soil in place. In the economy of nature, wetlands would be governed by laws based on their ecological role, not on lines drawn on a map. And their protection would be the responsibility of all those whose activities wherever carried on adversely affected them. If today we are seriously to protect what remains of our biological heritage, to restore degraded rivers and landscapes, and to redeploy forests to play a positive role in controlling human-induced climate change, we need a legal system that is as well-attuned to achieving those goals as the conventional legal system we have inherited was attuned through transformation of nature to achieving the goals of the industrial revolution.

This history helps explain why the law has had so difficult a time in dealing with the most profound of modern environmental problems, such as biodiversity protection and climate change. When it works best, law creates incentives that encourage people to behave in ways

that promote society's goals. Our legal system structured on separately owned tracts of land was designed, and works efficiently, to achieve the goals of the transformative society: to produce houses and cars and wheat and steel, etc. It is quite ill-suited to meet the goals of an economy of nature, such as biodiversity maintenance and restoration. We have collective needs, but no collective rights. Moreover, as I shall illustrate shortly, the mentality of many of us, including lawmakers and judges, continues to perceive of the natural world solely through the lens of the transformative economy.

It is, of course, possible that the interest in protecting the services provided by natural systems could be protected by sovereign states outside the category of ordinary legal rights, and we have done that to some extent by setting aside parks, wildlife refuges, marine reserves, and wilderness areas. These were the primary techniques of the 19th Century conservation movement, and they continue to be necessary elements of any strategy for biodiversity protection, but they are demonstrably not sufficient. The vast majority of the world's land, including much of its most important and sensitive habitat, is in private ownership or control, and is vulnerable to private economic exploitation by owners whose conception of property rights and of ownership responsibility contains little or no notion of any common rights or of responsibility to the commons. In light of traditional concepts of landownership (and usufructuary rights in water as well), that is hardly surprising.

It is a sobering thought that while virtually every other interest that we consider vital has been made the subject of enforceable legal rights, our heritage of biodiversity stands largely outside the framework of established jurisprudential theory, and thus, except to the extent governments find it in their interest to act protectively, exposed to the ravages of human activity. We would not think of leaving individuals to the discretion or current policies of the government to safeguard their private property, or their contractual rights, or their inheritances. We view all these things as essentials and we have enshrined them as legal entitlements. They can be invoked even if government officials at a given time decided to take no initiative on their behalf. It is not that we do not, and should not, rely on public officials. It is simply that we should not rely solely on them; and where fundamental rights are in question, we never do rely solely on them. We want and need the state to be vigilant on our behalf, but we treasure our rights, and we know the value of being able to invoke the machinery of the law to protect those rights.

To be sure, the notion of rights held in common among us all that are real and serious enough to be as well protected as our individual rights, is not the way most of us are accustomed to thinking about what is "ours." If someone asked you to list your assets, in addition to your house and your bank account and your jewelry, you would not likely list the polar bear or the eagle, to say nothing of freshwater mollusks or primaeval forests, yet our biological patrimony is among the most precious of our assets. In the United States, we *do* think of places like our national parks as common possessions that belong to us and that we are entitled to have protected, but such publicly owned places embrace only a tiny fraction of the creatures, plants and habitats that constitute the stock of our remaining biodiversity.

The task of protecting adequately our remaining biological patrimony demands a robust development of the idea of common heritage, of things that belong to us as members of the

world community, and that are entitled to protection at our behest in whatever particular ownership patterns they are held. As some of you know, I have written quite a bit in recent years about what is called "cultural property," such as great works of art, important antiquities, and objects of historical and scientific importance³. This has puzzled many people, who wonder what all this has to do with environmental law. The answer is that I became interested in studying cultural property because it has some of the same characteristics and presents some of the same problems of preservation and protection as does our biological inheritance.

We tend to think of things like the Parthenon Marbles or Old Master Paintings or the temple at Angkor Wat as part of our common cultural heritage, and to recognize that they need to be cared for and protected, regardless of their location or their formal ownership status. Many great works of art are in private collections, yet we expect them to be cared for, and ultimately to be made accessible to the public. The great English Monument of Stonehenge was once part of a private landed estate, but that did not make it any less worthy of preservation to humankind, both to present and future generations. Nor does national sovereignty or asserted national ownership, as in the tragic case of the Bamiyan Bhuddas of Afghanistan recently mutilated by the Taliban-bestow rights of neglect or destruction, a point that has been made against political iconoclasm at least since the destructive frenzies experienced at the time of the French Revolution⁴. The ideas, and the protective techniques, that have been established in the field of cultural property provide some useful precedents and analogies as we work to enlarge public understanding and to assure the safeguarding of our biological birthright.

The distinctive character of biodiversity, as I have noted in these remarks, presents a novel challenge to our legal system, not simply in the technical task of formulating laws, but even in understanding of the nature of the problem. A few moments ago I noted that the presuppositions of the transformative society were so dominant in the thinking of many that they made it difficult even to perceive the real nature of biodiversity issues. Several recent cases in the U.S. Supreme Court are depressingly illustrative of the problem.⁵

The case involved implementation of the Endangered Species Act⁶, and the question was whether the environmentally concerned citizens who had initiated the case had a sufficient stake in the matter to be allowed to come to court. (The general principle is that I can only sue to protect some interest of my own, as where my contract is breached, or my property is trespassed on; and the question in this case was who had a sufficient interest in protecting an endangered species from illegal activities that were jeopardizing its continued existence, to sue to stop that activity). In this case, the justices characterized the sole legitimate interest of the public in the safeguarding of endangered species as "use," in the sense that people use the animals when they come as tourists to see and photograph them, or use them for scientific study. The Court refused to allow the environmental plaintiffs to seek enforcement of the endangered species law because they had not proven that they personally were going to re-visit the site where the animals lived in order to see them, and thus their personal "use" of the species was not being affected. This appalling misconception of what biodiversity is about, and what the stake of each of us is in that enterprise, is unfortunately demonstrative of how far we have yet to go.

Nor is the case I just cited as exceptional as one might wish. In another more recent

case⁷, a number of the Justices showed themselves unable or unwilling to see the scope of our water protection law in terms of ecological connections, and voted to deny protection under the law to wetlands unless they were physically adjacent to a river, apparently on some notion that wetlands are land, and not water, and therefore don't come within the ambit of a law designed to protect "the chemical, physical and biological integrity of [the] Nation's waters⁸." The opinion says it "rejected the notion that ...ecological considerations...provide[d] an independent basis for including entities like wetlands or ephemeral streams within the phrase "the waters of the United States." Whether decisions such as these are read as purposeful anti-environmental sentiment, or as a more innocent incapacity to see how modern environmental problems can be fitted into the pre-existing legal system, the conclusion is inescapable that the notion of a common heritage that vitally needs legal protection is still woefully underdeveloped.

Obviously, we cannot and should not simply replace the structure of the existing transformative economy, and its legal system, with a structure built solely on the restoration of natural systems. No sensible person wants to return to a state of nature. We need the positive benefits of the industrial and post-industrial economy, but our inherited legal structure cannot stand unaltered if we want to protect what we have, and to restore what we can, of our biological patrimony. There are many workable adaptive mechanisms that can produce a desirable level of protection and restoration. But we need a legal system that permits and promotes such adaptations.

One aspect of such a system requires an understanding of property rights as being adaptive to changing public needs and to new technological and scientific knowledge. This is well accepted at some levels. Everyone understands that if new knowledge demonstrates something to be hazardous to health, though it was previously a valuable property, it can no longer be used as it was previously. Industrial waste water, once discharged without control or limit, is a familiar example. That principle needs to be more widely appreciated. For example, as we have discovered the adverse impacts on fish spawning grounds of traditional water diversions for agriculture, industry and urban use, it must be recognized that there is no property right to destroy a fishery or other valuable aquatic habitat, even though that means a reduction in traditional economic uses.

This is simply one example of the proposition that a river is a common, and must be used to secure common rights in its productivity as an aquatic system, and isn't simply a source of private proprietary diversionary rights. The same sort of re-conception is possible in the context of forest management, or land development for residential and commercial use, if previously-recognized developmental rights are moderated to promote maintenance and restoration of habitat, and the duty to do so is acknowledged as a legally cognizable public entitlement.

While any such re-configuration of rights will necessarily require changes in the way business is done, and will sometimes be costly, we should not require such changes to be compensated. The reason is that we need a system that encourages human adaptation and ingenuity. The familiar precept that necessity is the mother of invention is a necessary component of a well-functioning legal system. For example when we articulated air emission

standards as legal requirements, it stimulated the development of new technologies and new industrial practices. Often, it is possible to implement such transitions without serious adverse consequences to those who must undergo change. For example, in the arid western United States, where agricultural irrigation (which uses the great bulk of all the available water, averaging as much as 80%) must limit its diversions in order to restore instream ecosystem values, newly developed efficiency gains in the use of water, or shifting to less water-intensive crops, can significantly offset losses attributable to reduced diversions.

In either event, whether costly or not, property exists in a social context, and like all rights, its limits are described by the social exigencies of its time. For example, at one time married women could not own property; what they owned went to their husbands upon marriage, reflecting a societal view about women's status in society. When that value changed, we enacted what are called Married Women's Property Acts, which revised the property rights of husbands to their disadvantage. This same principle must govern contemporary societal values about the responsibilities of owners to protect our environmental heritage.

The need to revise our conception of rights in the earth and its waters in order to reinvigorate the conception of the world as a commons, and of rights held in common, has a long way to go before it can flower fully. So far, we have made just a modest amount of progress. The public trust doctrine, drawn from the ancient Roman law recognizing the sea and the seashore as the common inheritance of humankind, open to all for navigation and fishery, has been one of the most useful adaptations of traditional legal doctrines for bringing the notion of public rights and responsibilities into the modern era⁹. So far its application has been limited to waters, but the underlying principle will, I am confident, find even broader application. Two important contemporary cases in the United States are illustrative of the way the law needs to evolve if we are to get an adequate grip on protecting the natural values that constitute our biological inheritance.

In the first such case¹⁰, the City of Los Angeles was diverting water for municipal use from streams tributary to a large lake known as Mono Lake, which is located directly east of Yosemite National Park in California. The result of these diversions was steadily to diminish the elevation of the lake, severely impacting its capacity to sustain its indigenous marine organisms, and its use as bird habitat. In response to concerns expressed that the enforcement of common rights under the public trust doctrine would either deprive a major city of its needed water supply, or simply drive it to another location where it might do even more harm, the government authorized the appropriation of funds to install a variety of water-conservation programs in the city, so as effectively to replace the lost supply by reducing demand. In the ensuing years, the elevation of Mono Lake has risen, and its biological values have been largely restored with no discernible adverse impact on Los Angeles. The case stands for the proposition that the natural values in the Mono Lake ecosystem are an entitlement of the public, and that any uses of the resources of that system, even though for a perfectly legitimate use, must be made in a way that respects the protection and sustained productivity of that system. Notably, nothing in the case suggests that absolute preservation is required, or that the system cannot be impacted by human use. The legal constraint is only that use must be made in a way that does not destroy the functioning ecosystem of the lake.

A more recent Hawaii case¹¹ is also illustrative of how common rights in the form of the public trust can be effectively implemented. Early in the 20th Century, in order to irrigate plantations on the dry (southern) side of the island of Oahu, tunnels were drilled through the mountains, and water diverted from streams on the northern (wet) side of the island. The result was harm to ecosystem values in those streams and to the traditional agriculture of Native Hawaiian people who lived near those streams. In recent years, as the plantations were retired, diversions through the tunnels were sharply reduced, and water again flowed in the streams. In a notable example of the resilience of natural systems (and, incidentally, of the positive potential of restoration efforts), there was a resurgence of life in the streams and revived opportunities for traditional agriculture. While those who had owned the use-rights in the water for plantation irrigation wanted to retain those rights, presumably for planned future residential development, an environmental case was initiated to restore ecosystem and Native values under the rubric of the public trust in water as a common right, rather than a merely private, perpetual property right. The Supreme Court of the State of Hawaii issued a most interesting and important decision recognizing public trust rights in Hawaii, and ordering the restoring of substantial flows to implement those rights. The case is of special interest because it not only elucidates the familiar public trust doctrine with its roots in Roman Law, but it sets out principles of traditional Hawaiian law that lead to similar mandates for restoration. In addition, the case is instructive because it shows that certain moments of opportunity arise (in this case the closing of the sugar plantations on Oahu) where environmental restoration can be effectuated without adverse impacts on existing economic activity.

These are just two specific illustrative instances of adaptive behavior mandated by the legal system, providing examples of the practicality of bringing about needed change in favor of biodiversity protection and restoration. Broadly stated, what we need is a more robust notion of common rights and responsibilities, legally recognized and enforceable, that we all hold as stewards of the earth, no less important than the effort we expend to protect our stock of common scientific knowledge, or our literary and artistic heritage. We need a more fully developed conception of land as habitat (and not solely as an object to be transformed and exploited for privatized benefit). Such changes call for an increased focus on land in terms of function, rather than in terms of boundaries. Such an approach is the antithesis of the perception I described earlier, in which it was thought important to decide whether a wetland is 'land' or is 'water'. And it is antithetical to the way in which some laws still formally treat surface water and ground water as separate legal entities, even when they are demonstrably elements of a single geo-hydrological system.

In addition, we need increasingly to come to terms with the need for proactive protective laws, as contrasted with the traditional legal practice of focusing on after-the-fact remedies. We have made some considerable progress in this respect in our modern air pollution and water pollution laws. But the urgent issues of climate change that are at the forefront of today's environmental agenda indicate how remiss we have often been in getting in front of problems before they reach crisis proportions. This is in part due to a traditional mind-set about the standards of proof needed to set the protective machinery of the law in motion, and our traditional use of the law largely to provide after-the-fact remedies. Whether it goes by the

name of a precautionary principle, or of simple prudence in adapting away from the excesses of the transformative economy, these are the some of the vital tasks that remain before us. They constitute the unfinished agenda of environmental law.

I would like to end with a brief quotation from the American scientist Edward O. Wilson, who in my opinion clearly and elegantly sets out the nature of the task before us. He said¹²:

“...it is reckless to suppose that biodiversity can be diminished indefinitely without threatening humanity itself....The ethical imperative should therefore be, first of all, prudence..... We should not knowingly allow any species or race to go extinct. And let us go beyond mere salvage to begin the restoration of natural environments, in order to enlarge wild populations and stanch the hemorrhaging of biological wealth. There can be no purpose more enspiriting than to begin the age of restoration, reweaving the wondrous diversity of life that still surrounds us.”

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