# Justice and the Convention on Biological Diversity

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"Benefit-sharing" is a technical term that was popularized by the Convention on Biological Diversity (CBD), which was adopted at the 1992 Earth Summit in Rio de Janeiro, Brazil. This global convention aims to achieve three objectives: the conservation of biological diversity, the sustainable use of its components, and the fair and equitable sharing of benefits from the use of genetic resources.[1] The CBD, with 191 state parties as of spring 2009, was the first international treaty to recognize that the conservation of biodiversity is a "common concern of humankind."[2] Parties to the convention have pledged to cooperate to stop the destruction of biodiversity by attempting to ensure its sustainable use, and by requiring users of this natural wealth to share the benefits with those who provide access to nonhuman biological resources.

This paper situates the CBD within long-standing debates on justice, and asks: (a) What type of justice does the CBD demand with its principles? and (b) Can the CBD be regarded as *just* (or equitable) legislation? First, we explain that nonhuman biological resources can be viewed both as the common heritage of humankind and as property falling under the sovereignty of states, groups, or individuals. Second, we discuss whether the CBD is based on natural rights or alternative foundations. Third, we outline the difference between distributive justice and justice-in-exchange. Finally, we present our answers to the two questions posited above.

## Common Heritage of Humankind vs. National Sovereignty

Who legally owns biological resources? For individual biological specimens, such as particular trees or even whole forests, ownership follows the usual rules. Depending

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on the legal system and history of the relevant country, most nonhuman biological resources are owned by private individuals, companies, traditional communities with secure rights over their ancestral land, or the state. Some general characteristics of biological species, by contrast, are considered to belong to humanity at large. These characteristics prominently include plant DNA.

The idea of the common heritage of humankind explicitly entered the canon of international law in the late twentieth century with the conclusion of two UN-brokered international treaties: the Agreement Governing the Activities of States on the Moon and Other Celestial Bodies (1979) and the Convention on the Law of the Sea (1982). These treaties declare that the seabed, the ocean floor, the subsoil thereof, as well as the surface and the subsurface of the moon shall not become the property of any state, organization, or individual. The common heritage idea has since been extended to certain biological resources, such as human DNA, which are not governed by property ascriptions,[3] and in 1995 were (along with human body parts) specifically excluded from the CBD.[4]

But what does the common heritage principle mean? There are two conflicting interpretations, exemplified respectively in the initial text (1982) and subsequent revision (1994) of the Convention on the Law of the Sea.[5] One interpretation is that our common human heritage must be used and enjoyed on terms that benefit all. The other is that our common heritage is available to be used and exploited at will on a first-come, first-served basis.

The former interpretation is suggested by some of the more lofty language of the UN agreements and also expressed by the Human Genome Project's Ethics Committee in its Statement on Benefit Sharing (2000), which asserts that "the human genome is part of the common heritage of humanity" and "[t]herefore, the Human Genome Project should benefit all humanity."[6] But the legal and practical realities are often much closer to the latter interpretation, as has been observed by (among others) the prominent Indian environmentalist Vandana Shiva:

> The North has always used Third World germplasm as a freely available resource and treated it as valueless. The advanced capitalist nations wish to retain free access to the developing world's storehouse of genetic diversity, while the South would like to have the proprietary varieties of the North's industry declared a similarly "public" good.[7]

Germplasm is the collection of genetic resources (DNA) of an organism. For instance, the seeds of an artemisia plant would be called the plant's germplasm. Through its germplasm, the plant itself can be recreated or its properties can be used, for instance, in developing malaria medication. Before the CBD was

adopted, such genetic resources were assumed to be part of the common heritage of humankind[8]—but in the sense of the second interpretation: they were not protected through any demand that all of humanity must benefit from their exploitation. For hundreds of years Northern plant specialists traveled to the South and took germplasm without asking permission of, or sharing potential benefits with, states or local communities. Some botanists and bioprospectors might have given money to local farmers for local plants in recognition of private property boundaries, but once the plant was obtained, its DNA was considered available for private use. As a result of this free-for-all, those in the South today sometimes face high barriers to access to goods based on the biodiversity of their own territories.

It matters greatly, then, how the common heritage idea is interpreted—specifically, whether its implementation combines privileges and rights of access with the obligation to share benefits, or instead simply allows private appropriation by the fastest or strongest or best equipped, without any benefit-sharing requirements. It is conduct of this latter kind that has led to the denunciation of open access to biological resources, as the following pre-CBD example illustrates.

*The Merck Example*

After obtaining a patent in 1991, Merck Pharmaceuticals started marketing a treatment for glaucoma derived from a bush (jaborandi) found exclusively in the Amazon region. The plant's leaves are harvested by Indians in Brazil and then transported to Germany, where its relevant parts (alkaloids) are refined and transformed into eyedrops. If a Brazilian wanted to use the eyedrops, she would have to buy them at German-set prices, and any Brazilian company wanting to produce a generic version of the treatment would have to pay royalties to Merck. Holmes Rolston succinctly outlines the tension: "Northern biotechnology companies see this as a right to earnings on their investments. Southern nations see this as more of the all-too-familiar exploitation."[9]

Following the adoption of the CBD, germplasm (such as that used by Merck in the production of the glaucoma eyedrops) is no longer freely available to all. According to the preamble of the CBD, nonhuman biological resources fall under the national sovereignty of states. CBD proponents argued that this move would help facilitate the resources' sustainable use and preservation more than the common heritage paradigm had in the past. They also claimed that this would contribute to combating incidents of exploitation by imposing restrictions

on access and setting requirements to share benefits with the providers of the resources.

One may take it to be obvious that the CBD promotes justice, but this judgment is controversial. As one observer has noted, ''The international discourse on benefit sharing (even within civil society organizations) is split into two antithetic positions: While some people think that benefit sharing is possible and achievable, others consider it as part of a Western paradigm of injustice—not possible and not even desirable.'' More dramatically, ''The most sweeping biopiracy coup occurred in 1993, when the CBD came into force and thereby legalized 'recognition' of national sovereignty over genetic resources.''[10]

## Different Concepts of Justice

To assess these criticisms, we need to situate the CBD within current debates about justice. Justice is a property that can be attributed to certain kinds of judicanda[11]—primarily agents, actions, social rules/institutions, and states of affairs. Let us apply this categorization to Merck's glaucoma treatment as an illustrative example. It was always true that the physical plant either belonged to the Brazilian state or to local landowners. However, the tacit *social rules* prior to the adoption of the CBD allowed that wild plants and germplasm belonged to the public domain, and the plant *type* and its biochemical properties could therefore be regarded as part of the common heritage of humankind, freely accessible to the first comer without any benefit-sharing requirements. This rule enabled Merck (the *agent*) to obtain valuable plant material in the Amazon and market a profitable product without obtaining consent for access and without sharing benefits (the *action*). At the same time, this tacit social rule led to a *state of affairs*, which Shiva describes as exploitative and unjust.

As a result of lobbying by developing countries, the tacit rule was abandoned and an explicit international legal rule was put in its place. Since 1992 wild plants and germplasm have fallen under the sovereignty of individual states and are thereby subject to access and benefit-sharing regulations. One could say that bioprospectors who today disregard the CBD are unjust agents, committing unjust actions, insofar as they violate a legitimate social rule set up to prevent exploitation and injustice. Before the CBD came into effect, one could not make this claim without contention. But there is also the deeper question of whether the CBD itself accords with justice. *Should* the germplasm of biological species belong to

the countries in which these species are native? Assessing the CBD's assignment of rights requires further reflection on the justification of social rules.

*Natural Law vs. Social Utility*

Human communities are organized by social rules, many of which are today encoded in law and administered through courts. Social rules may be understood in two main ways: they may reflect ultimate moral requirements, whether set down by God or dictated by reason; or they may be understood as merely serving a social purpose within human society. The constitutional rights of individuals are typically understood in the first way, reflecting, as John Rawls says, a person's "inviolability founded on justice which even the welfare of society as a whole cannot override."[12] The inviolability of these rights applies across the globe and across time, and they are often referred to as natural rights.[13] The right not to be killed, suitably circumscribed (to allow for self-defense, say), is considered such a right.[14] Traffic rules, on the other hand, are typically understood in the second way, in terms of their social utility as facilitators of efficient travel. Such social rules are taken to be open to thoughtful revision toward preserving or enhancing their usefulness under changing conditions. By contrast, insofar as rules express natural-law requirements, they are not thought to be revisable for the sake of social usefulness.

With regard to some social rules, their categorization into one of these two types is contested. Thus, some argue that the social rule against torture is based on expediency and may therefore be revised or abolished in changed circumstances, whereas others present this rule as founded on a natural right.[15] The social rules that create and define property rights are subject to similar contention: some assume that such rights should be designed to promote the common good, specified as economic efficiency, say, or poverty avoidance.[16] Others, following John Locke, regard legal property rights as implementing preexisting natural rights to acquire things and to dispose of them as one pleases.[17] The two disputant groups may entirely agree on what the rules should be and yet disagree sharply on their justification. They agree then on what justice demands while disagreeing on why justice demands it.

*Intellectual Property Rights*

The same disagreement exists with regard to intellectual property rights (IPRs), which include the rights at stake in the CBD debate. Some hold that IPRs should be shaped with an eye to the common good, striking the optimal balance between

encouraging innovations and ensuring easy access to them. Others believe that innovators have a natural right to control the use of their innovations. This dispute was in evidence in the 1990s when affluent states successfully pressured less developed states to accept the World Trade Organization's Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS), which required them to legislate for very extensive IPRs. Some argued that adopting U.S.-style IPRs would benefit poor countries by making them more innovative. Others argued that poor countries were morally required to adopt extensive IPRs in order to suppress within their jurisdictions the natural-law crimes of "theft," "piracy," and "counterfeiting" that were being committed by copycat manufacturers.

We cannot thoroughly discuss this issue here, but we can offer three arguments against the latter, natural-law understanding of IPRs. First, IPRs can be shaped in myriad ways, each specifying differently their mode of acquisition, scope, or duration. None of these specifications is natural or obvious. And natural rights theorists of IPRs disagree on which of these many specifications accords with natural law.

Second, like ordinary property rights, IPRs often clash with other important rights, such as the right to life. One of the best examples of this tension can be found in the area of access to lifesaving medication. The question, simply put, is whether the creator of a lifesaving medicine should have the legal authority to deny this medicine to those who cannot afford it, even if it is urgently needed to halt a fast-spreading, deadly disease.

Third, IPRs are incompatible with the very natural-law understanding of property rights adduced to support them. By asserting an IPR in some innovation, the innovator claims not merely rights to the products she has made out of her own materials, but also new property rights over materials owned by other people who supposedly lose their freedom to convert their materials into products like the one she had made. Such a deprivation of freedom conflicts with the natural-law understanding of property rights in material things, which render owners immune to unilateral expropriation by others. If the rights we have to use our material property cannot be diminished by others without the owner's consent, then there can be no IPRs—that is, no restrictions an innovator can unilaterally impose on what others may do with what they own. We see here that the common natural-law understanding of physical property rights—far from showing the way to an analogous natural-law understanding of IPRs—actually provides natural-law grounds *against* IPRs.

Could the claim that the genetic makeup of a wild plant growing in the Brazilian Amazon belongs to the Brazilian state rather than, for instance, humankind be based on natural law? Is there a natural right that requires that states be assigned ownership of plant DNA? We have seen that natural rights theorists run into serious difficulties justifying intellectual property rights. And the claim that states hold a natural right of sovereignty over plant genetic resources is even harder to justify. Many governments today are corrupt, brutally oppressive, or both. Why should governments own the resources of the countries they rule when for a considerable number of governments today the flourishing of their citizens seems to be the least pressing concern? Why should human flourishing be hampered through state property rights that potentially limit benefits for humankind? If the earth were an island with plentiful resources for its small number of roughly equally affluent citizens, it would not make sense to restrict access to wild plants. Under such circumstances, no one would object to a particularly inventive chap taking a plant and extracting its active ingredients in order to create an anti-diabetes drink, even if he charged for the end product.[18]

*Social Utility*

Neither mandated nor forbidden by natural law, the CBD framework should be assessed by reference to the common good of humankind. In making this assessment, one must consider the effects of the CBD relative to those of its politically available alternatives. These effects depend on what the world is like: on present facts about resources and scarcity as well as on the present international economic order and distribution of wealth. Changes in the world may affect whether the CBD rules are justified—for example, the rule that wild plants with their DNA and other nonhuman biological resources fall under the sovereignty of states.

It is difficult to estimate the relative effects of a set of social rules—that is, how various relevant groups of people fare differently under these rules than they would fare if other rules, or none, existed. Moreover, decisions about the design of social rules are rarely such that one option is unambiguously worse than another—that is, worse for some and better for none. In such cases, when no option clearly dominates all others, a judgment of justice is required about which option best serves social utility on the whole.

*Distributive Justice and Justice-in-Exchange*

Distributive justice concerns the assessment of social rules and procedures that regulate access to valued goods. Insofar as such rules and procedures are not preempted by natural law, they ought to be designed to promote social utility, or "the common good." Such judgments, and the balancing of relative gains and losses incurred by various affected groups, are controversial. Robin Hood might say that a rule permitting involuntary redistribution of wealth from the rich to the starving has high social utility: the protection it affords a disadvantaged group outweighs the cost it imposes on the affluent. He might add that the rich are already exploiting the poor as serfs on their land and therefore have contributed to their starvation. By contrast, the Sheriff of Nottingham and English law impose the same rules against theft upon poor and rich alike. In defense of his claim, the sheriff would argue that human beings have a natural right to property, which must not be violated. Or he would argue that a blanket prohibition on theft is for the best even if it leads to the starvation of some.

This example illuminates two potential justice considerations. First, should anybody ever starve while others have enough to avoid such starvation? This is a distributive justice issue in a world of scarce resources that is characterized by vast inequalities in wealth. Second, should serfs ever starve when they are working on a landlord's property? Do they not deserve rewards for their labor that suffice at least to lift them to the level of subsistence? This, then, is a justice-in-exchange issue. Essentially, justice-in-exchange regulates the justice of giving one thing and receiving an appropriate return, while distributive justice deals with the division of a jointly generated social product among qualifying participants.[19]

Justice-in-exchange mainly establishes the fairness of transactions. For instance, is the rent charged for a particular flat in central London appropriate—in other words, is it *just*? We are not using here the understanding of justice-in-exchange based on Roman law, which only requires that two competent adults have voluntarily agreed to a price. Rather, we are referring to the Aristotelian notion of justice-in-exchange, which requires that a price and a good are proportionate requitals—that is, that the intrinsic worth of a good is mirrored in a monetary sum.[20] On this understanding, a landlord can violate justice-in-exchange by overcharging a tenant *even if the tenant agrees to the charge*.

Distributive justice, on the other hand, deals with access to scarce resources—from the division of an apple pie among friends to the structure of an economic order that regulates access to raw materials and the distribution

of the jointly created social product. The further one moves away from individual actions (such as sharing an apple pie) toward actions affecting large groups (all those requiring tuberculosis treatment, for example), the more complex are the social rules that come into play.

In the mid-twentieth century it appeared that there was some consensus, at least within the West, on the essential question in distributive justice, namely: *Who deserves what from whom?* European welfare-focused politicians and theorists (henceforth "welfare liberals") agreed that (simply put) citizens and legitimate residents (the *who*) qualify for income support at a subsistence level plus various other basic social services (the *what*) from the state in which they reside (the *from whom*).[21] However, later in the century the proviso that the distributive justice realm should align with national borders was questioned, and it is now increasingly argued that distributive justice demands a universal, cosmopolitan response.[22] This understanding also seems to align with Article 25(1) of the Universal Declaration of Human Rights, which reads:

> Everyone [the *who*] has the right to a standard of living adequate for the health and well-being of himself and of his family, including food, clothing, housing and medical care and necessary social services, and the right to security in the event of unemployment, sickness, disability, widowhood, old age or other lack of livelihood in circumstances beyond his control [the *what*].[23]

There may seem to be no practical disagreement about distributive justice between the welfare liberal and the cosmopolitan. In response to the *who* question, the cosmopolitan ascribes certain entitlements to *everyone*, while the welfare liberal ascribes them to *everyone who lives within a state*. In the twenty-first century, everyone is born into a state. Hence, the answers to the *who* question are identical, for all practical purposes. There is also no difference in regard to the *what* question, as welfare liberals and cosmopolitans tend to answer it with reference to basic needs fulfillment, demanding that no human being should suffer violent aggression for lack of protection (legal rights, police support, and so on) or die prematurely from hunger, lack of shelter, or easily curable diseases.[24]

But the two approaches to distributive justice diverge with respect to the *from whom* question. Welfare liberals require each state to be concerned with the basic needs of *its* citizens only, while cosmopolitans typically argue that national borders make no significant difference to questions of distributive justice and that any state and its citizens should therefore be concerned with the needs of all human beings worldwide.

## CBD Benefit-Sharing: Distributive Justice or Justice-in-Exchange?

Let us recall the main principles of the CBD. First, the convention aims to improve the conservation of biological diversity. It is one thing to look after a resource for the benefit of humankind, and quite another to do so when one stands to gain the lion's share of the benefits oneself. By giving a large stake in the benefits that flow from natural resources to their custodians, one may hope better to preserve our planet's biodiversity—for the benefit of human beings everywhere, present and future. Second, the CBD aims to enable access to biodiversity for sustainable use, with the emphasis on *use*. In the context of increasing criticism from developing countries regarding the exploitation of their biological resources, it is much more likely that access for use will be granted if developing countries' concerns are satisfactorily addressed through access and benefit-sharing agreements. Consequently, the third principle of the CBD—the fair and equitable sharing of benefits from the use of genetic resources—is instrumental in achieving the first two principles.

Drawing on our discussion of common heritage, national sovereignty, social utility, and natural rights, as well as of distributive justice and justice-in-exchange, we can now situate the CBD within two justice frameworks.

The famous neem tree case illustrates how the CBD relates to justice-in-exchange. The neem tree's medicinal properties have been known for thousands of years in India, Sri Lanka, Burma, and elsewhere. Nonetheless, a patent was taken out by an international agrochemical business (Monsanto) ignoring this prior art and aiming for monopoly control.[25] Led by Vandana Shiva, an international lobbying movement managed to have the patent revoked after a legal battle of nearly ten years.[26]

The CBD generalizes this result by creating justice-in-exchange requirements that forbid conduct such as Monsanto's use of a resource from a foreign country for shareholder profit without rewarding local people for their contributions of knowledge and husbandry. The CBD makes it illegal for outsiders unilaterally to appropriate plants, animals, microorganisms, or traditional knowledge without obtaining the consent of, and offering compensation to, the state from which these resources are taken.[27]

By creating property rights where there were none before (in plant DNA, for example), has the CBD been a significant step toward justice? One might deny this by saying that humans should be ready to share their local knowledge

and biodiversity free of charge for the greater health and well-being of people everywhere. To appreciate this attitude, consider an analogous case involving the authors of this paper (well-off academics in permanent posts) or many of our readers. If we were asked by medical researchers for a blood sample that might lead to some new (possibly patented) medical product or service, we would probably comply and think no more of it. Though our contribution brings benefits to others, we would not think ourselves unjustly treated if we were offered no opportunity for benefit-sharing. This apparent altruism may be sustained in part by our appreciation that we would have access to any benefits of the research, and that we and our fellow citizens also derive indirect economic benefits from a thriving high-tech industry focused on human health.[28]

But the issue looks very different when the medical research involves illiterate participants from a poor country who naively show the same common-spiritedness while perhaps even laboring under the misconception that they stand to benefit from the study through new products that would be available and affordable to them. Such research may well be exploitative.[29] This is especially likely when the intended product will be unavailable in, or unsuitable for, the country where the research took place and when the research brings no significant indirect economic benefits in that country. Under such circumstances, a compelling case can be made for benefit-sharing as a requirement of justice. This analogy shows how *context* matters. It matters for justice-in-exchange, as when the future availability of the research products is reward enough for an affluent research participant—yet not for a poor one, because these products will not be affordable to her or to her friends, relatives, or most of her compatriots.

Context matters also for distributive justice, as is brought out by Bram de Jonge and Michiel Korthals, who maintain that benefit-sharing

> should not merely be seen as an instrument of compensation. . . . Instead, and in the face of the harsh reality that more than 800 million people are undernourished, benefit sharing should also . . . be a tool to improve food security.[30]

In this passage, de Jonge and Korthals invoke a harsh reality that is not restricted to food security. While distributive justice as basic needs fulfillment has almost been achieved in European-style welfare states, the situation in other parts of the world is desperate. According to official statistics, of the world's 6.7 billion people over one billion are chronically undernourished, 884 million lack access to safe water, and about 2 billion lack access to essential medicines.[31] People living

with such severe deprivations are particularly vulnerable to infectious diseases and often unable to overcome them. Today, a third of all human deaths are from poverty-related causes, including over 9 million deaths each year of children under the age of five.[32] This is the context in which developing country activists, such as Shiva, Gurdial Singh Nijar, and Pat Mooney, have raised their concerns about the unilateral and uncompensated appropriation by rich and powerful foreign corporations of biological resources from poor areas of the globe.[33] A requirement to share some of the benefits of biodiversity is much more compelling in contexts where it contributes to the fulfillment of basic needs and, hence, to the promotion of distributive justice.

It is possible that the CBD will promote the fulfillment of basic needs and thereby mitigate the great distributive injustice of existing global institutional arrangements. But it affords at best a very partial remedy. Imagine two communities, in different countries, whose members are undernourished and lack safe drinking water, adequate sanitation, and access to essential medicines. One community resides amid considerable biodiversity that is being used by a pharmaceutical company and leads to a patent; the other does not. Pursuant to the CBD, the company must compensate the first of the two communities for its contribution to any patented product—thereby helping to meet its members' basic needs. But the other community, gaining nothing from the CBD, would remain in crisis. Thus, the CBD is no substitute for a more ambitious reform of our global economic order that would realize social and economic human rights worldwide. With such a reform in place, the CBD might well become obsolete.

## Conclusion

When it comes to biological resources, be they blood samples or plants, the ideal scenario would let them be freely accessible to be used for the benefit of humankind without any inherent exploitation. Those who access resources would share the resulting benefits equitably with others. Bureaucratic barriers to the use of resources (other than for reasons of achieving sustainability) and requirements of benefit-sharing would be counterproductive in a benign context resembling the previously described island of affluent citizens who would have real access to the fruits of innovation through the market.[34] Free access to biological resources would facilitate innovation enjoyed by all, much in the spirit of the common heritage idea.

Free access to biological diversity cannot be justified, however, in a context of extreme economic inequality where appropriation by some (on a first-come, first-served basis) will lead to innovations unavailable to the global poor. In such a context, the CBD rightly favors national sovereignty over the common heritage principle with regard to nonhuman biological resources. The CBD can be justified as a contextual decision made at the end of the twentieth century, when biodiversity was being rapidly depleted and developing countries were justifiably concerned about the exploitation of their resources. While we agree that ideally the common heritage principle is to be preferred over fencing in resources with bureaucratic procedures, implementing this principle in the context of our severely unjust international economic order would be excessively detrimental to the poor.[35] The CBD therefore represents just legislation at the beginning of the twenty-first century.[36]

NOTES

[1] Convention on Biological Diversity (CBD), 1992, Article 1: Objectives; available at www.cbd.int/convention/convention.shtml (accessed April 14, 2008). The resources covered by the CBD are animals, plants, microorganisms, and traditional knowledge. All examples used in this paper refer to plants. As a result, we shall refer to the protection of germplasm regularly, although this term does not, obviously, apply to traditional knowledge.

[2] Ibid., Preamble.

[3] Doris Schroeder, "Benefit Sharing: It's Time for a Definition," *Journal of Medical Ethics* 33 (2007), pp. 205–09.

[4] Convention on Biological Diversity, 1995 Decision II/11, Access to Genetic Resources; available at www.cbd.int/decisions/?m=COP-02&id=7084&lg=0 (accessed June 18, 2009).

[5] This revision and the Clinton administration's role in imposing it are discussed in Thomas Pogge, *World Poverty and Human Rights*, 2nd ed. (Cambridge: Polity Press, 2008), pp. 131–32.

[6] HUGO Ethics Committee, Statement on Benefit Sharing (2000); available at www.eubios.info/BENSHARE.htm (accessed June 18, 2009).

[7] Vandana Shiva, *The Violence of the Green Revolution: Third World Agriculture, Ecology and Politics* (London: Zed Books, 1991), p. 257. Other activist academics and politicians who have highlighted the exploitative nature or unfairness of the first-come, first-served principle are Gurdial Singh Nijar, *In Defence of Local Community Knowledge and Biodiversity: A Conceptual Framework and the Essential Elements of a Rights Regime* (Penang, Malaysia: Third World Network, 1996); Pat R. Mooney, *Seeds of the Earth: A Private or Public Resource?* (London: International Coalition for Development Action, 1969); and Tewolde Berhan Gebre Egziabher, "The Convention on Biological Diversity, Intellectual Property Rights and the Interests of the South," in Vandana Shiva, ed., *Biodiversity Conservation: Whose Resources? Whose Knowledge?* (New Delhi: Indian National Trust for Art and Cultural Heritage, 1994), pp. 198–215.

[8] Krishna Ravi Srinivas, "Traditional Knowledge and Intellectual Property Rights: A Note on Some Issues, Some Solutions and Some Suggestions," *Asian Journal of WTO & International Health Law and Policy* 3 (2008), p. 88.

[9] Holmes Rolston III, "Environmental Protection and an Equitable International Order: Ethics after the Earth Summit," *Business Ethics Quarterly* 5, no. 4 (1995), p. 746.

[10] R. Sridhar and Usha S. Karsten Wolff, "Commodification of Nature and Knowledge" (paper presented at the National Conference on Traditional Knowledge Systems, Intellectual Property Rights and Their Relevance for Sustainable Development, Delhi, November 24–26, 2008), p. 2; and Silvia Ribeiro, "The Traps of 'Benefit Sharing'," in Beth Burrows, ed., *The Catch: Perspectives in Benefit Sharing* (Washington, D.C.: Edmonds Institute, 2005), p. 49.

[11] The word "judicandum" is from the Latin: that which is to be judged. Compare Thomas Pogge, "Justice," in Donald M. Borchert, ed., *Encyclopedia of Philosophy,* vol. 4, 2nd ed. (Detroit: Macmillan Reference, 2006), pp. 862–70.

[12] John Rawls, *A Theory of Justice* (Cambridge, Mass.: Harvard University Press, 1999 [1971]), pp. 3, 513, and back cover.
[13] Brendan F. Brown, ed., *The Natural Law Reader* (New York: Oceana Publications, 1960).
[14] John Finnis, *Natural Law and Natural Rights* (Oxford: Clarendon Press, 1980), p. 281.
[15] Bob Brecher, *Torture and the Ticking Bomb* (Oxford: Blackwell Publishers, 2007).
[16] Rawls, *Theory of Justice*.
[17] Robert Nozick, *Anarchy, State, and Utopia* (New York: Basic Books, 1974).
[18] Of course, people might object if he simultaneously demanded monopoly powers over his anti-diabetes drink for more than a decade.
[19] It would go beyond the scope of this paper to explain the other two main concepts of justice—namely, corrective and retributive justice. But see Pogge, "Justice."
[20] See Aristotle, *Nicomachean Ethics*, trans. Harris Rackham (Cambridge, Mass.: Harvard University Press, 1934), pp. 279–82.
[21] William Beveridge, *Social Insurance and Allied Services* (London: H.M. Stationery Office, 1942).
[22] Pogge, *World Poverty and Human Rights*; and Phillip Cole, *Philosophies of Exclusion: Liberal Political Theory and Immigration* (Edinburgh: Edinburgh University Press, 2001).
[23] General Assembly of the United Nations, Universal Declaration of Human Rights, 1948; available at www.un.org/Overview/rights.html (accessed April 15, 2008).
[24] Harry Frankfurt, "Equality as a Moral Ideal," *Ethics* 98, no. 1 (1987), pp. 21–43; and Joseph Raz, *The Morality of Freedom* (Oxford: Clarendon Press, 1986), pp. 217–44.
[25] "Prior art" is an expression used in patent law to describe all information in the public domain, which would be relevant to an applicant's claim of originality.
[26] "EPO Neem Patent Revocation Revives Biopiracy Debate," *Nature Biotechnology* 23, no. 5 (2005), pp. 511–12.
[27] See Schroeder, "Benefit Sharing."
[28] The issue of alleged excessive profits is a different matter outside the scope of this paper.
[29] Doris Schroeder and Carolina Lasen-Diaz, "Sharing the Benefit of Genetic Resources: From Biodiversity to Human Genetics," *Developing World Bioethics* 6, no. 3 (2006), pp. 135–43; and Thomas Pogge, "Testing Our Drugs on the Poor Abroad," in Jennifer S. Hawkins and Ezekiel J. Emanuel, eds., *Exploitation and Developing Countries: The Ethics of Clinical Research* (Princeton, N.J.: Princeton University Press, 2008), pp. 105–41.
[30] Bram de Jonge and Michiel Korthals, "Vicissitudes of Benefit Sharing of Crop Genetic Resources: Downstream and Upstream," *Developing World Bioethics* 6, no. 3 (2006), p. 152.
[31] FAO (Food and Agriculture Organization of the United Nations), "1.02 Billion People Hungry," news release, June 19, 2009; available at www.fao.org/news/story/en/item/20568/icode/; World Health Organization (WHO) and United Nations Children's Fund (UNICEF), *Progress on Drinking Water and Sanitation: Special Focus on Sanitation* (New York and Geneva: UNICEF and WHO, 2008); available at www.wssinfo.org/en/40_MDG2008.html; and Fogarty International Center for Advanced Study in the Health Sciences, "*Strategic Plan: Fiscal Years 2000–2003*" (Bethesda, Md.: National Institutes of Health, n.d.); available at www.fic.nih.gov/about/plan/exec_summary.htm.
[32] Roshni Karwal, "Policy Advocacy and Partnerships for Children's Rights," 2008; available at www.unicef.org/policyanalysis/index_45740.html.
[33] See note 7.
[34] We are assuming here that the products derived from nonhuman biological resources would not be priced out of the range of some islanders through a system that gives monopoly powers to their inventors for a considerable interval of time.
[35] It is beyond the scope of this paper to outline why today's international economic order is unjust. For a detailed justification of this claim, see Pogge, *World Poverty and Human Rights*.
[36] While we argue that the CBD promotes justice, we do not maintain that it cannot give rise to new cases of injustice. For instance, a local community may be the originator of traditional knowledge, but an autocratic government could retain funds paid on behalf of the community to use for its own purposes. Or CBD funds could serve as window dressing for national governments unwilling to invest in essential services. See also Doris Schroeder and Roger Chennells, "Benefit Sharing and Access to Essential Health Care: A Happy Marriage," *Medicine and Law* 27, no. 1 (2008), pp. 53–69.