

Kristin Peterson

Rice University

Benefit Sharing for All?: Bioprospecting NGOs, Intellectual Property Rights, New Governmentalities

Michel Foucault's concept of governmentality has had an increasing influence on comparative inquiry into political economy in past decades. "Governmentality" denotes the complex types of power, in various forms, that are exerted over populations and that create regulations between people and things in order to establish security within and outside of the state. Up until at least World War II, the primary agency of governmentality was located in the state, in both national and international contexts. In the past couple of decades, a new agency has come on the scene: the non-governmental organization (NGO), principally an extra-statal and extra-national institution.

In this paper, I address the emergence of an array of transnational artifacts and forces that have coalesced into a type of NGO of particular contemporary saliency and dynamism: the bioprospecting NGO. Bioprospecting is the search for biological, chemical, and genetic material (in the form of plants, microbes, insects, etc.) that may prove to be effective for future pharmaceutical products. Bioprospecting NGOs are intriguing because they bring together an organizationally effective apparatus, conceptual and legal regimes, public capital, private capital, and political interests of an inherently transnational scope. Most bioprospecting endeavors rely upon private and public sector alliances, as well as the expertise of wealthy pharmaceutical firms and local community members in various parts of the world.

The key element of bioprospecting's biopolitical charter—benefit-sharing—is a pseudo-legal concept designed to compensate marginalized and indigenous people and communities for their intellectual contributions to large and wealthy public or private organizations' bioprospecting endeavors. Conscious of colonial histories of natural resource pilfering, many proponents of bioprospecting endeavors project a win-win situation among all bioprospecting actors, in which marginalized and/or indigenous communities benefit as much from bioprospecting as wealthy research institutions. However, such large institutions "wield enormously disproportionate access to resources, information, technology and capital . . . (in) that the benefits of bioprospecting overwhelmingly apply to them and not to the nation-states in which prospecting occurs, and especially not to the communities where prospecting takes place" (Dorsey 2001:2). I argue that benefit sharing emerges out of development paradigms in which market-driven forces are advocated as more favorable avenues to community development as opposed to traditional development aid policies and practices. Benefit sharing, as a development practice, is an instructive example of the sorts of policies that are likely to shape transnational governmentality in decades to come. Specifically, the structural asymmetries of legal regimes that I will detail, and the resultant strategies for benefit sharing, have enabled transnational development NGOs and environmental NGOs, and their private affiliates, to gain increasing policy-making influence on market-driven development practices throughout the Third World.

Intellectual Property Rights and Benefit-sharing Practices

In 1980, the United States Supreme Court made a landmark decision, in *Diamond v. Chakrabarty*, to allow patenting for the first time of a genetically modified life form. Ananada Chakrabarty genetically engineered a bacterium that can break down multiple hydrocarbons in crude oil, creating the potential to commercialize an organic “device” that cleans up industrial oil spills. In a five-to-four decision, the Supreme Court declared “the distinction is not between living and inanimate things, but between products of nature, whether living or not, and human-made inventions.”¹ This decision permanently altered the ‘products of nature’ doctrine, which formally prohibited the patenting of non-human made and “biologically based” products.² It also launched the biotechnology industry³, but, more importantly, it redefined, and in many cases generated controversy over, what counts as life and knowledge, who counts as authors, and what counts as ownership within property regimes.

Out of the current intellectual property crises emerged what could be called a sustainable development practice: “benefit sharing.” The new intellectual property regime, globalized both legally and conceptually, created an impetus, if not an imperative, for benefit-sharing practices, which are often brokered by NGOs. “Benefit sharing” was conceptualized at the 1992 Convention on Biological Diversity, or the CBD, which was ratified in 1993 (Earth Summit 1993). The CBD is currently the most important legal document on biodiversity management, mainly because it shifted ownership rights of resources from “available to all” to nation-states. Prior to the CBD, germ plasm and other biological material was previously freely exchanged among scientists, farmers, and research institutions. With the increasing global character of intellectual property, particularly patent law, the “available to all” practice was making it possible for large, wealthy research institutions and pharmaceutical companies to begin patenting what was once freely exchanged.

In recognizing the shift from a public to a more privatized exchange system, the CBD became a powerful rhetorical device for the Third World to use in the project of managing its own national resources. The CBD’s three main objectives are the conservation of biodiversity, the promotion of sustainable use of its components, and the creation of fair and equitable sharing of benefits arising out of the utilization of genetic resources.⁴ The third objective, benefit sharing, which has received a great deal of attention in global biodiversity and conservation circles, was originally conceptualized as “equitable partnerships” between marginalized groups or communities and larger industrial or public organizations. The CBD stipulates that if Western industrial corporations contract work with other nation-states, especially with indigenous peoples, some form of contractual benefit sharing must take place.⁵ To engage in benefit sharing means that indigenous peoples, local communities, “Third-World” nation-states, scientists, and scientific institutions must be compensated for their intellectual knowledge and contributions to foreign scientific and industrial investigations.

In addition to new changes in patent law, as well as a long history of “seed wars,”⁶ what gave rise to demands for benefit sharing was a now well-known trade agreement being negotiated at the same time as the CBD—the Trade Related Intellectual Property (TRIPs) Agreement, at the 1992 Uruguay Round of General Agreement of Tariffs and Trade (GATT) now renamed the World Trade Organization (WTO). At the TRIPs negotiations, intellectual property regimes were, for the first time, linked to multi-lateral trade rules, and this linkage was made to fit a global and standard definition of knowledge and ownership. TRIPs stipulated that only

individuals are legitimate knowledge-makers and owners; it is significant that corporations were included in the language of “individuals” (WTA/GATT 1994), while communitarian or diasporic forms of knowledge and ownership were marginally conceptualized in the agreement (Shiva 1999).⁷ This clearly gives an advantage to those who would profit from such exclusive use-rights, namely pharmaceutical, chemical, and seed industries.

Third-World nations negotiating at the CBD perceived that the TRIPs agreement created an inequitable legal and economic gap between high-tech, wealthy corporations on the one hand, and more marginalized communities, including scientific communities, within Third-World nation-states, on the other hand. The Organization of African Unity stated that the organization is fully aware of the damage that could be done to sustainable agriculture, small farmer production systems, food security, political stability, and democratization as more and more crops (plants) become subject to monopolistic ownership of life-science corporations. Africa recognizes its obligation to a world driven by science and technology, international agreements, and the principle of free and fair trade based on free flow of information and knowledge. It has difficulty, however, accepting concepts and practices that are detrimental to its survival as a people and continent (Ekpere, no date). In other words, the TRIPs agreement was seen as a further step in what Martin Shapiro (1993) named the “globalization of the law.” Hence, Third-World CBD actors supported benefit sharing as an appropriate strategy to alleviate structural asymmetries and inequities created especially by new trade regimes and patent law (Grubb et al. 1993).

Benefit sharing is a concept that circulates widely among many environmental and development NGOs. The reason for the wide circulation is that many pharmaceutical and botanical corporations over the last several decades began intensive searching for potential drug and botanical material within rainforests and other ecosystems. This method, “bioprospecting,” sometimes enlists the help and knowledge of indigenous and/or minority peoples, as well as scientists, in the Third World.⁸ Over 160 countries signed the CBD. The U.S. has not ratified the Convention. But because the pharmaceutical and botanical industries work with indigenous people and scientists with whom they wish to maintain long-term relationships, many US corporate institutions look to the CBD as a model for establishing benefit-sharing practices. Many NGOs have emerged as benefit-sharing middlemen; they speak on behalf of industry or indigenous communities, or they are the main producers of discourses on how equitability of biodiversity products should be administered. While NGOs are often thought of as neutral entities, which are not affiliated with governments or corporations, there exist NGOs that are created by, or are affiliated with, private industry. Bearing in mind that there are many different kinds of benefit-sharing practices that vary across nation-states, institutions, and social groups, I focus on NGOs linked to the botanical and pharmaceutical industries.

I argue that the legal asymmetries I just outlined, and resultant strategies for benefit sharing, have enabled the rise of this NGO-industrial pairing. I agree with Akhil Gupta’s (1998) assertion that a Foucauldian (1991) regime of “governmentality” is emerging in the wake of new global accords. In arguing against a decline of the nation-state, Gupta asserts a tension between nation and state in which “a particular relationship that coalesced in the formation of nation-states may be unraveling” (1998:320). To understand this he turns to “governmentality,” by which Foucault (1991) refers to sixteenth-century government rationality in which procedures, institutions, etc., were exercised as complex power over populations in order to create regulations between people and things. Foucault traces how the “governing” of the

family household was extended into the government of the state, which was not necessarily designed to expand the sovereign's wealth, but rather to establish security, both inside and outside of the state. Gupta argues "that we may be witnessing the birth of a new regime of discipline in which governmentality is unhitched from the nation-state to be instituted anew on a global scale" (321). He further states that global agreements enact a new form of governance, which increasingly regulates relationships between people and things also on a global scale. Moreover, the global character of governmentality cannot be territorially defined and is related to reorganizations of capital over the last twenty-five years (321).

To this effect, I would argue that transnational development and environmental NGOs and their private affiliates gain increasing policy-making influence on development practices throughout the Third World. Through the making of experts and expert knowledge, backed by wealthy and/or powerful donors such as corporations or large public institutions, transnational environmental NGOs co-opt the language of the Convention on Biological Diversity in order to evoke a very specific kind of "environmental consciousness" that may ultimately advance corporate agendas. Moreover, NGOs are viewed as policy makers and fair players at a moment when many have commented (e.g., Brown and Korten 1989; Fowler and James 1995) that the state has failed in its role to make appropriate development policies. But the answer to the failures of the state (particularly the Third-World nation-state) that are put forth lies in the view that NGOs are promoters of civil society, in which good works are favored over and above politicization and also in which "(t)he word 'power' is startlingly absent from most discussions of NGOs" (Stewart 1997:15). Also absent are the histories of trade and structural adjustment policies, for example, which have economically paralyzed many Third-World nation-states. The logic of state failure underlies how primary agency of the state has shifted to new policy-making formations often driven and administered by NGOs and the political and economic alliances that they make.

The remainder of this paper addresses an NGO-industry benefit-sharing practice, in order to demonstrate the complex relationships that NGOs have to, primarily, private industry. This practice continues to generate conflicts and struggles between local communities and global interests.

Shaman Botanicals and the Healing Forest Conservancy

I look to the activities of Shaman Pharmaceuticals, now Shaman Botanicals and its NGO, the Healing Forest Conservancy, as examples of current benefit-sharing practices. Shaman Botanicals was founded ten years ago as a pharmaceutical company at first. By the spring of 1999, Shaman Pharmaceuticals folded after its inability to fund a second Phase III clinical trial, requested by the U.S. Food and Drug Administration, and erected its subsidiary, Shaman Botanicals. Shaman's sole methodological practice for identifying new botanical sources is to consult healers on plant medicinals in rainforest regions, a practice otherwise known as ethnobotanical bioprospecting. The company created a non-governmental organization, The Healing Forest Conservancy, which has designed programs to compensate indigenous people for their knowledge sharing with Shaman Botanicals. Shaman's practice of instituting compensation came prior to the CBD and in fact was never an industry standard. Not surprisingly, Shaman's benefit-sharing plans were originally met with great enthusiasm among investors, industry members, and environmentalists alike.⁹

The following is an excerpt from the Healing Forest Conservancy's informational packet

called "Purpose and Priorities." It is significant because in characterizing rainforest problems, it lays out a plan for the role of industry, indigenous peoples, and the state:

Forest peoples lose their homelands and humanity loses generations of their traditional knowledge on the use of forest resources. . . . A vicious cycle of poverty, destructive population and consumption practices, poor land use and land tenure policies and inappropriate development has doubled the rate of tropical deforestation in the past decade. Yet tropical forests represent laboratories of biological resources critical to humanity, particularly medicinal plants. . . . Similarly, peoples who live in or near tropical forests represent libraries of information on the use of plants for medicinal purposes. Accumulated over millennia, traditional knowledge is as rich and diverse as tropical forests' biological resources, and it is equally as threatened. Since 1900, due to outside encroachment and loss of habitat, extinction has been the fate of an average of one indigenous culture each year in the Amazon region alone (Healing Forest Conservancy, no date: 1).

There are a number of critical ways to think about this excerpt. Three crucial points stand out: 1) the fact that certain industries, such as logging, oil, industrial agriculture, or cattle ranching, are not named as contributors to rainforest destruction; 2) indigenous peoples are seen as "libraries of information," that is, as resources, for prospecting and industrial drug development endeavors; and 3) "Third-World" nation-states are often to blame for poor management practices while international political and economic constraints, such as structural adjustment policies, the upkeep of export economies, and chronic debt and loan responsibilities, are erased.

While I am wary of what the Healing Forest Conservancy outlines as reasons for rainforest loss, I do not doubt the NGO's good intentions. The reasons that the Healing Forest Conservancy gives for rainforest destruction and indigenous disappearance reflect a popular and mainstream discourse that is articulated by many different environmental and development NGOs who advocate conservation measures that are linked to market forces.¹⁰ Similarly, many NGO discussions and practices of benefit sharing do not take into account power differentials between marginalized communities and wealthy transnational corporations (GRAIN 2000). As a result, the "equitable" in benefit sharing is rarely defined and contracting parties are usually nowhere near "equal" in either salaries or living conditions.¹¹ Despite these discourses, which do not account for economic and social contexts, there is a need to focus on the ways that rainforest loss, conservation measures, and the search for drugs are explained via certain discursive strategies. These strategies are related to the notion that the use of market forces will save rainforests and communities living in rainforest areas, and, out of this market force rationale, benefit sharing is the primary mode of compensation in uneven economic environments. It is important to consider the effects that such discursive and practical strategies have on local economies as well as on indigenous and marginalized peoples.

For example, Shaman recently created a marketed botanical product, SB Normal Stool Formula, which is a strong anti-diarrheal agent.¹² Materials for SB Normal Stool Formula were prospected in Ecuador by an ethnobotanical team from the company, which consulted a healer, Elias Gualingua, in a community outside of Quito.¹³ The tree from which the product is derived is called *Croton lechleri* and grows abundantly in the rainforest, crossing nation-state

boundaries and ethnic groups who may or may not use it for similar purposes. According to Katy Moran, its executive director, the Healing Forest Conservancy will compensate a wide range of people: the healer who provided the material and information in the first place and all ethnic groups who use the plant for diarrhea and for other healing purposes as well.¹⁴ As this compensation effort seems like a massive, perhaps impossible, task to accomplish, the Healing Forest Conservancy's benefit-sharing plans include the planting of 300,000 *Croton* trees in the Amazon Basin, workshops on sustainable forestry and economic alternatives, and the creation of agro-forestry education manuals.¹⁵ While these are noble forms of compensation that may or may not reach a great deal of people, they certainly will benefit Shaman's interest in future sustainable harvests of *Croton*.

Michael Dorsey has pointed out that, in the Ecuadorian Oriente, many indigenous groups express ambivalent and even antagonistic reactions to Shaman. He writes that Shaman's presence has prompted a widespread shift in local agricultural practices that heretofore presented unmeasured effects on regional conservation. In early to mid-1998, shortly before Shaman entered economic hard times and was forced to radically restructure itself and more or less abandon its Ecuador operations, it obtained "*Cartas de Compromiso*" ("Promise Letters") from at least eleven community leaders representing more than 178 families to provide latex from *Croton lechleri*. The communities' members, who anticipated fair compensation, turned eagerly to *Croton lechleri* production. As Dorsey points out, Shaman was well aware that it would take some of the communities two to four years before they would see any return from selling latex to the company. Dorsey writes: "It must be noted that the entire time Shaman has been pursuing its 'sustainable development and management of *sangre de drago*' (*Croton lechleri*) field scheme it has also been actively trying to synthesize the active compounds in *sangre de drago* (*Croton lechleri*) to cut its dependency on its local suppliers" (Dorsey 2001:11).

Moreover, Dorsey additionally reports that the actual benefit-sharing packages to these indigenous groups fall below one percent of the company's total expenses, and consultants benefited just as much, if not more so, than indigenous communities (Dorsey 2000). Svarstad's (2000) research on Shaman's activities in Tanzania shows similar findings. She has asserted that Shaman's "community reciprocity" is decided mostly by the company and the Healing Forest Conservancy, which usually serves the company's own interests and not the economic and environmental interests of the local community.

Well after establishing and altering agricultural production among many farming communities in the Ecuadorian Oriente, Shaman folded and lost a great deal of investment funding. The company and its NGO ultimately failed to bolster community development and undermined conservation strategies. This example shows that market-driven rationales for development practices, based upon benefit-sharing paradigms, can result in further uneven development. The potential failure of these strategies—for conservation, community development, or drug development—is not anticipated. And even if they do "succeed," what can local communities ultimately gain when they reap little of the benefits from the company's projects?

Benefit Sharing vs. Rights Recognition

As with nearly all benefit-sharing cases, Shaman and the Healing Forest Conservancy's benefit-sharing plans do not include patent rights and entitlement to significant profits as options.¹⁶ Even if patent rights were an option, there would be many problems to consider,

beginning with whom to list as individual authors and inventors if many different people have used a medicinal therapy for generations. Additionally, because patent law only recognizes authorship through individual achievement (including corporations given their personhood status), communities, groups of farmers, or indigenous people who cross nation-state boundaries have extreme difficulty in getting rights recognition.

Theoretically, patent law is meant to reward individual inventors with monopoly use that is made available to the wider “community” or public. Requirements for patents include that inventions must be novel and innovative which is determined by an examination of current public knowledge or what is understood to be “state of the art.” The European Patent Office notes:

To find a substance freely occurring in nature is . . . mere discovery and therefore unpatentable. However, if a substance found in nature has first to be isolated from its surroundings and a process for obtaining it developed, that process is patentable. Moreover, if the substance can be properly characterised either by its structure, by the process by which it is obtained, or by other parameters and it is ‘new’ in the sense of having no previously recognised existence, then the substance per se may be patentable. (Graeme n.d.: 243).

These rules enabled Shaman to do the following: When the company initially screened *Croton* for bio-activity against diarrhea, it detected the active compound and characterized its molecular structure. Because the company could describe the compound’s utility and also because the molecular structure was novel, meaning it had never been characterized (and published), it was eligible for patenting, and hence, monopoly use-rights.¹⁷ These loose definitions of novelty and utility legitimate industrial forms of high technology over other forms of informational knowledge. Indeed, other forms of (communal) knowledge, such as generations of human trial and error, are not at all well conceptualized in patent law and the new trade regimes, leaving benefit-sharing practices the primary alternative for resource rights. As one indigenous leader in the Andean region commented to me: “Entering a country and extracting natural resources, patenting them, and offering benefits, is like a thief entering your home, getting caught, but pronouncing: ‘I can provide you some benefits from the loot I just took from you.’”

A key assumption underlies how certain knowledges are recognized as legitimate: the persistence of an old concept—“discovery”—which harkens to John Locke’s (1947) argument that man combines “his” own labor with nature to create and obtain property. In Locke’s well-known acorns and apples examples, labor is objectified and therefore man can claim natural rights to private property and his right to exclude others from that property. Central for Locke is control over and use of land. By assuming that production use constitutes property, Locke provides arguments of endorsing common lands and subjecting them to rigorous production management, such as agriculture, enclosure, and other kinds of activities that involve human labor. Therefore, private property is favored over and above the discourse of “waste,” which is used to imagine an epistemologically empty space, or *terra nullius*. Locke furthered this argument by asserting that, because Native Americans do not mix labor and nature in the way that he outlined it, they do not have the same entitlement within his private property schema. Rosalind Petchesky points out that such a perspective on property “tends to reify the idea of property itself, to encase it in a prevailing economism and nullify its tremendous cultural

variation" (1995:388).

"Discovery" is a key conceptual device that makes sense of the current rules governing the ownership, knowledge, and circulation of biological material within the global economy. Importantly, "discovery," particularly scientific discovery, distinguishes and legally legitimizes a very particular form of individual labor over and above communal intellectual labor and knowledge. This is especially true of published scientific "discoveries," available to scientists and patent offices alike, where what is published and circulated among scientists and patent offices is solely what counts as circulating in the realm of knowledge. There exists no room for oral descriptions of plant medicinals and their uses, which therefore are often out of the realm of patent office scrutiny. Thus, Lockian notions of property continue to pervade in global trade and intellectual property regimes in which communal knowledge is excluded from the possibility of rights recognition. In effect, proliferating NGOs broker benefit-sharing discourses and practices as the primary option available to local communities and others marginalized in the global economy, while simultaneously foreclosing rights recognition.

A discussion of either rights recognition or benefit sharing presupposes the numerous ways marginalized communities can be absorbed into the Western pharmaceutical and botanical transnational economy, an absorption that differs in sentiment and practice across regions. In fact, the CBD created the space to allow a simultaneous connection between the conservation of biodiversity, the growth of the biotech industry, and the gradual expansion of capitalist markets. This spurred a profound "instrument-effect" of the CBD in general and practices of benefit sharing in particular. Foucault's conception of the instrument-effect pointed to the exercises of power that are served through the endless failures of the prison system. James Ferguson (1994) uses the same term to describe the failure of development projects in Lesotho, in which a certain "logic transcends the questions of planners' intentions" (255). When actors negotiated on behalf of Third-World interests, it was not foreseeable how benefit sharing, administered by NGOs, would enter an existing web of social and institutional relations and current asymmetries in intellectual property and trade laws. However, instead of rights recognition, "more equitable" partnerships between minority peoples within different states and industry was the obvious route for those who have little access to capital and technology. Thus, benefit sharing remained the only option upon which global actors could begin to envision, albeit differently, equitability. As a result, NGOs are the leading force in creating a new vision of biodiversity conservation and local community development.

Conclusion

The practice of benefit sharing arises from the coevolution of patent law, trade regimes, and new development paradigms which assert that market driven development is the best option for both community development and biodiversity conservation. In this context, NGOs as benefit-sharing administrators have been crucial to the formation of global policies that address development, conservation, and even poverty alleviation. NGOs play significant roles in contributing to global agreements such as the CBD, and their benefit-sharing packages, such as those of Shaman and the Healing Forest Conservancy, provide important inputs to and examples of the new forms of governance that global agreements represent. Namely, the CBD and TRIPs are reorganizing, in very complicated ways, how the search for drugs, biodiversity conservation, intellectual property protection, and community development are to be regulated on a global scale. Thus, in determining global policy-making, less agency resides in the hands

of the state, and more agency remains with NGOs and their wealthy backers (such as foundations, the World Bank, etc.), leaving governmentality territorially undefined and matching the deterritorialization of capital and its movement. Ultimately, NGO–industry pairings gain increasing policy-making authority in biodiversity and bioprospecting circles, and less room is available for public debate, or for the implementation of alternative viewpoints and actions that resist market-force based development rationales. And despite the development failures of benefit sharing, such as those involving Shaman and the Healing Forest Conservancy, market based development paradigms are persistently hailed as the best options and the new way forward for marginalized communities and private industrial organizations alike.

Notes

I wish to thank the following for very helpful editorial suggestions and feedback: Shannon Leonard, Jae Chung, Tamara Jones, Kaushik Sunder Rajan, and James D. Faubion. I additionally thank anonymous reviewers for their constructive suggestions. I also acknowledge Michael Dorsey for permitting me to use unpublished material from recent fieldwork. Any mistakes and inaccuracies remain my own. I gratefully acknowledge the Department of Anthropology, Rice University for funding assistance and the American Anthropology Association for the opportunity to present an earlier version of this paper at the November 1999 meetings in Chicago. Many thanks go to Lamia Karim and Lauren Leve for their editorial assistance and direction.

1. 447 US 303, 65 L Ed 2nd 144 100 S Court 2204 (1980), 152.
2. The basic criteria for patenting includes novelty, utility, and non-obviousness.
3. Genentech Inc. was the first major venture capital biotechnology firm to go public the very same year that *Diamond v. Chakrabarty* was decided. In 1982, Genentech's first recombinant DNA drug, human insulin, was approved by the FDA.
4. Earth Summit (1992), Article 1.
5. The CBD's most important aspects of benefit sharing are covered in Article 8 (*in situ* conservation), Article 9 (*ex situ* conservation), Article 15 (access to genetic resources), Article 16 (access to and transfer of technology), Article 18 (technical and scientific cooperation), Article 19 (handling of biotechnology and distribution of its effects). Concrete examples of benefit sharing include monetary compensation, sustainable development projects, technology transfer, and even co-authorship of scientific papers.
6. The Convention on Biological Diversity came into being out of a long crisis that can be traced back to at least the colonial era in which it became difficult to remove organisms and seeds from territories or monopoly holders (see especially Juma 1989). In the 1960s and 1970s, "the link between plant production and the use of genetic diversity had been fundamentally changed around the world" (Flitner 1998:150) and "(f)ollowing the industrial paradigm, agricultural modernization was perhaps the most important building block of the US-led global development project" (Flitner 1998:150). What followed was the burgeoning of the seed industry and a dilemma over use rights between farmers world-

wide and the industry's ownership rights to seeds and other biological material. Eventually an international agreement, Union internationale pour la Protection des Obtentions Végétales (UPOV, 1961), granted full rights to plant breeders that launched the beginning of the "seed wars," which meant that intellectual property rights as well as the notion "heritage of mankind" would play out on the global scene. Since then a number of agreements including the FAO Undertaking (1983), which created very weak provisions for farmers rights, and the TRIPs agreement negotiated at the 1992 Uruguay Round of GATT (General Agreement on Tariffs and Trade) further exacerbated these conflicts and inequities by bringing them more tightly into the realm of patent law and new trade regimes. The CBD is the first strong agreement that attempted to rectify a long period of what has been considered piracy by many Third-World actors and interests.

7. I would argue that one reason why individuals were privileged over community information and knowledge is due to the fixation or the romance of the author in intellectual property regimes (Boyle 1996). Boyle puts it well: "(individual, transformative authorship) has a clear element of existential truth—our experience of authors, inventors, and artists who do transform their fields and our world, together with the belief...that the ability to remake the conditions of individual life and collective existence is to be cherished and rewarded."

A *sui generis* system is described and allowed in the TRIPs agreement. It is an alternative to the patent system. Within global biodiversity networks there are many workers attempting to conceptualize how an alternative system could recognize and allow the protection of community or communally-based knowledge. The Organization of African Unity has conceptualized such a possibility (Model Legislation) and the Peruvian Patent Office, which actually works on behalf of indigenous communities, also has been conceptualizing how such a system could function in a global patent regime.

8. There are two main biological prospecting methodologies. The first is called random screening, in which plant collectors, usually contracted by well-financed public and private institutions, collect samples from rainforest or other ecosystems and screen for potential bio-activity, that is, drug potential. The second is ethnobotanical methods. This method employs the consultation of medicinal healers. It is sometimes favored over random screening because ethnobotanists recognize that healers have used medicinal materials successfully after many years or generations of trial and error. In effect, the claim is that it cuts down on costs of hundreds, if not thousands, of blind screens and targeting for "magic bullets" is more focused and therefore more efficient.
9. See, e.g., Cohen 1994; Grindley 1993; Hamilton 1993.
10. Other more well-known NGOs include Conservation International, Merck-InBio, and Rainforest Alliance.
11. For example, at the latest round of CBD negotiations in May of 2000 in Nairobi, Kenya, the meetings on access to genetic resources (usually meaning access by a northern company to a region rich in biodiversity) saw a great deal of stalling, particularly on the issues of creating contractual agreements (namely material transfer agreements and prior informed consent) for every biological material that a wealthy country may want to obtain. Peru, in particular, questioned the countries present that have large biotech indus-

tries, such as the European community, Argentina, and Australia as to what the fundamental agenda was for access and benefit sharing. "Are we here to acknowledge that it is no longer acceptable for northern countries to steal genetic resources from the South?" This was asked repeatedly in the working group meeting and was continually met with silence.

12. SB Normal Stool Formula was originally tested as a pharmaceutical called SP-303/Provir. It failed in the Phase III FDA clinical trials not because it was determined to be unsafe but because dosage could not be determined. At this point, Shaman exhausted its funds for trial, received primarily from Merck, and dissolved the company. Shaman Pharmaceuticals then activated its subsidiary, Shaman Botanicals, and transferred SP-303 into immediate production of SB Normal, now as a marketed botanical product.
13. This made headline news in the *Wall Street Journal* (Burton 1994).
14. Moran also presented this plan at two conferences: "International Conference on Biotechnology in the Global Economy," Center for International Development, Harvard University, September 2-3, 1999; "Ethnomedicine and Drug Discovery," Silver Spring, Maryland, November 2-5, 1999. Moreover, it is outlined on Shaman's website: www.shamanbotanicals.com/sustain.htm.
15. www.shamanbotanicals.com/sustain.htm
16. Indeed the CBD also does not suggest patents and profits as options. There are numerous case studies performed since the signing of the CBD which serve as examples as to how to (not) go about appropriate benefit-sharing practices. Case studies can be found on the Convention's website: www.biodiv.org.
17. Shaman's patent numbers for Croton are US05494661 and US05211944.

References cited

- Boyle, James
1996 *Shamans, Software and Spleens: Law and the Construction of the Information Society*. Cambridge, MA: Harvard University Press.
- Brown, David and David Korten
1995 "The Role of Voluntary Organizations in Development." In *The World Bank*. Copenhagen: Institute for Development Research.
- Burton, Thomas M.
1994 "Drug Company Looks to Witch Doctors to Conjure Products." *The Wall Street Journal* (July 7): A1.
- Cohen, Jonathan H. and Catherine H. Tokheim
1994 "Shaman Pharmaceuticals: Ethnobotany, Biodiversity and Drug Discovery." Investment Thesis from Smith-Barney, now Solomon-Smith-Barney, an investment banking company. (June 28): 8.
- Dorsey, Michael K.
Forthcoming "Political Ecology of Bioprospecting in Amazonian Ecuador: History,

Political Economy and Knowledge.” In *Contested Nature: Power, Protected Areas and the Dispossessed, Promoting International Biodiversity Conservation with Social Justice in the 21st Century*. Brechin et al., eds. New York: SUNY Press.

Earth Summit

1992 *Text on the Convention on Biological Diversity. United Nations Conference on Environment and Development*. Rio de Janeiro, Brazil: 3-14 June.
<http://www.biodiv.org/convention/articles.asp>

Ekpere, Johnson A.

n.d. “The Organization of African Unity Initiative and the African Common Position on TRIPs.” Lagos, Nigeria: OAU/Scientific, Technical Research Commission.

2000 “The OAU’s Model Law: The Protection of the Rights of Local Communities, Farmers and Breeders, and for the Regulation of Access to Biological Resources—An Explanatory Booklet.” Lagos, Nigeria: OAU/Scientific, Technical Research Commission.

Ferguson, James

1990 *The Anti-Politics Machine: “Development,” Depoliticization and Bureaucratic Power in Lesotho*. Cambridge: Cambridge University Press.

Flitner, Michael

1998 “Biodiversity: Of Local Commons and Global Commodities.” In *Privatizing Nature: Political Struggles for the Global Commons*. Michael Goldman, ed. New Brunswick, N.J.: Rutgers University Press.

Foucault, Michel

1991 “Governmentality.” In *The Foucault Effect: Studies in Governmentality*. Graham Bruchell, et al., eds. Chicago: University of Chicago Press.

Food and Agriculture Organization

1983 *The International Undertaking of Plant Genetic Resources for Food and Agriculture*. Rome: FAO Conference.
<http://ftp.fao.org/waicent/pub/cgrfa8/iu/iutextE.pdf>.

Fowler, A. and R. James

1995 *The Role of Southern NGOs in Development Cooperation*. Oxford: Intrac.

Graeme, Laurie T.

n.d. “Biotechnology and Intellectual Property: A Marriage of Inconvenience?” in *Contemporary Issues in Law, Medicine and Ethics*. Sheila A. M. McLean, ed. Dartmouth: Aldershot/Brookfield USA.

GRAIN and the GAIA Foundation

2000 “Biodiversity for Sale: Dismantling the Hype About Benefit Sharing.” *Global Trade and Biodiversity in Conflict*. Issue 4, April 2000.
www.grain.org/publications/stbc/issue4.htm

- Grindley, June
1993 "The Natural Approach to Pharmaceuticals." *Scrip Magazine* (December):32-33.
- Grubb, Michael, et al.
1993 *The Earth Summit Agreements: A Guide and Assessments*. London: Earthscan Publications Ltd.
- Gupta, Akhil
1998 *Post-Colonial Developments: Agriculture in the Making of Modern India*. Durham: Duke University Press.
- Hamilton, Joan
1993 "The Medicine Man Will See You Now: Shaman Pharmaceuticals Inc.'s Product-Development Process." *Business Week* 3307 (March 1):93.
- Healing Forest Conservancy
n. d. "Purpose and Priorities." Washington DC, informational brochure.
- Juma, Calestous
1989 *The Gene Hunters: Biotechnology and the Scramble for Seeds*. African Centre for Technology Studies, Research Series No. 1. London: Zed Books; Princeton, NJ: Princeton University Press.
- Locke, John
1947 *Two Treatises of Government*. Thomas I. Cook, ed. New York: Hafner Publishing Company.
- Organization of African Unity
n.d. Scientific, Technical and Research Commission. Model Legislation. Draft
- Petchesky, Rosalind Pollack
1995 "The Body as Property: A Feminist Re-vision." In *Conceiving the New World Order: The Global Politics of Reproduction*. Faye D. Ginsburg and Rayna Rapp, eds. Berkeley: University of California Press.
- Shiva, Vandana
1999 *Biopiracy*. London: Zed Books.
- Shapiro, Martin
1993 "Globalization of Law." *Indiana Journal of Global and Legal Studies* 1 (1).
- Stewart, Sheelagh
1997 "Happy Ever After in the Marketplace: Non-governmental Organizations and Uncivil Society." *Review of African Political Economy* 71:11-34.
- Svarstad, Hanne
2000 "Local Interests and Local Interventionsw: Shaman Pharmaceuticals in Tanzania." In *Responding to Bioprospecting: From Biodiversity in the South to Medicines in the North*. Hanne Svarstad and Shivchnr S. Dhillion, eds. Oslo, Norway: Spartacus Forlag AS.

UPOV (Union for the Protection of New Varieties of Plants)

- 1961 *International Convention for the Protection of New Varieties of Plants.*
Geneva, Switzerland. December 1.
<http://www.upov.org/eng/convntns/index.htm>.

WTA/GATT (World Trade Organization/General Agreement on Tariffs and Trade)

- 1994 Agreement of Trade-Related Aspects of Intellectual Property Rights,
including trade in Counterfeit goods.