

Contested Ownership: TRIPs, CBD, and Implications for Southern African Biodiversity

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ABSTRACT

The increasing importance of biodiversity sparked by the emergence of modern biotechnology has ignited tensions between transnational corporations and indigenous communities. Conflicting international instruments governing access to and control over biodiversity exacerbate disputes over control of local bioresources and knowledge. While there is some overlap between the Trade-Related Intellectual Property Rights (TRIPs) Agreement and the Convention on Biological Diversity (CBD), the agreements provide conflicting policy prescriptions regarding trade in biodiversity. The tension derives from the fundamentally different ontologies on which the agreements are based. In Southern Africa, governments are attempting to reconcile the agreements through national frameworks based on the OAU/AU Model Legislation. The success of such efforts will depend on the ability of the state to guarantee the rights of indigenous communities to control local biodiversity and the participation of such communities in the development of national legislation. In the end, such efforts depend on the rearticulation of the relationship between public and private spheres.

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Introduction

The emergence of modern biotechnology has generated extensive interest in and competition over genetic resources. Indeed, as the raw materials necessary for the promised “Biotech Revolution,” genetic resources have assumed increasing economic, scientific, and commercial value to a wide range of groups. Traditional knowledge, historically dismissed as “primitive,” “unscientific,” and “uninformed,” is attracting increased attention as Western scientists and corporations turn to local communities for the genetic resources fueling technical innovations in agriculture and health care.

But renewed interest in plant and animal genomes has reignited tensions between local communities, national governments, and transnational corporations. Corporations, dependent on the genetic resources of the Third World, home to an estimated 90 percent of the Earth’s biodiversity, have come into competition with governments and indigenous communities over access to plants, animals, and knowledge; and debates over ownership have assumed center stage (UNDP 2001). At the same time, communities and governments in the Third World have been suspicious of corporate interest in genetic resources.

These tensions are reflected in international agreements governing control over biodiversity and indigenous knowledge, particularly the Convention on Biological Diversity (CBD) and the Trade-Related Intellectual Property Rights (TRIPs) Agreement. This paper explores these tensions and contradictions. While some have rejected the notion that TRIPs and CBD are at odds, arguing that there is no contradiction because TRIPs deals with international trade while the CBD governs environmental protection, such a position obfuscates the overlap and contradiction between the two instruments. Some areas, such as trade in pharmaceuticals developed from the traditional practices of indigenous communities or seed developed from the lines of local farmers, are governed by both instruments. In such instances, as well as in efforts to protect local resources, indigenous communities and their knowledge from exploitation at the hands of transnational corporations, understanding the areas of conflict between the two agreements is of central importance. To that end, this paper begins by briefly outlining the fundamental tenants of the two agreements, highlighting the essential differences between them and problematizing the theoretical frameworks that underpin them. It then explores the implications of the agreements for African biodiversity, drawing on the Southern African experience.¹ Specifically, it examines questions related to the rights

¹ For my purposes, Southern Africa is defined as including all member states of the Southern African Development Community (SADC), namely, Angola, Botswana, the

of farmers, breeders and the community in the context of contradictory international agreements. As all Southern African Development Community (SADC) members (with the exception of Seychelles) are signatories to both the WTO's TRIPs Agreement and the CBD, the contradictory prescriptions mandated by the agreements will play out in each of the countries (WIPO 2001). Attempts to reconcile the agreements, including the proposed OAU/AU (*Sui Generis*) Model Legislation and national efforts to adopt the OAU framework in the SADC member states are thus explored in the final section of the paper.

International Agreements

Prior to the adoption of the Convention on Biological Diversity at the Earth Summit in Rio de Janeiro in 1992, access to biological resources was governed by the "Common Heritage of Mankind" doctrine. Under this framework, codified in the FAO's International Undertaking on Plant Genetic Resources (1983, 1989), biodiversity was considered the property of humanity in total, and Western corporations and researchers generally had free and unfettered access to such materials in the Third World.

However, the unequal status afforded public biodiversity and private elite lines under the FAO's framework facilitated disputes between developed and developing countries. Developing countries argued that it was unfair to characterize their contribution to genetic diversity as common property, while the seed lines developed by Western corporations were protected through plant breeders' rights and other forms of intellectual property (IP). Attempts by the Third World to push for free access to "elite lines" developed by private breeders in the West under the common heritage doctrine were rebuked by corporations and Western governments, who argued that their investments in research and development of new seed lines merited reward. They believed that, unlike the raw biodiversity of the South, their research involved considerable time and financial risk. If forced to offer their proprietary seed lines freely to the developing world, there would be no incentive for innovation and they would be unable to recover investment costs.²

Democratic Republic of the Congo, Lesotho, Malawi, Mauritius, Mozambique, Namibia, Seychelles, South Africa, Swaziland, Tanzania, Zambia, and Zimbabwe.

² Of course, such an argument is based on a problematic understanding of innovation, which is discussed below. Further, it ignores the role played by publicly-funded research in facilitating innovation.

At the same time, the expansion of genetic engineering techniques, particularly recombinant DNA (rDNA),³ facilitated greater commercial interest in biodiversity and genetic resources. Unlike traditional breeding, rDNA allows the combination of genetic material from different species. The technique, thus, opened countless new avenues for research and spurred greater commercial interest in biotechnology. Combined with the expansion of intellectual property rights (IPRs) afforded to new biotechnological innovations, corporate researchers were increasingly interested in the biodiversity and indigenous knowledge (IK) of the developing world as the raw material on which future innovation would be based.

Indeed, there were significant benefits for employing IK in research endeavors. Drawing on the knowledge and experience of local communities, corporate researchers could increase success ratios in trials from one in 10,000 samples to one in two. Further, the use of traditional knowledge could increase the efficiency in screening plants for medicinal properties by more than 400 percent (Prakash 1999). The higher success ratios obtained by employing IK in preliminary research translated directly into reduced research costs and shorter development times for new products, which collectively meant greater profitability. The profitability of using indigenous knowledge in research is directly evidenced by the US \$32 billion annual market for drugs based on traditional medicines, and, according to one estimate, if the US was forced to pay royalties on germplasm flows from the South, it would owe US \$302 million for agricultural products and US \$5.1 billion for pharmaceuticals (World Bank 2000; RAFI 1991).

While the results of corporate research are increasingly protected through strong IPRs, particularly in the US, the rewards afforded researchers and corporations have rarely flowed back into the community whose knowledge was the original source of the innovation. As a result, critiques of the inequitable sharing of the benefits of biodiversity and biotechnology have become increasingly widespread. Pat Mooney (1988), for example, has argued that, "The perception that intellectual property is only recognizable when produced in laboratories by men in lab coats is fundamentally a racist view of scientific development" (p. 1). Similarly, according to Barry McCarter (2001), General Manager of Seed Co Zimbabwe, "We have historically undervalued traditional plant breeding techniques. Now we are overvaluing one gene because it comes from a laboratory" (personal interview). The source of the dichotomy is clear: intellectual property protections are afforded only to

³ Recombinant DNA is the process by which genetic information from one organism is inserted into another organism, and was first completed in 1973. For a more detailed discussion, see Grace (1997).

individuals (or increasingly to corporations as legal individuals) and only for commercial innovation, not communities and their traditions, culture, or knowledge. Or, as Joseph Made (2000), Minister of Lands, Agriculture and Resettlement for the Government of Zimbabwe remarked, “Rights are recognizable only when they generate profits and are capable of industrial application. This excludes all sectors of society, and that is the majority, who produce outside the industrial codes of production and often do so for the public good” (p. 3). This inequality of protection is most clearly embodied in the TRIPs Agreement.

Trade Related Intellectual Property Rights

The Trade Related Intellectual Property Rights Agreement was the first of its kind—an international agreement governing the protection of intellectual property. Historically patents had been governed solely by national law. While the World Intellectual Property Organization (WIPO)⁴ coordinated divergent national legislations and mandated national treatment,⁵ the exact nature of the rights afforded under patent legislation, including patent requirements, restrictions, and rights, were left to national jurisdiction. Consequently, there was a great deal of disparity between countries in terms of protections extended. While the developed countries usually afforded strong intellectual property protections, the developing world frequently afforded only circumscribed protections. In Southern Africa, new plant varieties have generally been protected with plant breeders’ certificates, which afford more circumscribed protections than the patents issued in the West. Similarly, patent rights in pharmaceuticals have been limited, and governments have used licensing and working requirements to attempt to provide medicines to their populations—the most dramatic example of which has been South Africa’s recent victory over pharmaceutical manufacturers in the provision of AIDS drugs. National legislation thus varies

⁴ Operating under the auspices of the United Nations, the World Intellectual Property Organization (WIPO) administers international treaties covering intellectual property, including the Paris Convention on the Protection of Intellectual Property (1883), the Berne Convention for the Protection of Literary and Artistic Works (1886), the Rome Convention for the Protection of Performers, Producers of Phonograms and Broadcasting Organizations (1961), and the Treaty on Intellectual Property in respect of Integrated Circuits (also known as the Washington Treaty) (1989).

⁵ The principle of national treatment with regards to intellectual property is spelled out in Article 2 of the Paris Convention on the Protection of Industrial Property (1883), which mandates that nationals of any signatory to the convention should enjoy the same protection and remedies against infringement as nationals of the host country. In essence, it ensures that foreign and domestic patent holders receive the same protections and rights under national law, but does not specify the scope or nature of protections extended.

Table 1
Comparison of National Patent Protection

Issue Area	Post-TRIPs Protection (Developed Countries)	Pre-TRIPs Protection (Developing Countries)
Exclusions from patentability	Patents on all innovations regardless of field without discrimination. Patents or <i>sui generis</i> protection on plants. Exclusions for national health and public morality are maintained.	Agricultural and horticultural methods, diagnostics, medicines and other treatments for humans animals and plants, food and food products, chemical processes, and microorganisms frequently excluded from protection. Also exclusions for national health and welfare, and public morality.
Product vs. process patents	Mandatory patent protection for both processes and products (Article 27.1).	Only patents on processes, not products, to allow for development through imitation.
Compulsory licensing	Importation meets working requirements. Compulsory licensing only in case of “national emergency or other circumstances of extreme urgency” (Article 31).	Patents must be worked locally—importation does not satisfy working requirements.
Terms of protection	Twenty years from date of filing.	Between 10 and 20 years.

significantly, especially in terms of exclusions from patentability, rights conferred, compulsory licensing, and terms of protection (see Table 1).

Indeed, divergences between developed and developing countries in terms of patent protection were historically common. Hoping to benefit from technological advances in more developed countries, developing countries usually afforded only very limited protections, frequently emphasizing local working requirements and compulsory licensing. According to the US Office of Technology Assessment,

There have been political tensions between nations whose role as producers of intellectual property allowed them greater access to such products, and nations that imported technology products, and had only limited access to them. *When the United States was still a relatively young and developing country, for example, it refused to respect international intellectual property rights on the grounds that it was freely entitled to foreign works to further its social and economic development [emphasis added] (US OTA 1986: 228).*

Development of intellectual property protections in other countries followed similar patterns, and weak IP protection was frequently used as a developmental tool.⁶ Until recently, many OECD countries did not provide patent protection for many innovations. Chemicals were not considered patentable material in Germany until 1967, Japan in 1976, and Switzerland in 1978. Similarly, Germany and France refused to extend patents on pharmaceuticals until 1967, and Italy until 1979 (Raghavan 1990: 123).

Even in the United States, patent protection for biotechnological innovations was generally weak until the 1980s. Perhaps the most important element in the expansion of intellectual property rights in the US was the Supreme Court's decision in *Diamond v. Chakrabarty* (1980), in which the court upheld by a 5 to 4 decision Chakrabarty's right to patent a micro-organism engineered to consume oil.⁷ Writing for the majority, Chief Justice Warren Burger argued that the essence of the patent code was that "ingenuity should receive a liberal encouragement." Citing the 1930 Plant Patent Act, Burger argued that Congress had "recognized that the relevant distinction was not between living and inanimate things, but between products of nature, whether living or not, and human made invention" (*Diamond v. Chakrabarty* 1980). Chakrabarty's micro-organism was, in the opinion of the court, not a product of nature and was, therefore, subject to patent protection.⁸

⁶Weak IP protection is frequently cited as a significant barrier to technology transfer (Taylor 1994; Sherwood 1990). Such a linkage, while widely accepted, is hardly uncontested. Helpman (1993), for example, argues that the South is unlikely to reap any significant reward for stronger IP protection, but would instead forfeit the imitation-cum-innovation development path. Brenner (1998) and Richardson and Gaisford (1996) argue that stronger IP protection is likely to have mixed results for developing countries, increasing development through technology transfer for some countries and in some fields, while hindering development elsewhere.

⁷In 1972, Ananda Chakrabarty, a biochemist at General Electric, filed for patent protection on bacterium engineered to consume oil. Chakrabarty's application was rejected based on the product of nature doctrine, which held that while processes to extract what is found in nature may be protected under intellectual property rights, the object of discovery (i.e., what is found in nature) is not. Chakrabarty appealed the decision through the US Patent Office and court system until he reached the US Supreme Court in 1979.

⁸The decision to extend patents to life forms, traditionally forbidden under the product of nature doctrine, was expanded in several cases heard by the US Patent Board of Appeals over the next few years, until 1987, when the US Commissioner of Patents issued notice that the US Patent and Trademark Office would consider non-naturally occurring multicellular living organisms, including animals, to be patentable subject matter. The memorandum, however, specifically excluded patents on human beings, citing constitutional restrictions on property rights over human beings (US PTO 1987).

Not surprisingly, the US decision to open patents on plants and animals encouraged huge increases in research and development expenditures and opened the gates to a flood of new patent applications. In agriculture, the number of patents and similar protections issued increased from 251 in 1980 to 805 in 1997. Similarly, pharmaceutical research increased from just under US \$2 billion in 1980 to US \$25.7 billion in 2000. Between 1986 and 1996 alone, the number of patents issued by the US Patent and Trademark Office for biotechnological innovations increased from 1,547 to 4,844 (US PTO 1996). Combined with the technological innovations taking place in the field of molecular biology, the expansion of intellectual property rights thus opened the way for greater commercialization of biotechnology (Zerbe 2002).

While protections in the United States were being extended to encourage greater investment in and commercialization of biotechnology, much of the Third World continued to preclude patents on life. Western-based transnational corporations, particularly those involved in biotechnology and computers/information technology, believed that patents were essential to profitability. They argued that US industry was losing between US \$43 and \$61 billion annually as a result of weak IP protection worldwide⁹ (Saylor and Beton 1996). As a result, the biotech industry pressured the US government to push for stronger intellectual property protections worldwide. Believing that biotechnology and other high-tech industries represented an important area for American competitive advantage, and in light of the pressure being applied by US pharmaceutical, biotech, and software industries, the US President's Commission on Industrial Competitiveness (1985) concluded that "strengthening of intellectual property rights at home and abroad should be a priority item on the nation's policy agenda" (p. 52).

The forum the US chose was the Uruguay Rounds of GATT negotiations. The selection of GATT rather than WIPO as the international forum for extending intellectual property rights protection was not coincidental. The negotiating structure of WIPO generally precluded the developed countries from using their economic leverage to force concessions from the developing countries. Efforts to expand protections under the Paris Convention through WIPO in the 1980s, for example, failed to achieve results largely because of conflicting positions between developed and developing countries. GATT, on the other hand, offered an ideal forum. Unlike WIPO, where negotiations centered only on the relative

⁹ Such data are, of course, problematic. They assume those who obtained pirated products would have paid the monopoly prices of the patented product in the absence of alternatives. Nevertheless, they serve to demonstrate the importance which US industry attached to a stronger global IP regime.

merit of stronger intellectual property rights, GATT's multi-track negotiations forced countries to balance gains and losses across a number of areas (Purdue 1995). GATT also appealed to developed countries because it afforded stronger enforcement mechanisms than would be available through WIPO¹⁰ (Yusuf 1998).

Opposition to stronger IPRs on the part of the developing world was overcome through a combination of political and economic pressures and rewards. Using such methods, developed countries were able to force concessions on the part of the developing countries, which had traditionally resisted the international expansion of intellectual property rights. More specifically, the US made access to its markets contingent on adequate protection of intellectual property. In 1988, Congress passed the Omnibus Trade Act, which included a provision known as Super 301. Under Super 301, states deemed to provide insufficient IP protection were placed on a watch list. Continued failure to protect intellectual property would be penalized by countervailing tariffs on that country's exports.¹¹ Further, promises by Europe and the US of improved market access conditions on agricultural, tropical, and textile products from the Third World encouraged many developing countries to accede to the demands of the developed countries for stronger IPRs.

In the end, the final agreement largely conformed to the US/Japanese negotiating position.¹² In terms of patent protection, the final text mandated that member states provide 20 year patents for any inventions, whether products or processes, in all fields of technology without discrimination, subject to the normal tests of novelty, inventiveness, and industrial applicability (GATT 1994: Articles 27.1 and 33). Members may exclude certain innovations from protection on the grounds of public morality

¹⁰ Enforcement of WTO rulings is based primarily on the principle of countervailing sanctions. If a country is deemed to have violated WTO policy, the state whose exports are affected by the violation(s) can place countervailing sanctions on the violating country's exports. This, of course, leads to disparities in enforcement power, even if the dispute resolution mechanism is just. Countries with larger markets, such as the US, will be able to use the threat of countervailing sanctions more effectively than smaller countries, such as Zimbabwe or Malawi.

¹¹ Although many countries have been placed on the Super 301 watch list, few countries have been subjected to countervailing sanctions. Usually, the threat of sanctions is sufficient to evoke policy changes or compromises desired by the US (Sell 1995).

¹² During the Uruguay Round, three proposals emerged: the Swiss position, which laid out a set of general set of normative principles to be enforced by GATT; the US/Japanese position, which specified norms of protection to which national IP laws would have to conform; and the EU position, which comprised a set of substantive standards that all contracting parties would observe, but which fell short of seeking harmonization of national legislation (Raghavan 1990).

or medical necessity, and may exclude “plants and animals other than microorganisms as well as essentially biological processes for the production of plants and animals other than non-biological and microbiological processes” (GATT 1994: Article 27). However, countries excluding such areas must “provide for the protection of plant varieties either by patents or by an effective *sui generis* system, or by any combination thereof”¹³ (GATT 1994: Article 27.3.b). In many ways, then, the final TRIPs Agreement represented nothing less than the internationalization of American intellectual property legislation.

Convention on Biological Diversity

Unlike TRIPs, which deals with biodiversity only indirectly, the Convention on Biological Diversity deals specifically with the question of access to genetic resources. Completed in 1993, one year before GATT negotiations were concluded, the CBD formally replaced the “common heritage of mankind” doctrine with national sovereignty as the guiding principle governing control over biodiversity.¹⁴ Aiming to preserve biological diversity and arrest environmental degradation, the Convention created a set of international legal guidelines governing biological resources worldwide. In the broadest terms, it attempts to reconcile Northern control of biotechnology with Southern control over biodiversity, creating a framework under which each could benefit from the other’s endowment.

More concretely, the Convention “[recognizes] the sovereign rights of States over their natural resources,” while simultaneously mandating efforts towards sharing of genetic resources *and* the technologies and innovations resulting from their use (CBD 1993: Article 15). To that end, the CBD stipulates that states share genetic resources under their national sovereignty according to a general framework established by the agreement, subject to specific national legislation. In exchange, Parties to the agreement agree to undertake policy measures, “with the aim of sharing in a fair and equitable way the results of research and development and

¹³ The failure of the TRIPs Agreement to mandate particular forms of intellectual property protection meeting *sui generis* requirements has been called “the only loophole the West forgot to close” in the agreement (Chitsike 2001a). It seems clear that the West viewed the Union for the Protection of New Plant Varieties (UPOV) as its preferred *sui generis* protection, but failed to mandate this in the final text of the TRIPs Agreement.

¹⁴ In practice, the FAO’s International Undertaking had already moved away from the common heritage doctrine by 1989. Conflicts between developing and developed countries over the status of commercial seed varieties led the FAO to resolve that IP protection over commercial seed lines did not violate the spirit of the Undertaking, but that farmers’ rights should be maintained and that access to genetic materials did not necessarily mean free access (Frisvold and Condon 1998).

the benefits arising from the commercial and other utilization of genetic resources with the Contacting Party providing such resources” (CBD 1993: Articles 15.7). Access to the biological resources of the developing world is thus based on the quid pro quo transfer of technology from the developed world, based both on the principle of equity¹⁵ and the recognition that technological development is an essential part of conservation (CBD 1993: Article 16)

Benefit sharing¹⁶ and technology transfer, however, are mediated by Articles 16 and 22, which address the question of intellectual property rights over genetic resources, requiring that any sharing of benefits is predicated on the recognition and protection of proprietary rights over the technology or innovation being shared. Specifically, the CBD states,

In the case of technology subject to patents and other intellectual property rights, such access and transfer shall be provided on terms which recognize and are consistent with the adequate and effective protection of intellectual property rights. (1993: Article 16.2)

Despite the specific provisions embodied in CBD, the agreement does not spell out the exact measures that countries are expected to undertake. Instead, member countries are afforded discretion on how they meet their obligations. To date, the most common form of compliance has been the use of material transfer agreements, or MTAs, between private firms and developing countries. Under an MTA, a private firm is granted access to the genetic resources of a developing country, and in exchange the granting country receives either payments for their resources, promises to future royalties from innovations garnered from their genetic stock, or both. Ideally, MTAs reward the supplier of biodiversity and therefore provide a financial incentive for conservation (Barton and Christensen 1988).

Perhaps the most well-known MTA was signed between Costa Rica and the pharmaceutical giant Merck in 1991.¹⁷ Under the agreement, Costa Rica provides samples of plants and insects to Merck, for which Merck paid Costa Rica a one-time fee of US \$1 million. Merck also agreed to

¹⁵ Article 8j, for example, recognizes the important role played by local communities in preserving biodiversity through their knowledge, innovation, and practices (CBD 1993).

¹⁶ The CBD also contains a number of other provisions that collectively attempt to create a regime of benefit sharing. Article 15.5, for example, stipulates that access to biodiversity be governed by the principle of prior informed consent, or PIC, while Article 12 calls for greater education, training, and research contributing to conservation and sustainable use of biodiversity. Other measures called for under the CBD include public education (Article 13), technical and scientific cooperation (Article 18), and financial support for conservation efforts (Articles 20 and 21).

¹⁷ Indeed, the Costa Rica-Merck MTA provided the inspiration for the benefit sharing regime envisioned under the CBD.

pay an undisclosed royalty (believed to be approximately 5 percent) on all products developed derived from samples supplied by Costa Rica.

While the agreement served as an inspiration for the CBD, it has been criticized on several grounds. First, some have argued that the agreement represents the sale of the national heritage of Costa Rica to a private firm. The NGO Genetic Resources Action International (GRAIN), for example, contends that MTAs and other forms of “benefit sharing simply cannot take place in the context of monopoly rights” which deny current and future generations of their collective, inalienable right to control over local biodiversity (1998: 5). Second, some have decried the secrecy surrounding the agreement, arguing that such secrecy is fundamentally undemocratic. Third, others have argued that the contribution of Costa Rica is undervalued in the agreement. While the exact royalties afforded to Costa Rica under the agreement have not been disclosed, similar agreements elsewhere (with Monsanto in Peru and Bristol-Myers-Squibb in Surinam, for example) have been valued at between 0.25 percent and 3 percent of total sales of products based on the indigenous knowledge of communities. The US, however, has negotiated much larger concessions from Diversa Corporation in exchange for microorganisms from Yellowstone National Park’s hot springs—10 percent of total sales, leading some to argue that such discrepancies reflect not the value of the biodiversity but the relative negotiating power of the contracting parties (RAFI 1997). Finally, the MTA reached in Costa Rica in particular, and the regime of benefit sharing established by the CBD more generally, has been rejected by critics because of its failure to reach local indigenous communities. Such agreements are usually negotiated between the national state and the transnational corporation with little real input from local communities. The benefits of the agreements are frequently diverted to rent-seeking bureaucrats, brokers, local elites and government offices, recreating “the classic colonial practice of buying off some individuals to appropriate collectively held resources” (GRAIN 1998: 5).

As a result, the benefit sharing arrangements once celebrated as a way to promote biodiversity and conservation are now critiqued as legalized theft from the Third World, casting doubt on the potential benefit of such agreements for Southern Africa. Indeed, according to one critic, the current regime governing benefit sharing revives “the colonial type of trade of a Third World commodity, which is then given added value by the North . . . a repeat indeed of the formula which has resulted in the present North-South ‘imbalance’ of trade terms, and pauperized large parts of the Third World” (Nijor 1998: 79).

Table 2
Comparison of TRIPs and CBD Conflicting Issue Areas

Issue Area	TRIPs	CBD
Patentable subject matter	Circumscribes national sovereignty by mandating protection of biological and biotechnological innovations either through patents or <i>sui generis</i> protections.	Principle of national sovereignty implies discretion in the drafting of IPR legislation, including the right to prohibit protections on biological resources.
Benefit sharing	Strong private intellectual property rights with no corresponding rights for communities or farmers, and no mandated benefit sharing.	Benefit sharing mandated, with the exact terms to be negotiated between government and interested parties.
Protection of local knowledge	Narrow understanding of innovation associated only with commercial utility.	Recognizes importance of indigenous knowledge.
Role of the state	Role of the state to protect private intellectual property. No role in maintaining, promoting or protecting biodiversity.	Access to biodiversity governed by principle of prior informed consent, including consultation with local communities.

Adapted from GRAIN (1998).

TRIPs and CBD: Divergent Perspectives or Common Framework?

While TRIPs and CBD both attempt to legislate some form of intellectual property and technology transfer,¹⁸ the agreements appear to provide contradictory prescriptions for the control over genetic resources and biodiversity. According to GRAIN (1998), “the two agreements embody and promote conflicting objectives, systems of rights and obligations” (p. 1). More specifically, in the areas of patentable subject matter, benefit sharing, protection of local knowledge, requirement of prior informed consent, and role of the state, TRIPs and CBD are in direct opposition (see Table 2).

Essentially, the conflict derives from the nature and purposes of the agreements, which cannot be reconciled because they derive from

¹⁸ Articles 16 and 19 of the Convention of Biological Diversity argue IP protection facilitates technology transfer. This position, also underlying the TRIPs framework, has come under attack by critics who argue that strong IPRs prevent development by keeping control over technology in the hands of transnational corporations. The literature on this debate is equally conflicted (*Op. Cit.*, note 6).

fundamentally different ontologies. While the Convention on Biological Diversity recognizes the role of indigenous communities in the development and maintenance of biodiversity, the TRIPs Agreement is based on the assumption of *terra nullius*, a world which, based in the Lockean perspective, only recognizes private property rights in which nature is enclosed from the commons through individual labor.

Locke's belief that property is the just desert of individual labor and exists only when severed from the commons is the foundation of modern private property rights. According to Locke (1986), "Whatsoever [man] removes out of the state that Nature hath provided and left it in, he hath mixed his own labour with it, and joined to it something that is his own, and thereby makes it his property" (p. 20). Private property is therefore created through work, the act of combining nature and human labor, or through the enclosure of the traditional commons.¹⁹ The right to ownership, then, is established by that labor. That which exists in nature by definition cannot be considered property.²⁰

Locke's view of property as the just deserts of labor is, of course, at the heart of modern conceptions of intellectual property rights. The theoretical justification for intellectual property as labor's just desert, however, rests on a particular conception of property and commodity. Alternative frameworks and justifications, however, also exist. Hegel's (1967) belief that property is at the core of the self, that "property is the *embodiment* of personality," provides a supplemental justification for modern intellectual property rights (p. 45). Thus, for Hegel, property and property rights afford the individual a sovereign space vis-à-vis the state, the community, and other individuals in that community, within which the individual is free to develop.

¹⁹ Perhaps the most comprehensive and compelling analysis of the enclosure movement is provided by EP Thompson (1991), who argues that enclosure of the English commons was "a plain enough case of class robbery ... [resulting in] a redefinition of the nature of agrarian property itself" (pp. 237-8). For Thompson, enclosure thus resulted not just in the privatization of lands traditionally held in common, but also in fundamental shifts in both rural society and the nature of rural property (and therefore of rural class relations as well).

²⁰ The exclusion of nature from property can be seen in the product of nature doctrine of the US Patent and Trademark Office, which held (until the mid-1980s) that natural products could not be subject to patent protection. This exception, however, has increasingly been challenged as patents on human cell lines, plant and animal genomes, and human DNA markers have been granted. This challenge has facilitated the current rush to patent genomes makes perfect sense, and has also led to increased criticism. Indeed, some have argued that patents on genes and genomes represent nothing less than an attempt to enclose the genetic commons (Shiva 1997, 2000; Wilson 2001).

Knowledge, however, represents a fundamentally different type of commodity from traditional property. It seldom exhibits either exclusivity²¹ or scarcity, the traditional measures of property. One person's use of knowledge does not prohibit others from benefiting from that knowledge, nor does it reduce the total amount of knowledge available, as would be the case with other types of property. Intellectual property rights, therefore, have a secondary function. In addition to rewarding labor and innovation²² (the Lockean perspective) or providing space for personal development (the Hegelian perspective), intellectual property rights create an artificial scarcity of knowledge, the foundation for a "commodity fiction" without which private property in knowledge would be impossible²³ (Polyani 1957). TRIPs, in short, attempts to introduce and enforce market relations in areas where they previously failed to take root because the nature of the "commodity" (in this case knowledge) was not conducive to such relations. The intellectual property rights envisioned under TRIPs thus represent not just a civil right to property, but a tool of marketplace control which will reflect inequality and power relations inherent to market production (Fowler 1995).

Recent patents take Locke's position to its logical end, namely, the absolute expansion of property rights over something, in this case a biotechnological innovation, to the exclusion of all others worldwide. While all patents grant monopoly rights over a product or process for a limited time, recent patents in plant and human genomes have been especially broad. WR Grace, for example, holds a patent which grants it monopoly rights over all transgenic cotton seed and plants until 2008, regardless of the traits expressed or techniques employed to create the GM cotton (RAFI 1993). A similar patent was granted to Agracetus, later acquired by Monsanto, over all transgenic soybeans (GRAIN 2000).

TRIPs, viewed as an attempt to globalize the US patent system, has thus been critiqued as an attempt by the developed world "to establish new international rules to protect the monopoly rentier incomes of their TNCs, deny Third World countries access to knowledge, block their capacity

²¹ Exclusivity refers to the right of an owner to exclude others from the benefits of the property. Advocates of private property regimes believe that exclusivity encourages investment in and conservation of property. With regards to biotechnologies, it is believed that exclusivity encourages investment in research and development of new products.

²² Although Locke does not deal directly with innovation, his "property as the just deserts of labor" thesis is clearly applicable to the institution of intellectual property. See, for example, Moore (1997).

²³ Polyani (1957) argues that the transition from feudalism to capitalism rested on a redefinition of property. Land, labor, and money in particular were recast as commodities, a recasting which provides the organizing principle for society under capitalism.

for innovation and technical change and prevent any rise in competitive capacity in the Third World” (Raghavan 1990: 114).

In contrast to the Lockean foundations for TRIPs, Rousseau’s work provides the theoretical basis for the CBD. For Rousseau, the unlimited right to private property espoused by Locke²⁴ does not exist. Rather, an individual’s right to property was circumscribed by the community to which the individual belongs. This is a source of much confusion in Rousseau’s work, in part because at times Rousseau himself contradicts his own position (Keohane 1979; MacAdam 1979). In perhaps his most well-known comments on property, Rousseau (1993b) observes that

The first man who, having enclosed a piece of ground, bethought himself of saying ‘This is mine,’ and found people simple enough to believe him, was the real founder of civil society. From how many crimes, wars, and murders, from how many horrors and misfortunes might not any one have saved mankind, by pulling up the stakes, or filling up the ditch, and crying to his fellows: ‘Beware of listening to this imposter; you are undone if you once forget that the fruits of the earth belong to us all, and the earth itself to nobody.’ (p. 84.)

At the same time, in his discourses on political economy, Rousseau (1993a) contends that, “the right of property is the most sacred of all the rights of citizenship, and even more important in some respects than liberty itself. . .” (p. 151) Rousseau, thus, recognizes property as the source of inequality but at the same time is unwilling to challenge the institution of private property which is the root of the inequality he so decries.²⁵

The source of Rousseau’s distaste for private property and his simultaneous insistence of its importance rests on his prioritizing of the community over the individual. While Rousseau viewed property as central to the development of humanity, he also recognized that the rights of the individual must be balanced against the needs of the community and, that, absent the community, the individual’s right to property would have little meaning.²⁶ Thus, Rousseau (1993b) observes that

²⁴ In a state of nature, Locke places two limits on the amount of property an individual can possess. First, an individual cannot own more than he (and for Locke, the individual clearly was masculine) can use himself fully and without spoil. And second, an individual must leave “as much and as good” for others. However, these limitations are undermined when Locke mediates property with money and the market. Once money is introduced, the question of spoilage becomes irrelevant. Further, markets allow one individual to trade with another, thus absolving them of the caveat to leave “as much and as good” for others. Locke, however, never addresses the problems that arise with the introduction of money and markets.

²⁵ In this sense, Rousseau was a product of his times, influenced in particular by the ideas and idealism surrounding the French Revolution.

²⁶ In essence, then, Rousseau advocates a limited right to property, restricted to the amount that an individual could work or produce himself. Rousseau thus rejects Locke’s

... the idea of property depends on many prior ideas, which could only be acquired successively, and cannot have been formed all at once in the human mind. Mankind must have made very considerable progress, and acquired considerable knowledge and industry which they must also have transmitted and increased from age to age, before they arrived at this last point of the state of nature. (p. 84)

Not only, then, is the *concept* of property itself developed over successive generations, but so too is the knowledge and structures surrounding property relations. As a result, property can only exist within the context of community.

Rousseau's contradictory observations regarding property mirror the tensions inherent between TRIPs and CBD today. The root of conflict in Rousseau's work lies in his attempt to reconcile the often contradictory and competing needs of the community with the rights of the individual under the free market. Similarly, the attempt by the CBD to establish a framework of community rights in the context of TRIPs' insistence on the expansion of *individual* private property rights is wrought with problems. Thus, while TRIPs rests on Lockean notions of unlimited private property, in this case enforced through stronger intellectual property rights worldwide, the CBD recognizes the importance of the indigenous communities in providing the foundation for property, reflecting Rousseau's emphasis on community. The question that must be addressed in this context, then, is what is the appropriate balance between community and individual rights.

But in spite of differences over the nature of property rights afforded to communities, states, and patent holders, and the regime of benefit sharing, both TRIPs and CBD are essentially founded on the same assumptions regarding the nature and benefits of private control over genetic resources. Indeed, both rest on the assumption that the most efficient and sustainable use of biological resources is driven by private property rights, reflecting perhaps both Locke and Rousseau's belief that the institution of property was a natural (human) right even while disagreeing over the extent of that right.²⁷ While TRIPs acknowledges this outright, the CBD is less clear. It recognizes the important role of indigenous communities in the

call for unlimited private property rights on the grounds that such rights would *necessarily* deprive others from their natural right to property, a fact which Locke himself concedes.

²⁷ Marx, of course, rejects both Locke and Rousseau's arguments around natural rights to property resulting from a state of nature. For him, property relations do not emerge from an abstracted state of nature, but rather develop through a dialectical relation with the mode of production or exploitation (slavery, feudalism, capitalism). Modern property relations thus reflect capitalist relations of production which emerged following the collapse of feudalism and the enclosure of the commons that characterized feudal productive relations (Marx 1973 and 1978).

Third World in developing and maintaining biodiversity, but it nevertheless adheres to the belief that the primary cause of loss of genetic diversity is the failure to guarantee private property rights.

The belief that environmental degradation results from the failure to provide property rights rests in Garrett Hardin's "Tragedy of the Commons" (1968). Hardin's famous parable establishes a set of pastoralists who destroy the future viability of pastoral commons by overgrazing. For Hardin, each "rational herdsman" will take advantage of the commons by increasing his herd size, one by one, because the costs of increasing grazing are borne by the community, but the benefits of larger herd size belong to the individual alone. As other herdsman do the same, the resource base of the common land is eventually destroyed. Hardin thus concludes that common property regimes are essentially unable to govern themselves, as the interests of the individual seldom correspond to the needs of the community as a whole.²⁸ Although particularly contentious,²⁹ the tragedy of the commons thesis has become the guiding principle for most environmental problems, informing the decisions of NGOs, states, and international lending agencies alike.

Proceeding from the assumption that environmental degradation is a problem of insufficient private property incentives—a tragedy of the commons—the CBD attempts to privatize control over genetic resources, albeit in a more egalitarian manner than TRIPs. Because private property is characterized by exclusivity and transferability,³⁰ it is able to guarantee a more efficient allocation of biodiversity and genetic resources. Other forms of property rights, including common property, are held as unable to guarantee a similarly efficient allocation. As such, the commodification of biodiversity under the CBD is intended to encourage conservation. However, the adoption of a private property regime over biotechnology implicitly assumes that biodiversity can *only* be preserved through market exploitation, that is, through severing the indigenous knowledge from the context in which it traditionally existed and transferring it into a market context mediated only by price. In the end, then, the CBD forces

²⁸ The tragedy of the commons thesis has the added benefit of placing the blame for environmental degradation squarely on the Third World poor, rather than the wealthy West. The orientalist environmentalist discourse on the commons thus blames the rapidly growing population of the South as backward, uninformed, and misguided peasants who need Western guidance. This is at the heart of the "development is dead" literature. See, for example, Escobar (1995) and Crush (1995).

²⁹ See, for example George (1998) and Goldman (1998).

³⁰ Transferability allows the owner of the property to transfer rights to the property to another, according to mutually agreeable conditions. This is essential if the owner of a property hopes to profit from its sale.

commercialization and privatization of the intellectual, biological, and genetic commons of the developing world, just as the TRIPs agreement does, but with mandated benefit sharing.

Such a solution is, of course, problematic. It rests, first of all, on a misreading of common property regimes. Hardin's analysis fails to recognize the often informal relationships that govern use of the commons. Indeed, George (1998) observes that, "common property is not over-exploited so long as group members retain the power to define the group and to manage their own resources" (p. xii). Problems arise when the local community loses the ability to enforce social norms, such as when market-based relations displace existing social networks.

Further, the continued expansion of capitalism rests on the exploitation of commons and non-capitalist systems around the world. Thus, "without the unpaid labor from the commons, the household and the community, and without tapping ecological processes, there could not be any surplus-value production for capitalist industries. Maintenance of the commons is thus one of the legs on which commodity production stands" (Goldman 1998b: 16). Seen from this perspective, the CBD has less to do with the preservation of biodiversity *per se*, than with maintenance of capitalist economies in face of rapidly deteriorating ecological commons.³¹ It thus allows for the restructuring of the commons to facilitate an expansion of the site of surplus extraction in the global political economy. "The effect," in other words, "has not been to stop the destructive practices but to normalize and further institutionalize them, putting commoners throughout the world at even greater risk" (Goldman 1998a: 23).

Seen from this perspective, the CBD may represent "TRIPs-light," a system of private property rights in biodiversity that includes some provisions for benefit sharing, but which nevertheless results in the privatization of biodiversity and enclosure of the genetic commons. While this may represent an improvement over TRIPs, it is nevertheless an insufficient safeguard for either the biodiversity of the developing world or the rights of indigenous communities to control their own knowledge and commons, particularly in light of the unequal power relations (and therefore unequal negotiation positions) between parties to the Convention.³²

³¹ It is important to note, however, that deterioration of the global ecological commons is more a result of the extensive industrial production of the developed world and has less to do with the local practices of communities around the commons. Thus, as Goldman (1998a) notes, "the metaphor of the commons being destroyed by self-interested small-scale producers is inappropriate for explaining most cases of environmental degradation" (p. 28).

³² According to Boisvert and Caron (2000), "whereas the communities that were dispossessed of their resources had [before the Convention] no rights and no recourse, they

Implications for Southern Africa

The TRIPs and CBD Agreements will, of course, have dramatic implications for Southern Africa. The problem of biopiracy has already become widespread in the region, as “The illicit collection, smuggling and trade in biological resources from Southern Africa has become a multi-million-dollar business” (Madava 2001: np). Indeed, examples of the uncompensated export of biodiversity from Southern Africa have become widespread, as governments struggle to find a way to enforce the benefit sharing regime envisioned under the CBD. Recent examples include the theft of Tuli cattle embryos from Zimbabwe by Australia, which, according to some estimates, could increase the profit in the Australian cattle industry by up to 30 percent. Similarly, the use of Madagascar’s rosy periwinkle plant by the pharmaceutical giant Eli Lilly in the development of two drugs, vinblastine (used to treat Hodgkin’s disease) and vincristine (used in the treatment of leukemia), each with annual sales of more than US \$100 million, has never been compensated (RAFI 2000). Any agreement that could arrest the transfer of resources from Southern Africa to the developed world and enforce a sharing of the proceeds from innovations developed from African resources would thus be particularly welcome.

Outside the question of control over indigenous knowledge, TRIPs and CBD raise significant questions for agriculture in the region. Agriculture accounts for between 5 and 48 percent of gross domestic product, while providing employment for between 65 and 80 percent of the labor force. Cash crops account for more than 60 percent of export earnings in half of the countries of the region (World Bank 1999; Abdulai and Delgado 1995). The TRIPs Agreement has the potential to fundamentally alter agricultural production in the region.

Perhaps the most immediate impact could be felt in the privatization of seed systems. Historically, smallholder farmers relied extensively on informal seed networks, saving 60-70 percent of seed used on-farm, and acquiring 30-40 percent from relatives, neighbors and other community sources. Overall, less than 10 percent of seed used by smallholder farmers in Southern Africa is obtained from market sources³³ (Cromwell 1996: 20).

have [under the Convention] obtained the possibility of getting compensation, but they are also obliged to recognize the intellectual property rights of the industries, therefore to accept the principle on which they rest and the possibility to pay royalties. The rights of the communities, even if they are confirmed by the Convention on Biological Diversity, do not enjoy a recognition and a protection comparable with that of intellectual property rights; unlike the rules of the WTO, their transgression cannot entail retaliation” (p. 8).

³³ There are, of course, important exceptions to this general trend. In Zimbabwe, for example, a highly successful maize seed network has been developed through close

Informal networks and connections, such as barter, social obligation, and other exchange mechanisms, thus, provide most smallholder farmers across the region with seed. The TRIPs agreement, however, could extensively undermine the informal seed trade by creating legal restriction on the rights of farmers to save and exchange seed (Zerbe 2001).

African Model Legislation: The Way Forward?

Given the importance of such questions, it is hardly surprising that the Organization of African States/African Union has been at the forefront of resisting the expansion of intellectual property under the TRIPs Agreement. The OAU has already drafted an alternative legal framework to meet both the IP requirements of the TRIPs Agreement and the benefits sharing regime envisioned under the CBD. The OAU/AU Model Legislation, thus, attempts to create a system that guarantees the intellectual property protections mandated by the TRIPs Agreement³⁴ while simultaneously maintaining the traditional farmers' and breeders' exemptions,³⁵ and the rights of communities to dispose of their intellectual and biodiversity commons as they desire.

In many ways, the OAU Model Legislation is simply an attempt to codify the provisions of the CBD into a coherent national legislative framework. It mandates, for example, what constitutes prior informed consent, bodies governing access to biodiversity and biological resources in the host state, and the rights conferred to local communities under material transfer agreements. Its provisions governing the rights of communities under the Model Legislation are particularly telling, as they diverge most directly from the rights spelled out in both TRIPs and CBD, and from the theoretical perspectives on which those agreements are founded. Specifically, the Model Legislation recognizes the rights of

cooperation between the state and a private producer cooperative. As a result of this network, nearly all maize crops grown in Zimbabwe today are modern variety hybrids obtained from the formal seed market (Zerbe 2001).

³⁴ While TRIPs does not spell out exactly what is encompassed under *sui generis* protection, it is clear that any alternative form of protection would have to include, at a minimum, some form of intellectual property right, provide for national treatment, and permit action against infringement (e.g., would have to be enforceable) (Chitsike 2000: 3). The exact form of protection, however, would be left to individual states.

³⁵ Farmers have traditionally been exempted from intellectual property protections in seed, allowing farmers to produce, save and exchange seed even when such seed was proprietary. Similarly, researchers have traditionally been able to work with proprietary varieties of seed to develop new seed lines, and even receive intellectual property protection on lines developed from proprietary varieties. These exceptions to intellectual property protection in seeds are known as farmers' rights and breeders' rights.

local communities over their biological resources, innovations, practices, knowledge and technologies, as well as their right to benefit from the use of such resources. The Model Legislation mandates that the state enshrine the norms, practices, and customary law of local communities, specifically with regards to biodiversity. Communities are afforded the right to share, protect, preserve, or even *prevent the sharing* of some or all of their resources (OAU 2000: Part IV).

The right of communities under the OAU Model Legislation to prevent the sharing of their resources and knowledge is perhaps the most fundamental challenge to the TRIPs and CBD agreements and their attempt to commodify biodiversity. It undermines the commodity fiction in knowledge and prevents the establishment of property rights over community held resources, traditions, practices, and information. It represents an attempt, however limited, to subjugate market relations in biodiversity to social networks of community.³⁶

In Zimbabwe, efforts to adopt a national legislative framework governing access to biodiversity and indigenous knowledge based on the OAU/AU Model Legislation have proceeded. Building on a comprehensive consultative process based on close cooperation with local communities, Zimbabwe is developing national legislation guaranteeing farmers' and breeders' rights as well as community rights under Article 15.1 of the CBD (Chitsike 2001b; CTDT 1999, 1998a/b). Based on the results of the workshops, the central state is developing a framework under which the state works closely with local communities to protect local biodiversity while simultaneously allowing local communities to decide on the level of sharing. The proceeds of any benefits sharing agreements are, under the present form, to be split equally between the state and the community through local trusts (Zerbe and Thompson 2002: 38-41). Similar efforts are underway across the SADC region.

But while the OAU Model Legislation represents the most progressive development of the intellectual property rights in agriculture, biodiversity and biotechnology, it remains confined by the model of private property rights mandated by TRIPs. Thus, while attempting to ensure a more equitable distribution of the benefits of biotechnology and biodiversity and while establishing the right of communities to "opt out" of sharing, the

³⁶ This, of course, raises a number of questions regarding the nature of community, questions which fall outside the scope of this paper. Perhaps the most obvious, and one of particular importance in light of attempts to allow greater governance of resources by local communities, is what and who define community. Further, while community governance may be preferable to market governance, it should nevertheless not be idealized. Questions of gender equity and rights, in particular, come to the fore when governance is based on notions of traditional leadership.

OAU Model Legislation nevertheless cannot succeed in preserving local biodiversity for the same reasons that the TRIPs Agreement and CBD are bound to fail—namely, its inability to challenge the private property rights, which give rise to inequality and environmental degradation in the first place.

Ideally, intellectual property rights balance the social good of innovation and freely available knowledge against the private rewards of monopoly rents. However, under TRIPs and the CBD, the balance of public and private good that provided the foundation for early IP protection has shifted far towards the later, enshrining intellectual property as a *right* under which the traditional public good of patents is increasingly eroded. Thus, as Boyle (1997) notes, “the structure of our property rights discourse tends to undervalue the public domain, by failing to make actors and society as a whole internalize the losses caused by the extension and exercise of intellectual property rights” (p. 111). In this sense, the OAU/AU Model Legislation represents an attempt to recast debates over private versus public rights and rewards under intellectual property back to an appropriate balance. As a result, the OAU Model Legislation has met some resistance, most notably from the private sector, which opposes any effort by the state to limit intellectual property protection or mandate benefit sharing. Vincent Gwarazimba, General Manager of the Zimbabwe Seed Trade Association, for example, argues that the CBD (and the OAU Model Legislation by extension) is an environmental protection measure which should not interfere with the rights conferred under the TRIPs Agreement. For him, the rights of communities and farmers are best protected by the market, which ensures efficiency and innovation (Gwarazimba 2001).

But Gwarazimba’s suggestion is even more problematic than the OAU’s proposed alternative. At the most basic level, any proposal that rests on the expansion of private property rights and market relations as a solution to the problem of environmental degradation and genetic erosion is wrought with difficulty. Frequently, the environmental problems faced by local, indigenous communities and the larger world community as a whole have less to do with the failure of local common property regimes in the developing world than with the contradictions inherent to the capitalist productive process.

Further, the benefit sharing envisioned under the OAU Model Legislation will likely face the same problems raised by critics of the material transfer agreements signed elsewhere. In particular, it seems unlikely that the governments and local communities of Southern Africa will be able to negotiate with transnational corporations on an even footing. As a result, the benefits flowing back to local communities will be small, little technology transfer will take place, and inequality will persist. While the Model

Legislation may represent the best alternative, it nevertheless fails to challenge the market-based solutions proposed under TRIPs and the CBD. Therefore, it will, in all likelihood, fail to result in any significant changes in the relationships governing biodiversity, technology transfer, and local development.

Conclusion

The development of international frameworks governing access to biodiversity has generated extensive conflict. Traditional knowledge is attracting increasing attention as corporate interest in biotechnology has increased. But while the advances generated by corporate research in biotechnology are protected by strong intellectual property rights under TRIPs, the traditional knowledge on which many such advances are founded remains unprotected. Such inequality in levels of protection has been widely criticized, and efforts to rectify such injustices have proceeded. Indeed, benefit sharing agreements under the framework of the Convention on Biological Diversity have become increasingly common, as the underdeveloped world attempts to lay claim to some portion of the proceeds of the “biotech revolution.”

In Southern Africa, efforts have centered on the development of alternative frameworks of protection based on striking a balance between protecting the rights of plant breeders, farmers, and the community. Indeed, in many ways, the efforts of SADC members under the OAU/AU Model Legislation represent perhaps the most fundamental challenge to the extension of private property rights over community-held resources. However, limited it may be, such efforts nevertheless represent an important attempt to ensure more equitable distribution of the benefits of biotechnology and biodiversity. In the end, however, a rearticulation of the relationship between the public and private spheres is increasingly necessary. The current trend of neoliberalism has gone too far in privileging the rights of the individual over the community. Advocating the expansion of private property and market relations as solutions to the environmental degradation is, thus, akin to proscribing the disease as the cure.

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