

The Convention on Biological Diversity: An Institutional Perspective of the Debates

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Biodiversity came out as a global issue from the mid 1980s, under the pressure of converging forces: the threatening increase in species extinction and the changes in the theory as well as in the practice of nature conservation, but also the expansion of genetic engineering and the intrusion of industrial interests into areas from which they had been hitherto excluded. These elements have participated in the development of utilitarian perceptions of nature, reduced to a set of resources thanks to new technologies that have made its extensive economic exploitation possible. The Convention on Biological Diversity, adopted in 1992 during the Earth Summit in Rio de Janeiro, is in line with this approach (UNEP 1992). Indeed, the Convention rests on the notion of sustainable use of biological resources (first article), that is, an exploitation that meets the criteria of efficiency and equity and is meant to finance conservation but also to foster development in countries of the South and to benefit pharmaceutical and agricultural industries.

The Convention presents the definition of adequate property rights to biological resources and related knowledge as an essential prerequisite for the institution of the sustainable use—hence of the conservation—of biodiversity. This analysis comes to adhere implicitly to the conventional view of biodiversity erosion as a consequence of the appropriation failure that prevailed prior to the adoption of the Convention. Transnational corporations then had free access to indigenous resources—including knowledge—and after screening they could patent parts of these resources or their applications, depriving their former holders of their traditional use rights, as attested by the examples of *neem* in India or yellow bean in Mexico, both patented by American

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firms (RAFI 2000; Kloppenburg 1991). Bioprospecting was then exposing local communities, who—following Wesley Hohfeld’s terminology—had “no rights,” to the avidity of transnational firms in a position of “privilege” (Hohfeld 1913; 1917).

The definition of adequate rights aims at instituting the conditions of negotiated and mutually profitable access to biological resources. It is also presented as an incentive to undertake appropriate conservation actions. To that purpose, the Convention reaffirms the sovereignty of the states on their biological resources (preamble, art. 3), invites preservation of the knowledge, innovation, and practices of “indigenous and local communities embodying traditional lifestyles” with appropriate rights (art. 8j), and formally records the extension of intellectual property rights to life forms (art. 16.5).

The legal regime propounded is presented as the necessary prelude to the introduction of bilateral market-like contracts between the holders of biological resources (states, public organizations, or indigenous communities) and their users (firms of the life industry). These contracts would allegedly enable the optimal allocation of genetic resources and contribute to ensure the fair and equitable sharing of the benefits derived from their sustainable use.

In refusing to answer the problem of biodiversity by the implementation of an international regulation mechanism, the Convention has carried out a radical break. It pertains to the new prevailing approach of conservation, also propounded by other institutions (CITES, World Bank, OECD, etc.) (OECD 1997, 1998; Swanson, Barbier 1992; Swanson 1994). This approach is inspired by the theory of property rights that has its foundation in the Coase theorem. It draws moreover a certain defiance toward collective action and communal institutions from Garrett Hardin’s famous fable of “The Tragedy of the Commons.” It is eventually reinforced by the liberal theses of new resource economics (Anderson 1992; Anderson, Hill 1975; 1983; Anderson, Leal 1991) and by the pervasive ideology of globalization. Accordingly, it leads to the promotion of exclusive and transferable rights to genetic resources, species, and, if possible, ecosystems to allow the creation of markets guaranteeing their efficient allocation. However, the possibility of such rights and institutional arrangements to fulfill the objectives attached to them, namely, economic efficiency, social equity, and biodiversity conservation, is disputable.

Toward an Efficient Legal Regime at the Service of Biodiversity Conservation

Whereas former approaches of environmental law strove toward preservation and aimed at preventing exploitation, the Convention on biological diversity combines conservation with the use of biological resources for commercial purposes. Exploitation is not only restored to favor and no longer considered a threat to the environment, it is the very heart of the institutional device designed by the Convention. Therefore, the latter can be considered as a framework setting the terms for sustainable use of biological

resources by genetic engineering,¹ which is turned into a financial means and a lever for conservation policies.

The invitation to adopt intellectual property rights is in line with this perspective. It implies the acceptance of the privatization process and of the extension of market regulation to all life forms. Otherwise, these rights are parts of the prerequisites for the implementation of bilateral contracts for bioprospecting, an activity that can supposedly achieve both the objectives of efficiency and equity that are assigned to the Convention.

The Instrumentalization of Intellectual Property Rights

First, the Convention confirms the extension of intellectual property, especially patents, to the products of biotechnologies. This extension had been ratified by the GATT with the passing of the Agreement on Trade-Related Intellectual Property Rights (TRIPs) in April 1994. The holders of such rights are imparted with a temporary exploitation monopoly that confers on them production and sale exclusivity for the protected invention (UNEP 1996b; 1996c).

The Convention is obviously based on an assumption that can explain the importance attached to intellectual property rights: genetic resources are supposed to be of great value, and the latter can be revealed and enhanced through their industrial exploitation. Turning the exploitation of biodiversity into a profitable activity is consequently presented as the surest means to favor the preservation of the ecosystems and of the species they support. Patents are supposed to incite the development of the kind of industrial exploitation that makes the value of biodiversity increase. The extension of patent protection to all life forms—genes or species—also contributes to making commoditization commonplace. Therefore, it participates in the development of markets and allows an internalization of biodiversity conservation that becomes a full economic aim (Sedjo 1992).

Second, the recognition of intellectual property protection, through appropriate national legislation, is presented in the Convention as a prerequisite to having the sustainable exploitation of biological resources contribute to the economic development of the South. Indeed, a country that would not pass such legislation would have no recourse if its resources were patented elsewhere. Besides, a country that would not recognize patents on the products of biotechnology would not benefit by the transfer of this technology.

The Convention on biological diversity instrumentalizes intellectual property rights, initially dedicated to the promotion of technical progress, in turning them into tools for biodiversity protection. Article 16-5 asserts thus that “the Contracting Parties, recognizing that patents and other intellectual property rights may have an influence on the implementation of this Convention, shall cooperate in this regard subject to

national legislation and international law in order to ensure that such rights are supportive of and do not run counter to its objectives.”

The fundamental role attached to intellectual property rights in the Convention recalls the economic theory of property rights and the insistence of the latter on the definition of rights likely to pave the way for market regulation (Samuels and Schmid 1981; Mercurio 1989; Mercurio and Medema 1997). The economic theory of property rights rests both on the apology of private property and on the affirmation of the unconditional superiority of market regulation.

For property rights theorists, the superiority of private property as an institutional structure—said to be historically as well as theoretically demonstrated—can be explained by the nature of the prerogatives it confers on the holders of such rights (Alchian and Demsetz 1973). It combines indeed both fundamental attributes of property, namely, exclusivity and transferability (Randall 1975):

- The *exclusivity* prerogative confers on the holder the exclusive possession of the right at stake. It is supposed to provide a maximal incentive to invest in resource conservation or in the specific use considered. This argument is used to legitimize the extension of the system of patents to the products of biotechnology—ensuring exclusivity for the invention. Exclusivity is said to induce an efficient investment in research and technical progress in the field of biotechnology, an activity that contributes to the creation of new values for biodiversity.
- The *transferability* attribute entitles the holder to transfer the rights considered at freely agreed price and conditions. It guarantees an “efficient” allocation of the rights, that is, their holding by the economic agents who most value them.

The apology of private property is reinforced by the condemnation of all alternative forms of property, especially the commons (Furubotn and Pejovitch 1972). Common property institutions are held unable to achieve an efficient resource allocation (Demsetz 1967). The arguments used to bring discredit to alternative forms of appropriation are in the same vein as Hardin’s famous thesis of “The Tragedy of the Commons” (1968).² It has been amply demonstrated that this thesis is erroneous and that it is based on a fallacious comparison of common property with situations of free access where there is no legal regime governing the access to and the uses of the resource (Ciriacy-Wantrup and Bishop 1975; Berkes et al. 1989; Feeny et al. 1990; Ostrom 1990; Aguilera-Klink 1994). Moreover, Hardin’s text does not present privatization as the only solution to achieve sustainable resource use. In spite of its inaccuracy and the resulting inadmissibility of its conclusions that could not escape the notice of economists, “the tragedy of the commons” has been raised to the status of a theory and a demonstration in favor of privatization. Such a consecration has probably been made easier by the pessimism about the possibilities of collective action exemplified by prisoner’s dilemma modeling (see Ostrom 1990) and more generally conveyed by the methodological individualism of neoclassical theories.

In accordance with this “property-based approach,” the definition of private property rights to resources is held to be both necessary and sufficient to solve environmental problems, whatever their nature and scale. Such a legal regime provides incentives to manage resources efficiently and to invest optimally in their conservation (Demsetz 1967). Moreover, it ensures that any conflict between antagonistic resource uses will be solved thanks to decentralized negotiation about the conditions of an appropriate transfer of rights, that is, a reallocation of transferable property rights in favor of the most valued use. This viewpoint seems to be stamped with the influence of the Coase theorem.

In his 1960 article “The Problem of Social Cost,” Ronald Coase showed that a decentralized negotiation between the producers and the victims of a damage enables them to spontaneously achieve a situation corresponding to an efficient allocation of the resources (efficiency thesis of the Coase theorem), provided that there are zero transaction costs and that the property rights are unambiguously defined. This demonstration constitutes one of the main lines of criticism that the author addresses to the Pigovian approach to environmental issues and to its plea for an interventionist resolution. According to Coase, an amount of compensatory payment or dissuasive premium can be determined through a direct bilateral negotiation between the producer and the victim of the damage. This negotiated amount can be considered as the terms of exchange of property rights to resource uses. He also showed that the initial distribution of property rights—determined by the prevailing structure of the law—is neutral in their final allocation and that it is necessarily “efficient,” on condition that rights can be re-allocated at no cost (neutrality thesis of the theorem).

According to the theorists of property rights, the definition of exclusive and transferable rights is supposed to allow a correlative extension of market regulation guaranteeing their efficient allocation. This approach has obviously guided the Convention on biological diversity and the view it conveys of the importance of intellectual property rights. The focus on intellectual property rights proves inherently linked to the contractual and decentralized mode of regulation propounded by the Convention in the name of efficiency.

Bilateral Private Law Contracts as the Favored Mode of Regulation

In the Convention on biological diversity, the acknowledgment of the importance of intellectual property rights protecting some applications of biotechnology finds a counterpart in the affirmation of the sovereign rights of the States on their biological resources and of the rights of local and indigenous communities over their knowledge, innovations, and practices. In conformity with the logic of the Coase theorem, the definition of such rights is presented as the prelude to the implementation of private law contracts to answer the purpose of an efficient and equitable exploitation of genetic resources. Bioprospecting contracts are presented as the very examples of such bilateral agreements (see box 1).

Box 1. Bioprospecting Agreements

Bioprospecting agreements made between firms or research institutions of the North and communities or public institutions of the South are presented as efficient and fair means to promote biodiversity conservation (UNEP 1998). The firms and research institutes obtain access to genetic resources while the countries and communities providing knowledge and resources benefit from a part of the royalties drawn from their industrial exploitation. Bioprospecting also contributes to an increase in the value of biological resources, inciting therefore investment in their conservation. It appears to be a source of funds for in situ conservation actions as well.

The most famous of these agreements was reached in 1991 between the pharmaceutical firm Merck & Co and INBio, a Costa Rican private non-profit organization. This agreement is said to have inspired the drafters of the Convention on biological diversity.

INBio was committed to supply samples of plants and insects in exchange for US\$1 million. It was planned that Merck would pay royalties for all the products developed from the samples supplied by INBio. About 10 percent of the amount paid by Merck was to be devoted to the maintenance of protected areas, and 40 percent was to be used to start an inventory, a fourth of which (i.e., 10 percent) was to go to local people who had taken part in the collection. The transfer of technology or at least of skills from Merck to INBio was also planned.

This agreement has been decried essentially for political reasons related to the refusal to see national heritage given up to multinational firms. However, though INBio's access to the genetic diversity of the country is exclusive, it is in no way unlimited. National biodiversity is controlled by the ministry of natural resources, mines, and extraction (MIRENEM), which issues permits authorizing the genetic prospecting of national resources. The activity of INBio takes place under the control of the ministry, under a legally binding agreement in compliance with which INBio is committed to pay 10 percent of its global budget to national parks and 50 percent of the economic benefits drawn from its research activities. A part of the benefits of the project is thus captured by the government, which was, however, no contracting party in the initial agreement between Merck and INBio.

There is no such thing as a global standard agreement in the Convention that could be used as a blueprint when drafting such contracts. The Convention promotes bilateral negotiations between States, or at least public institutions, on one hand and private firms or other foreign organizations on the other hand, to define the terms of the contracts of access to and exploitation of biological resources. Such agreements, the terms of which are often kept secret, are subject to no external arbitration. The benefit-sharing measures they provide for strongly depend on the respective powers and negotiating skills of the parties.

These decentralized negotiations are legitimated both from a theoretical viewpoint, by a reference to the theory of property rights, and from a pragmatic viewpoint. All the

parties are supposed to win by such contracts: they are held to ensure the free participation of the actors; the cases of dispute can be brought before existing courts, minimizing the costs of control of the agreement. This financing source is all the more interesting as it is made up of private funds whereas the multilateral funding mechanism established to help the countries of the South to discharge their commitments toward the Convention (the Global Environmental Fund) meets with supplying difficulties. It avoids moreover having to define allocation rules for the subsidies. But such a mode of regulation also echoes the decisions made by the institutions responsible for international trade, especially the request to the countries of the South to develop legislation for the protection of intellectual property made within the scope of the TRIPs agreement of the World Trade Organization (WTO) (UNEP 1999).

The will to blend the legal regime of protection of industrial innovation and the objective of an “efficient” conservation is manifest in the Convention on biological diversity, but for all that, the requirements of sustainable development are not forgotten. A complete privatization of biological resources is never contemplated. The bilateral contracts that govern the access to and the exploitation of biological resources must be established with the aims of benefit sharing and equity in view.

***Equity, the Recognition of Community Rights,
and the Sovereignty of the States***

Given the ethical and cultural values that biodiversity represents and the environmental functions it fulfils, the management of biodiversity cannot be completely given up to multinational firms. It is important that the states should have a form of control over biodiversity, for it is a public good. This is what is achieved in recognizing their sovereignty over the biological resources within the limits of national jurisdiction (art. 3). Otherwise, it is advisable, if equity is to be considered, to assure that those whose ways of life most depend upon the resources have free and continuous access to them. Their role in the maintenance of biological diversity should also be recognized. That is why the rights of indigenous and local communities embodying traditional lifestyles are established (art. 8j) (Breckenridge 1992).

The commoditization of biological resources is presented not only as an incentive to biodiversity conservation but also as a lever for the recognition of the rights of rural communities of the South by the multinational firms that exploit their resources and knowledge as well as by the nation-states where they live. The Convention consequently appears to be an endeavor to echo the—political—claims of a group of actors: the NGOs speaking on behalf of local farmers and indigenous communities and some countries of the South.

The View of the South: Toward an Alternative Analysis of the Biodiversity Issue

The promotion of intellectual property rights to genetic resources and the development of bioprospecting on a contractual basis are not perceived by their opponents as economically efficient solutions but rather as evolutions that favor the interests of the most powerful, whose resources and innovations have attributes that make them patentable. These actors are transnational firms and states that have the means to profit from biotechnology. Of course, whereas the communities that were dispossessed of their resources had no rights and no recourse, they have obtained the possibility of getting compensations thanks to the Convention. They are, however, also obliged to recognize the intellectual property rights of the industries, therefore to accept the principle on which they rest and possibly to pay royalties for patented products. Communal rights, even if they are affirmed by the Convention on biological diversity, do not enjoy recognition and protection comparable with that of intellectual property rights; unlike the rights protected by the rules of the WTO, their transgression cannot entail retaliation. Moreover, the privatization of community resources to the advantage of transnational firms and the exclusivity it confers on them appear as disturbing threats to cultural diversity (IDRC 1994). For opponents of privatization, biological diversity and cultural diversity are indissociable. Globalization and the extension of market to which it gives rise are considered to be the major causes of biodiversity erosion and not solutions to be promoted (Kloppenborg 1991; Shiva 1996).

Even if they do not explicitly refer to it, the positions expressed in opposition to the privatization of life forms recall neo-institutionalist theory (Samuels and Schmid 1981; Bromley 1991). Refusing to regard privatization as the only and necessary solution for sustainable management of biodiversity, they endeavor to demonstrate its political biases and to stress that the context within which the biodiversity issue has come out does not lend itself to such a measure.

The Convention on biological diversity recommends the adoption of a property rule (Calabresi and Melamed 1972; Bromley 1978); the transfer and the exploitation of resources require the prior informed consent of the community that holds them and the negotiation of compensation. However, biological diversity has distinctive features that would suggest that other rules might be more appropriate. The debates on biological diversity involve varied actors whose economic, political, and bargaining powers are quite different: multinationals, states, research institutes, United Nations agencies, NGOs, indigenous peoples, and rural communities of the South. These debates take the form of a North-South conflict in which the situations of the protagonists are clearly asymmetrical. The uncertainties regarding the functional role of biodiversity, its value for pharmaceutical and agricultural industries, and the value of certain species as heritage let doubts hang over the possibility of determining a fair amount of compensation. The traditional knowledge related to genetic resources is even more difficult to assess since it is often common to several peoples, so that the identification of the holders is already a problem in itself (Brush 1993; 1996). Furthermore, the sometimes-vital nature

of access to resources and the relationship toward knowledge, which is an integral part of community identity, can make the alienation unthinkable for indigenous and local communities.

The choice of a property rule is then in no way dictated by the nature of biological diversity. It comes down to confirming a *de facto* situation, that is, to turning the privileges of the transnational firms presently exploiting genetic resources—the “biopiracy” denounced by NGOs (RAFI 1994; 1997)—into rights, a transformation that can be explained by the power of these firms. In situations characterized by high transaction costs and income effects, when irreversible destruction can take place and can induce social impacts that are not inconsiderable, other rules could—probably should—be adopted and the initial allocation of rights plays a decisive part (Bromley 1978).

Besides, the legal regimes applied to genetic resources before they were challenged by the extension of patents to life forms took this fact into account. The application of the notion of common heritage of humankind to plant genetic resources for food and agriculture, promoted by the Food and Agriculture Organization (FAO) in its International Undertaking on Plant Genetic Resources in 1983, established their inalienability to favor their universal availability. When the Undertaking was revised, following fierce criticism and debates,³ a rule of responsibility was advocated with the proposition of “farmers rights” (art. 12). The principle was to institute a multilateral fund, supplied by industrialized countries that would pay *ex post* compensations to the farmers of the South as an acknowledgment of the past contribution of their resources and related knowledge to the development of agriculture.

In the face of the problems met by these legal regimes, the opponents of privatization have adopted a more pragmatic position in negotiations about biodiversity. Farmers’ movements and advocates of indigenous peoples link the conservation of biodiversity with the status and evolution of local and indigenous communities (Escobar 1998; Shiva 1996). According to them, biological diversity recedes before the hegemony of the monopolies of life industry, threatening the local practices that make conservation possible. The attribution to local and indigenous communities of rights that would enable them to resist this oppression and to protect their biological and intellectual resources could check this phenomenon. While the supporters of privatization, following the theory of property rights, put the stress on the nature of the rights to be promoted, NGOs and farmers’ movements emphasize the importance of the identity of right holders. For them, the deciding factor in the choice of the rights that should be instituted is their appropriateness in accounting for the knowledge and practices of the local communities of the South and their capacity for serving the respective interests of farmers and indigenous people, that is, to enhance the value of the work of conservation of the former and to give the latter the means to preserve their cultural integrity.

The Collective Rights of Rural and Indigenous Communities

The wish for the institution of an equality of status between the scientific knowledge of the North and the local knowledge of the South, to bring the despoilment to an end, has given rise to many debates and to varied propositions issued by NGOs and a few countries of the South (Posey 1990; Posey and Dutfield 1996). However, the application of rights analogous to intellectual property rights to the knowledge and resources of the South seems difficult (Brush 1993; 1996). The characteristics of the latter compromise the possibility to protect them in a way that would be either efficient or lucrative for their holders. Even if it were technically feasible, such a protection denotes a perception of the relationship to knowledge and resources which is not that of the communities of the South (Shiva 1996). Furthermore, the adoption of a property regime favors market exploitation of traditional knowledge and resources rather than their preservation. These resources cannot be protected unless they are reified, cut off from the system that gives them meaning and from the tradition from which they stem. This necessary abstraction runs counter to the objectives pursued. Indeed, the importance attached to knowledge, especially by NGOs, is above all a pretext to link their main concerns, namely, the autonomy of the farming systems of the South and the cultural survival of indigenous populations, to biological diversity. To that purpose, it should be stressed that the local knowledge of the South is deeply rooted in traditional ways of life. Adequate rights should then focus on the maintenance of cultural integrity through the affirmation of the inalienability of the local systems of knowledge.

In the agricultural sphere, the rights to be established are referred to as *community intellectual rights* or *farmers' rights*, in reference to the concept developed by the FAO but with a quite different meaning (Shiva 1996). According to their promoters, these rights should be assigned to the collective interests of those who have preserved and developed the germplasm of the main crops, to enable them to pursue their practices. They should confer on them some autonomy toward the world markets of seeds and chemicals. The aspirations for cultural integrity and diversity they convey have nothing to do with the trade protection offered by more conventional intellectual property rights.

Concerning the question of the rights of indigenous peoples, two types of approaches are advocated. The first, guided by pragmatism, suggests that indigenous people should use all the existing laws on intellectual property and all the legal texts that recognize their cultural specificity to protect themselves from the improper exploitation of their knowledge (UNEP 1996a). A system of *sui generis* rights of that sort has been propounded by Darrell Posey under the name of "traditional resource rights" (Posey 1996; Posey and Dutfield 1996). These rights do not constitute a legal regime strictly speaking; rather, they make up a framework into which the various claims of indigenous communities could be integrated and defined (UNEP 1997). They refer nonetheless to the adoption of a property rule and are then in line with the Convention. Indeed, the advocates of this approach consider that economic globalization and the integration of marginal local communities into market economy are inescapable and that on this account

they should not be opposed but used as a lever to assert the political rights of these populations.

The second approach, which is a more radical one, aims at the control of resources and cultural knowledge by indigenous groups. It gives rise to varied claims, of which genetic resources and the related knowledge are just one aspect (Greaves 1994; 1996). This will for control convey a quest for sovereignty and autonomy of decision concerning the use of knowledge that goes far beyond the commercial viewpoint in which the question of intellectual property rights is rooted (UNEP 1997).

The Convention on biological diversity lays down a general framework for a more equitable relationship concerning access to genetic resources and the benefits drawn from them, but it falls to the countries to take the responsibility for the respect of these principles (UNEP 1996d). The sovereignty of the states recognized by the Convention can thus be interpreted not only as a counterpart to the power conferred on multinationals through the recognition of their intellectual property rights but also as a political counterweight and as a necessary condition for the institution of a right for the local components of the national community.

The Laws of Access to Resources: An Affirmation of the Sovereignty of the States

The legal framework for access to biological resources is thus fixed by the states. As most of the signatories of the Convention are also members of the WTO, they must conform to the TRIPs agreement and adopt intellectual property rights, failing which they incur trade sanctions. Some countries of the South have seized the opportunity given by the TRIPs to establish a system of *sui generis* rights, different from existing forms of protection of intellectual property, to fulfill their obligations as parties to the Convention. According to its supporters, this solution would offer the only real guarantee of respect of community rights (Dutfield 1998). However, it is a considerable challenge: the obligations of recognition and preservation of traditional resources and knowledge have to be integrated into a strictly commercial framework.

India, the Organization of African Unity, and Brazil, among other countries, have drafted bills of access to genetic resources that endeavored to limit the taking over of their resources by foreigners (UNEP 1996d). These countries have in common experiences of biopiracy that have stood out in their history or that have more recently upset their public opinion. They have followed different options in their attempt to prevent new pillaging: reinforcing control over national collections, purely and simply forbidding bioprospecting or punishing harshly any illicit exploitation of genetic materials and making the participation of national researchers compulsory in any research led by foreigners. These solutions have shown their limits. The measures to limit bioprospecting might create more problems than benefits. Preventing bioprospecting at

all costs might expose countries to retaliation and to isolation as regards research and technology related to genetic diversity.

The countries that have already adopted legislation covering access to their biological resources have consequently chosen pragmatic approaches, seeing to it that bioprospecting benefits the domestic economy and brings income to the state and possibly to local communities. This is, for example, the case of the Philippines and of the countries of the Andean Pact (UNEP 1996d). Their laws of access accept the principle of appropriation and commoditization of genetic resources, provided that they do not hamper the customary rights of the populations. The latter must give their prior informed consent; they must be consulted and informed of the destination and purpose of the resources and knowledge they supply. Therefore the state, by virtue of its sovereignty, reserves the right to issue permits of access.

The laws adopted illustrate the obstacles met by states when they have to reconcile their commitments as parties to the Convention on biological diversity with their obligation as members of the WTO to adopt intellectual property rights. They cannot possibly free themselves from a commercial framework; the principle of the commoditization of life forms must be accepted, even if it is accompanied with exceptions and the agreements often include provisions relating to cooperation. From a practical point of view, there is a hierarchy of norms (UNEP 1996c). The sovereignty of the states and the rights of local and indigenous communities appear to be political counterparts to the extension of patentability to life forms, intended to make it acceptable. In the Convention, only the latter is actually perceived as a new means to favor the conservation of biological resources through the development of the market. In other terms, even if the text of the Convention seems to pave the way for the claims for autonomy of the South and of rural and indigenous communities, the prevailing context does not allow the defining of really innovative solutions. In spite of their strong opposition to the commoditization of life forms and related knowledge, the NGOs and countries of the South intending to promote community rights are constrained to formulate their propositions within a market framework.

Conclusion

In conformity with the Coase theorem, the Convention on biological diversity appeals to decentralized regulation of resource exploitation. It suggests that once the rights of the protagonists of bioprospecting are established, this activity can develop on a contractual basis, so as to benefit all the parties, to raise funds for the implementation of conservation measures, and to incite the resource holders to exploit it in a sustainable way. However, the endeavor to reconcile the requirements of equity and efficiency within a market framework appears to be a doubtful undertaking.

From a practical viewpoint, bioprospecting agreements prove hard to settle and yield limited benefits (Simpson 1997). Building up commons out of cultural knowl-

edge, which is sometimes denied the status of resource by its very holders, is controversial. Moreover, technical obstacles and the imbalance of power and legal status make it difficult for local and indigenous communities to sign contracts on their own terms with transnational corporations. International competition for the supply of resources and world trade regulations do not leave the governments of developing countries much room for maneuvering in the definition of laws of access to their biological heritage so that they cannot reckon on large benefits from bioprospecting (Vogel 1996). The project to establish commons is finally limited to marginal dispositions concerning access to resources.

More fundamentally, the Convention appears to be a compromise between contradictory—if not opposite—interests and aims that might seem doomed to apory. The attempts to ensure at the same time maintenance of traditions and incentives to innovate or to favor the conservation of cultural differences while advocating a market regulation—which cannot but entail homogenization—can raise doubts.

Similarly, the Convention conveys two antagonistic positions about the exploitation of genetic resources. On one hand, biodiversity erosion is considered to result from the lack of adequate rights to the resources, inducing no incentives for their holders to invest in conservation. On the other hand, the Convention aims at remedying a situation considered iniquitous: the asymmetry between “wild” genetic resources, exposed to any attempted privatization, and biotechnology products, which can be protected by patents following an extension of the field of application of the latter. These positions pertain to opposite analyses of biodiversity degradation. They attribute indeed the responsibility for this erosion respectively to the negligence of the populations of the South and to the greed of transnational firms.

The decision to associate the issue of biodiversity conservation with that of genetic resources commoditization also partakes of a paradox. The TRIPs agreement is intended to develop life forms commoditization and privatization, not to prevent them. Using this legal instrument implies the acceptance of its basic assumptions. It might seem surprising to refer to this framework to define collective rights for communities whose problems stem precisely from the threats of commoditization of their biological and intellectual resources (Dove 1996).

Given these antagonisms, the attempt to ensure the goals of efficiency and equity through a common framework tends to subject the achievement of the latter to the pursuit of the former. On the plea of defending at the same time the varied interests of the parties, the Convention on biological diversity has finally resulted in favoring the status quo. Bioprospecting has acquired legitimacy though its benefits are dubious and its postulated impacts on biodiversity conservation have never been assessed.

Notes

1. The Convention on biological diversity focuses on genetic resources and tends to pass over the other levels of organization of biodiversity—species and ecosystems, in which direct profit-

ability is less obvious—in silence. This insistence that borders on reductionism is highly questionable insofar as it suggests that conserving genetic resources—the marketable part of living ecosystems—would be a sufficient condition to protect whole ecosystems and to provide a sustainable living to the local communities who use and maintain them. These assumptions should obviously be addressed for they are of crucial importance. For this very reason they would require a separate article and we will not address them in detail here.

2. In Garrett Hardin's example, the shepherds are incited to overgrazing on a common pasture because the individual additional benefit of an additional animal is higher than the individual additional costs. A part of the costs imposed by additional animals is indeed paid by all the holders of the common pasture. The shepherds are incited to behave as free riders, which leads to the overexploitation of the common resource.
3. It should be stressed that the common heritage principle (*res communes humanitatis*) was not dismissed because of its irrelevance or intrinsic weakness or lack of efficiency. It was progressively taken off the agenda as it was challenged by the development of patents on the products of biotechnology. Indeed, while it secured the possibility of free access to farmers' seeds and traditional varieties for researchers, it offered little counterpart to local farmers of the South in terms of access to new technology and improved seeds. In place of the mutually beneficial trade expected in the 1983 International Undertaking (art. 6), this legal regime provided a legal framework for biopiracy, through the privatization of local resources, after slight changes or mere identification of particular characteristics. To remedy abuses and stress the iniquity of the system in an impressive and provocative way, G77 fought to have the status of common heritage extended to biotechnology products. Not surprisingly this proposition met with the strong opposition of some industrialized countries, and the notion of common heritage practically fell into abeyance.

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