

**The Catch:
Perspectives in Benefit Sharing**

edited by Beth Burrows

The Edmonds Institute

2005

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First edition

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catch . . . n. 1. the act of catching, a taking and holding. 2. Something that catches, especially a device for fastening or for checking motion. 3. a. Something caught. b. *Informal*. One, such as a person or thing, that is worth catching. . . 5. A quantity that is caught. . . 8. *Informal*. A tricky or previously unsuspected condition or drawback. . .

*definitions drawn from The American Heritage
Dictionary of the English Language, 3rd Edition*

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Preface

When the Parties to the Convention on Biological Diversity decided to negotiate a regime about “access to genetic resources and fair and equitable sharing of the benefits arising out of their utilization” - sometimes more plainly called “access and benefit sharing” or “ABS” - I remember thinking, “Now the good old days are over. Now we’ve arrived at the ugly stuff: Property, Injustice, Domination. Now we’re going to talk about the really painful issues - so painful, indeed, that some of us may yearn for the good old days of the biosafety negotiations.”

The difficulty of the issues related to benefit sharing - and the pain of talking about them - are apparent in every chapter in this book. Elpidio Peria even begins his chapter talking about the difficulties of talking about it.

Perhaps it was the troublesomeness of the topic that led me to seek a title that could convey a landscape both graced by splendid inhabitants and marred by numerous pitfalls and the occasional highway robber.

There is almost no aspect of a benefit sharing discussion that is easy. Even where the authors of this book generally agree on the list of topics to be discussed and the need to achieve greater justice than in the past, they do not concur about all the salient details. Looking at the same scenarios of biodiversity acquisition - the story of the San and their Hoodia, for example - they come to somewhat different conclusions.

Some of the authors do not think that an ABS regime is possible or even desirable; some remain hopeful that it can still be achieved. Some think that benefit sharing belongs to an old paradigm steeped in injustice and destruction; some see it as our last opportunity to create a better future.

Generally speaking, the book begins with chapters by those most gloomy about benefit sharing and ends with chapters by those most

hopeful. Thus, the book begins with work by NGOs and indigenous peoples and ends with work by diplomats.

There is much simmering anger in these pages. Debra Harry and Le'a Malia Kanehe help the reader understand the contentiousness of the issues by beginning their chapter:

Countries that historically have been robbed of their genetic resources by more powerful states are determined to establish level playing field rules that allow them a fair share of the benefits arising from use of their resources. Countries relatively poor in biodiversity, a poverty sometimes exacerbated by destructive development practices, do not want to lose access to the genetic resources of those countries rich with biodiversity. The tension between the two sides, between states of the South and the North, has led to the articulation of "fair and equitable sharing of the benefits arising out of the utilization of genetic resources" as a primary objective of the 1992 Convention on Biological Diversity (CBD). Now, more than ten years later, the discussion at the CBD has arrived at the elaboration and negotiation of an international regime on access and benefit sharing.

Unfortunately, the CBD fails to recognize Indigenous peoples as owners of a vast amount of the world's genetic resources.

The “benefit sharing” problems of indigenous peoples and local communities permeate every chapter in this book. So too do problems related to intellectual property rights - patents in particular.

Although much of the book focuses on ABS negotiations in the context of the CBD, some of the discussion is directed elsewhere, to other venues, other times, and other contexts. Despite content that covers diplomatic, historical, economic, scientific, and even anthropological aspects of benefit sharing, the book is not meant to be a scholarly treatment of the subject. Consider it rather a series of reflections by a group of authors all of whom care deeply about biodiversity and people.

In some chapters, particularly those by Ossama M. El-Tayeb and Tewolde Berhan Gebre Egziabher, you may find an offering of tentative

solutions to some of the problems raised in this book. If occasionally you decide that there are missing topics or neglected nuances, you should fault the editor. It may also be useful to remember that this is a book created in anticipation of a negotiation. At least some of the contributors may have been contemplating the opening gambits.

The book began when Devinder Sharma sent me an essay he had written about some recent cases of biopiracy. I was struck by his reference to “‘benefit sharing’ candies and trinkets” and - perhaps because I come from a culture whose mythology includes a rather famous exchange of land (Manhattan) for trinkets - I wrote to several people, asking their thoughts on benefit sharing. I knew they were all immensely busy and I offered them little guidance and no compensation. Nevertheless, they generously agreed to help. I am deeply indebted for what they shared - the chapters of this book. All that follows is their gift.

Beth Burrows
December 31, 2004

Selling Biodiversity: Benefit sharing is a dead concept

Devinder Sharma

May, 2004. News report of the failure of the most written about benefit sharing partnership in India – involving the Kani tribes in Kerala, the Tropical Botanic Garden and Research Institute (TBGRI) at Thiruvananthapuram and a pharmaceutical company – comes at a time when Hawaiian lawmakers are under pressure to put a hold on research based on Hawai'i endemic species until it is decided how to regulate such research and share any profits that subsequent discoveries might produce.

The Kani tribe story, which was more or less a public relations exercise for the policy makers,

academics and some civil society groups who needed a justification for their own involvement in facilitating exploitation of biodiversity and the traditional knowledge that comes along with it, has now turned into a global showcase for biological theft. The TBGRI had initially encouraged 50 Kani families to undertake cultivation of arogyapacha plant species. The benefit every year was expected to be in the range of 20,000 to 30,000 rupees (Rs) per acre. (1) The income was expected to increase every year as demand for leaves went up. All that the Kani tribes have received so far is Rs 5 lakh (about US \$12,000) as one-time payment when the product was licensed and a royalty of Rs 2,000 (US \$ 5). (2)

The traditional knowledge that the Kani tribe provided led to the development of India's wonder drug, Jeevani, which is known to enhance immunity levels and have anti-fatigue and anti-stress properties. Jeevani has a commercial value estimated to be in the range of at least US \$50 million to 1 billion. A US-based company, NutriScience Innovations, is already using Internet channels to market the drug. The end result has been disempowerment, and an undermining of local communities' capacity to maintain their own

biodiversity-based livelihood strategies.

The Convention on Biological Diversity (CBD) describes benefit sharing as a fair and equitable sharing of the benefits arising out of the utilization of genetic resources, including by appropriate access to genetic resources and by appropriate transfer of relevant technologies, taking into account all rights over those resources and to technologies, and by appropriate funding. Effective regulation of access to genetic resources and benefit-sharing is currently one of the principal focuses of international negotiations relating to the CBD and the Plan of Implementation arising from the World Summit on Sustainable Development (WSSD) in 2002.

The definition of benefit sharing being used by the CBD has been used very cleverly by researchers and policy makers, including international agencies like the World Trade Organization (WTO), World Intellectual Property Organization (WIPO), and the United Nations Environment Programme (UNEP), to push forth industrial interests and, in the process, to turn a blind eye to the rights of the native communities

who preserved the knowledge associated with the resources. While voluntary guidelines and various options for equitable sharing of benefits and technology transfer are being tossed around, the fact remains that misappropriation of genetic resources and traditional knowledge continues unabated.

Perceiving that the international organizations, including the CBD Secretariat, are merely providing a helping hand to pharmaceutical companies and academic institutes in accessing precious biological resources, indigenous groups and some environmental organizations in Hawai'i called for scrapping a contract struck two years ago between the University of Hawai'i Marine Bioproducts Engineering Center and a San Diego biotech company called Diversa. The manner in which research had been conducted and the way proceeds from the deal were to be apportioned and distributed became matters of concern among indigenous groups. News of the proposed arrangement strengthened the belief that research would produce profits for industry with no benefit to indigenous communities, thus impelling some of

the local peoples to push for laws that ban outsiders from harvesting living things on their property. (3)

State Representative Ezra Kanofo, who chairs the committee on water, land, and Hawaiian affairs, has said in an interview that the contract gave the US-based Diversa Corporation exclusive rights to the discoveries based on research on environmental samples collected from Hawai'i's ocean resources. The *Honolulu Advertiser* says two bills, one originating in the Senate last session and one introduced this year in the House, are therefore aimed at establishing a moratorium on bioprospecting -- referring to scientific research aimed at finding a useful and profitable application for a process or product in nature.

Bioprospecting, however, is often just a handy term used by university researchers to obtain unlimited access to valuable genetic resources at a throwaway price. Take the case of Papua New Guinea, a hotspot of biological wealth and knowledge. Under the aegis of the International Cooperative Biodiversity Groups (ICBG) -- a misleading title for a so-called partnership consortium mainly between the University of

Papua New Guinea and the US National Institutes of Health and the University of Utah, among others -- the University of Papua New Guinea is taking a lead role in executing a US \$4 million project aimed at finding marine organisms and plant species that exhibit chemical properties useful in the treatment of tuberculosis, malaria, cancer, HIV, and other diseases. (4)

Already, in the last three years, the project has resulted in the collection for testing of 250 plant samples from about 120 plant species. Papua New Guinea is excited at the benevolence of the ICBG - US \$4 million, much of it going to US researchers - which will help in capacity building. Local researchers will be taught to inventory plants, collect ethno-medicinal plant species, and prepare and screen extracts. They will also learn the process of economic valuation of natural products, develop intellectual property rights legislation, and conduct outreach programs to educate communities about the further sharing of their knowledge. On the other side of the bargain, it is estimated that the US National Institute of Health and the University of Utah will make a neat US \$26 billion a year, if the drug discovery program in Papua New Guinea

proves successful. Whatever the case, the US \$4 million investment in Papua New Guinea is peanuts by any known international standards. This classic case of unbridled biological theft and exploitation comes at a time when meaningless international negotiations continue unabated. The Papua New Guinea benefit sharing example is in tune with the earlier and equally exploitative experience of Costa Rica that has been hailed by the pharmaceutical industry as well as researchers and policy makers as a success story.

The National Institute of Biodiversity of Costa Rica (INBio) in 1991 signed an agreement with the multinational Merck Sharp and Dome “to collaborate in the investigation of the existing biodiversity in Costa Rica’s tropical forests in order to establish its potential application to human health and animals.” Subsequently, INBio signed similar bioprospecting agreements with the cosmetic company Givaudan Roure in 1995 to explore the potential of biodiversity fragrances and aromas, which could be eventually synthetically reproduced. In 1996, INBio signed an agreement with another company, Indena Spa, to procure antimicrobial compounds to be used in cosmetics.

Three years later, it also entered into an agreement with the US-based Diversa to explore new enzymes in aquatic and terrestrial microorganisms. (5)

Numerous other INBio agreements involved ICBG (the group operating in Papua New Guinea), British Technology Group, University of Massachusetts, University of Strathclyde, NASA, American Development Bank, Cornell University, and the pharmaceutical company Bristol Myers Squibb. INBio has so far signed eleven international agreements on behalf of the Costa Rica government. Significantly, INBio provided unrestricted access to scout the tropical forests for a paltry fee. Costa Rica alone is home to five per cent of the world's biodiversity, with an estimated worth of several billion dollars, and all it has managed to get in return for its biodiversity is US \$2.6 million.

From Merck and Co., INBio got US \$1 million for the first phase of the project. (The project has been extended twice since then.) In addition, it received laboratory equipment and the material required for processing plant and microorganism samples. While the percentage of royalty accruing from the products derived from

samples taken in Costa Rica is being kept confidential, Merck enjoys the exclusive right to file patents.

If the INBio bioprospecting program is being offered as an example of successful benefit sharing, it would be interesting to know what would constitute an example of an exploitative collaborative effort. From here, the INBio agreement, to put it bluntly, looks like a sale of high grade oil for the price of brackish water.

Not having drawn any lesson from the INBio agreements, India, which is home to 45,000 plant species, merrily goes on documenting the traditional knowledge of its people. Plant and soil samples are regularly flown out of the country in the name of joint research collaboration. Some years back, Prime Minister Atal Bihari Vajpayee issued a directive to the Indian Council of Agricultural Research (ICAR), the umbrella organization for public-sector agricultural research, not to allow individual institutes to go into scientific collaboration with research institutes abroad. The directive was met with strong opposition. ICAR has since announced a prize of

Rs 5,000 for the best contribution of traditional knowledge that it manages to document every year.

The Council for Scientific and Industrial Research (CSIR) also is involved with documenting traditional knowledge. Neither CSIR or ICAR, however, is engaged in assessing the potential flow of benefits, if any, from the knowledge they are documenting. Both agencies support a network of civil society groups and institutes that receive nominal funding for documentation of innovations. Interestingly, the one confirmed benefit that does flow back to the local communities “sharing” their knowledge with government agencies involves a series of annual awards, including a small cash component and a plaque for the “winners”. And, in the end, the whole seductive process of extraction is invariably justified with phrases like “empowering of local communities” and “equitable benefit sharing”. In reality, both government agencies are busy selling the “green gold” of India for peanuts, not realizing that plant and animal biodiversity is for India - and for other developing countries - what oil has been for the Middle East.

The debates about “benefit sharing” will go on and on, and the corporations and the research institutes will continue to exploit local communities for their traditional knowledge. What needs to be done immediately, in order to draw international attention to this vexing problem, is for India to follow Mexico’s example in dealing with a five-year US government initiative entitled “Drug Discovery and Biodiversity among the Maya of Mexico”. That bioprospecting project, it will be remembered, intended to collect and evaluate thousands of plants and microorganisms used in traditional medicine by Mayan communities, in order to promote drug discovery. It also proposed to patent and privatize resources and knowledge.

(6)

Many indigenous communities opposed the commercial exploitation of their genetic resources and traditional knowledge, even though the project was designed to foster benefit sharing so that local communities could derive benefits from their biological resources. After two years of local opposition from indigenous peoples’ organizations in Chiapas, the bioprospecting project was finally canceled.

There is no other way out of such projects. Such projects must be canceled and avoided. Otherwise, the developing countries will be made to sell their “green gold” for little more than “benefit sharing” candies and trinkets.

Endnotes:

- (1) Moran, K. 2000. Bioprospecting: Lessons from benefit sharing experiences, *International Journal of Biotechnology* 2:1,2,3.
- (2) Varshney, V. , Tragic Potion, *Down to Earth*, Mar 31, 2004.
- (3) *Honolulu Advertiser*. Hawaiians, environmentalists protest native species study, Mar 18, 2004.
- (4) *The National*, Wonders of nature, Dec 30, 2002. Available at <<http://www.thenational.com.pg/0315/w1.htm>> on the Internet (viewed December 2004).
- (5) Government of Costa Rica. 2000. Benefit sharing, experience of Costa Rica. Paper prepared for the Second Regional Workshop of the UNCTAD on Project on Strengthening Research and Policy making Capacity on Trade and Environment in the

Developing countries, May 31-June 3, Havana, Cuba.
Available on the Internet at
<[http://r0.unctad.org/trade_env/docs/
Benefit%20Sharing.pdf](http://r0.unctad.org/trade_env/docs/Benefit%20Sharing.pdf)> .

- (6) See Intellectual Property Research Institute of Australia (IPRIA) webpage entitled, "Traditional knowledge, genetic resources, folklore, and biodiversity", especially "3.6 Mexico: Biopiracy/ prospecting", on the Internet at <http://www.law.unimelb.edu.au/ipria/research/trad_know.html> (viewed December, 2004).

Bioprospecting as Sophisticated Biopiracy

Vandana Shiva

Bioprospecting is a term that was created as a response to the problematic relationship between global commercial interests, the biological resources and indigenous knowledge of local communities, and the epidemic of biopiracy – the patenting of indigenous knowledge related to biodiversity.

Bioprospecting was first defined by Reid et al as “the exploration of biodiversity for commercially valuable genetic resources and biochemicals”. (1)

Bioprospecting is an inappropriate term and inappropriate process. It offers a commercial view of the world and assumes that prior to prospecting, the resources of desire were unknown, unused and without value. Using terminology derived from earlier "prospecting" for minerals and fossil fuels, "bioprospecting" obscures the fact that living resources are not non-renewable and are not without value prior to exploitation by global commercial interests for global markets.

Biodiversity is the basis of living cultures. It is the foundation of the living economies of the two thirds of humanity who depend on biodiversity for their livelihoods and basic needs. Bioprospecting, from the point of view of indigenous communities, is an expropriation of their collective and cumulative innovation -- innovation which has been utilized, protected, and conserved by their communities since time immemorial. Biodiversity and cultural diversity have mutually conserved and shaped each other.

The very concept of bioprospecting is legally

flawed, since it is based on patenting traditional knowledge. A patent is granted for inventions, which must be novel. Commercializing existing knowledge, the product of thousands of years of collective innovation by indigenous cultures, is not invention.

The bioprospecting model can never be a legitimate source of benefit sharing in the case of biodiversity-related knowledge because it is based on two exclusions. The first exclusion takes place when communities of users/innovators are excluded, when one local group is treated as the "legal" and exclusive holder of the knowledge in question. The second exclusion occurs when the corporation signing the bioprospecting contract claims intellectual property rights in knowledge transferred from an indigenous community; this distortive and unjustified claim to innovation serves over time to exclude the donor community from its rightful share in emerging markets.

Bioprospecting contracts, which deal with one individual or one community, fail to be equitable because prior informed consent needs to be granted by all communities and all members of

the communities who have contributed to the collective innovation and/or who utilize the knowledge to meet their needs.

Bioprospecting creates impoverishment within donor communities, first by claiming monopolies on resources and knowledge which previously enabled communities to meet their health and nutrition needs, and then by charging royalties for what was originally the community's and once was available for free.

Finally, bioprospecting leads to the enclosure of the biological and intellectual commons, through the conversion of usurped biodiversity and biodiversity related knowledge of indigenous communities into commodities protected by intellectual property rights (IPRs).

How Bioprospecting Undermines Access

Bioprospecting is being promoted as the model for relationships between corporations, which commercialize indigenous knowledge, and the indigenous communities, which have collectively

innovated and evolved the knowledge related to biodiversity. Bioprospecting is being presented as an alternative to biopiracy. However, bioprospecting is merely a sophisticated form of biopiracy. Bioprospecting, in effect, leads to the enclosure of the biological and intellectual commons. It takes the biodiversity and intellectual heritage of indigenous communities and converts it into commodities protected by IPRs.

Collective innovation, evolving over time and involving many people, is different from individual innovation, which is usually localized in time and space. Collective innovation involves many persons who contribute to innovation over time. The innovation is modified and enhanced as it is used over time and passed on from generation to generation. In some examples, collective innovation is no longer even local, e.g., in the case of seeds and in the case of such major, non-Western knowledge traditions as Ayurvedic and Chinese medicine. In some cases, collective innovation even crosses national boundaries.

Where innovations cross borders, it is particularly difficult to avoid biopiracy. This was

particularly obvious in the case of “ayahuasca”, a plant whose name means vine of the soul. Ayahuasca is used in an intoxicating drink produced for ritual healing and “enlightenment”. Traditional stories about the origins of this powerful tonic weave together ancestral guidance, communication with spirits of the plants, and the protection of visible and invisible guardians. Known by a variety of names including caapi, yahe, sainto daime and ayuhuasca, the drink is made using the bark of the jaguba vine (*Banisteriopsis caapi*).

In 1986, an American citizen, Loren Miller, obtained a U.S. patent for a variety of *Banisteriopsis caapi* which he had collected from an indigenous person’s garden. He dubbed the ayahuasca plant “Da Vine”. His patent was challenged by the coordinating body of indigenous organizations of the Amazon Basin (COICA), an umbrella group that represents 400 indigenous tribes of the region. The challenge led to the rejection of Miller’s patent claim in November, 1999. The decision was later reversed; the patent was reinstated and eventually expired.

Another case of problematic benefit sharing - some would say "biopiracy" - involved a case which has been cited as a "success" story of benefit sharing by the global community but one which is viewed as a failure by the indigenous (donor) community. This is the case of "arogya pacha" or "Jeevan", a plant that the Kani tribe has used for generations against fatigue and stress. A wonder drug derived from "Jeevan" was commercialized through a contract between the Tropical Botanical Garden Research Institute of Trivandrum and a pharmaceutical company. A U.S. based company, Nutri Science Innovations, is using the Internet to sell the drug. The estimated market value is \$1 billion. The Kani community only received US \$12,000. (3)

The biological diversity of India has always been a common resource for millions of our traditional communities. These communities have utilized, protected, and conserved their biodiversity heritage over centuries. Their collective and cumulative innovation has been the basis of local culture and local economies, economies which, I might add, constitute the dominant economies of the world in terms of the

numbers of livelihoods provided and needs met. In fact, traditional knowledge in medicine, agriculture, and fisheries is the primary base for meeting the food and health needs of traditional communities. For them, conserving biodiversity is synonymous with conserving the integrity of the ecosystem and species, the right to resources and knowledge, and the right to the production systems based on biodiversity. Thus biodiversity is intimately linked to traditional indigenous knowledge systems as well as to people's rights to protect their knowledge and resources.

Recently, however, nature's diversity and the diversity of knowledge systems have undergone a major process of destabilization with the expansion of patents and other IPRs into the domain of biodiversity via the Trade Related Intellectual Property Rights (TRIPs) agreement of the World Trade Organization (WTO). The whole concept of TRIPs was shaped by the trade objectives of transnational corporations (TNCs). Through the instrument of TRIPs and the appropriation and privatization of community knowledge that TRIPs facilitates, TNCs have posed a potent potential threat to the biological and intellectual heritage of

our diverse communities. The TNC interest is entirely commercial. For TNCs, biodiversity itself has no intrinsic value beyond its use as a "raw material" for the production of commodities and the maximization of profits.

In the context of privatization, the mutual exchange among communities has been replaced by bioprospecting - or "access and benefit sharing" - contracts offered to indigenous communities (or individuals) by corporations. These corporations seek to expropriate the invaluable and once-inalienable heritage of many communities through various means, including scientific collection missions and ethno-botanic research. Reid et al defined "biodiversity prospecting" as exploration of biodiversity in the pursuit of commercially valuable genetic and biochemical resources. The operative metaphor for such prospecting is borrowed from another arena where the prospecting was for gold or for oil. While biodiversity is fast becoming the "green gold" and the "green oil" for the pharmaceutical and biotechnology industry, the metaphor "prospecting" suggests that prior to the search, the resources were buried, unknown, unused and

without value.

However, local communities know the uses and value of biodiversity. It is that knowledge that sets the stage for bioprospecting contracts. Put another way, having spent centuries developing an understanding of their biodiversity, local communities are in a perfect position to save TNCs a lot of time and effort. . . and money in their search for useful material. The metaphor "bioprospecting" hides the prior uses, innovations, knowledge, and rights associated with biodiversity. Taking knowledge from indigenous communities through bioprospecting is only the first step in developing an IPR-protected industrial system which must eventually market commodities that use local knowledge as an input but are not based on the ethical, epistemological, or ecological structures of local knowledge systems. The TNCs will use biodiversity fragments as "raw material" to produce patent-protected products and these products in turn will serve to displace the biodiversity and indigenous knowledge originally exploited by the TNCs and their bioprospecting servants. Bioprospecting is the first step in the (colonial) path towards domination by monocultures and monopolies and the acceptance of the destruction

of diversity.

Indigenous knowledge is centered on the mutually creative relationship between nature and people. IPR regimes are premised on the denial of the creativity of nature. The ethical and epistemological assumptions and consequences of adopting an IPR regime through bioprospecting contracts need deep analysis and reflection. Such contracts may involve profound and irremediable changes in a community.

Biodiversity knowledge in indigenous communities is not individual innovation but collective innovation. Indigenous knowledge is not privatized but part of a shared heritage. All members of the community (or communities), including members in past generations, have contributed to the innovation, with many communities utilizing the knowledge and sharing the biological resources.

Bioprospecting usually involves an ethnobotanist - or some other type of congenial scientist - coming to talk with a member of an indigenous community. In time, the conversation

will turn to talk of compensation to the individual or the community for access to their biodiversity and/or the knowledge of how to use it. Not all who will be affected by this conversation will necessarily be invited to be present. However, whether or not the discussion includes them or their representatives, other communities will feel the impact of the transaction in the future, other communities who also share the innovation. Suppose other communities do not support the privatization of their common heritage. Bioprospecting has no room for respecting the rights of people and communities who do not want the common genetic resources enclosed. It is for those who do not accept the inevitability of the enclosure of our biodiversity that the alternatives to bioprospecting become an imperative.

The utilization of biodiversity in the people's economy is guided by a plurality of knowledge systems. Local communities hold the implementation of the properties, characteristics, and uses of this biodiversity, in different languages and in diverse epistemological frameworks.

In the case of a resource like land, which

cannot be multiplied, land-based commons have clear territorial boundaries for communities, with rights of access to common forests or pastures. Communities have very strict limits on resource use. The exploitation of these commons will only go as far as subsistence level so users cannot limitlessly increase exploitation for private gain. Principles and rules of management of the commons set strict upper limits to prevent over-exploitation and lower limits to ensure that none in the community is excluded from utilizing the commons.

In the case of agricultural resources and knowledge, which multiply by sharing and do not intrinsically reduce the givers' share by sharing, the community of users is always expanding. Thus, seed travels across communities and over time, increasing its uses and innovations, becoming available to all communities who might share in the biological and intellectual contributions it "contains".

The bioprospecting paradigm needs to be examined in the context of equity, specifically its impacts on the following:

- the donor community,

- the potential recipient communities,
- the bioprospecting corporations.

Even though bioprospecting contracts are based on prior informed consent and compensation - unlike biopiracy where no consent is taken and/or no compensation given - not all owners/carriers of an indigenous knowledge tradition are consulted or compensated pursuant to bioprospecting contracts. This exclusion not only leads to inequity and injustice; it also has the potential to pit individual against individual within a community and community against community in a community of communities. For example, consider an innovation that has been evolved by a group of communities. A bioprospecting contract enables a corporation to take this collective knowledge by writing a contract with only one community. This contract violates the biodiversity and knowledge rights of all other communities who have held or contributed to the knowledge and resources "accessed" by the contract.

This potential violation is the reason why the bioprospecting model, which deals with one

individual or one community or one interest group, can never be equitable. A commercial interest needs to gain the prior informed consent of all communities and all members of each community that has used and contributed to the collective innovation that is reflected in biodiversity-related knowledge. The partnership of the state is only one mechanism for discerning the interests of all contributing groups. In the case of biodiversity-related collective innovation, there are many interests involved and the state is not always able to represent all those interests. Farmers and the seed industry, traditional healers and pharmaceutical corporations, Western and non-Western scientific traditions, masculinist ways of knowing and feminist ways of knowing - all the diverse communities of interest have to be included in the transaction.

Corporation cannot be allowed to sign a bioprospecting contract with one local community, but only with the entire community of users/innovators, all those who have been or are carriers of the knowledge tradition related to biodiversity utilization.

Collective rights cannot be abjured or relinquished by any one community of users, or by any individual of any community, or even by the state on behalf of any community. The bioprospecting model, seen in this light, clearly is not a legitimate basis for benefit sharing in the case of biodiversity related knowledge. Bioprospecting is based on a double exclusion, as I have said before. The first exclusion takes place when communities of users/innovators are excluded and one local group is treated as holding the knowledge exclusively. The second exclusion takes place when the commercial enterprise signing a bioprospecting contract seeks intellectual property rights in the knowledge transferred from an indigenous community by way of an unjustified claim to innovation. Over time this intellectual property serves to exclude the donor community itself from free access; marketing systems and IPR regimes combine to make the community providing biological resources and knowledge dependent on purchase of proprietary commodities from those who sought their biodiversity and knowledge in the first place. For an example, we need look no further than the farmers who contributed seed to seed banks and later had to buy proprietary seed from

the seed industry that had accessed their donations.

How Bioprospecting Creates Poverty

Bioprospecting is often presented as a means for making the poor rich. It is often stated that the biodiversity rich regions are financially poor and since bioprospecting is associated with monetary compensation, it can make the biodiversity rich regions financially rich as well. However, the bioprospecting model is a model for taking away the last resources, both natural and intellectual, from the poor. It is, therefore, in reality a model for creating poverty for the community as a whole, even when it might bring money to a few individuals in the community.

The poverty creating impact of biopiracy and bioprospecting can only be perceived if one recognizes that there is a difference between the material economy and the financial economy. If people have rich biodiversity and intellectual wealth, they can meet their needs for health care and nutrition through their own resources and knowledge. If, on the other hand, the rights to both

resources and knowledge have been transferred from the community to IPR holders, the members of community end up paying high prices or royalties for what was originally theirs and free. In the bioprospecting world, they therefore become materially poorer.

Some communities are local users and others are non-local users. Suppose a community enters into a bioprospecting contact about a medicinal plant with a corporation and the corporation subsequently claims intellectual property rights (IPRs) related to the products derived from the plant:

- As a first impact, all other communities may no longer have access to the seeds and medicines they once used and thus they may be rendered poorer in terms of nutrition and health
- The second impact has to do with those other communities becoming poorer in financial terms as they are forced to buy seeds and medicines they once may have derived freely from local

plant biodiversity.

When a corporation uses the biodiversity knowledge of a community, commercializes the biodiversity, and transforms it into proprietary knowledge protected by IPRs, the impacts are also felt by the donor community:

- As the biodiversity gains commercial value globally, it may be exploited more intensely than it was before its “value” was widely recognized.
- This can lead to diversion of the biological resource from meeting local needs (into production activities aimed at feeding non-local greed).
- This diversion may generate scarcity which can lead to price increases and subsequent further increases in exploitation of the biodiversity.
- If exploitation devolves into over-exploitation, the process can lead to extinction.

- The local scarcity combined with IPRs on derived commodities eventually may put the resource and its products beyond the reach, i.e., access, of the donor communities (e.g., neem).
- Where that happens, the providing communities may lose their rightful share to emerging markets.

Thus communities may be made poorer by the bioprospecting process. They can also be made dependent, if not on the bioprospectors themselves, then certainly on those who benefit from the booty the prospectors bring back. Other poor communities - those whose traditions permit them to rely on free exchange or low cost seed - those who could have received the knowledge freely or at low cost - can, as discussed above, also be made dependent on the commercial interest.

The bioprospecting perspective reflects the commodification and privatization paradigm, which only protects the rights of those who appropriate people's common resources and turn

them into commodities. Once indigenous/ community knowledge has been absorbed into a commercial “invention”, the benefits provided and shared by indigenous and local communities are rendered invisible, and the focus is only on the benefits shared by those who have privatized and enclosed the local commons. Bioprospecting is sophisticated biopiracy. Its impact on biodiversity and indigenous cultures and local economies is the same as that of biopiracy. Reclaiming the intellectual commons through asserting collective Intellectual Property Rights represents the real model of equitable benefit sharing; only the commons ensures equity and sharing.

Endnotes:

- (1) Reid, W. V., et al., eds., *Biodiversity Prospecting : Using genetic resources for sustainable development*. World Resources Institute: Washington D.C., 1993.
- (2) Varshney, V., *Tragic Potion, Down to Earth*, March 31, 2004.

The traps of “benefit sharing”⁽¹⁾

Silvia Ribeiro

Contractual benefit sharing is like waking up in the middle of the night to find your house being robbed. On the way out the door, the thieves tell you not to worry because they promise to give you a share of whatever profit they make selling what used to belong to you.

*– Alejandro Argumedo,
Quechua activist*

The immense wealth of knowledge of plants, animals, insects and other elements of nature - knowledge on which the world has come to depend

for food, health, clothing, and many other aspects of human life - originated in indigenous communities and rural communities across the planet. That knowledge is and has always been a collective and public wealth, managed by local communities for the benefit of humanity. Pharmaceutical and agrifood industries and many others take from this base of knowledge for the production of their products and the acquisition of vast private profits. The resulting parasitism of collective knowledge and resources - and the massive exploitation it has come to represent - are not new phenomena, but are in fact centuries old. What is new, however, is the outcome of this activity. Today's legal, technological, and market tools are enabling ever bigger companies not only to profit from collective resources and knowledge, but also to privatize them and even to prevent the original stewards and creators from accessing them. As a sort of compensation for this expropriation, the term "benefit sharing" has been coined by those seeking access to other peoples' knowledge and resources. The was meant to imply, one supposes, that something will be given back to those who cared for the resources and generated the knowledge associated with it over the centuries. But, will

“benefit sharing” really work that way? Or is it a new trick for legalizing robbery? What impact will the mechanism of “benefit sharing” have on indigenous peoples?

Some history

All the foods we eat today, anywhere in the world, are based on the historic contribution that farmers and indigenous peoples have made over a period of more than ten thousand years. These peoples were the ones who adapted and developed plants and animals that came to be cultivated and raised as part of each community’s sustenance. The same is true in regard to health care. In addition to the medicinal plants that are widely used throughout the world, we also owe much of our medicine to the knowledge and experience that indigenous peoples and farmers have accumulated over the centuries.

The process of “mutual” nurturing - that is, of people feeding themselves with the crops they, in turn, nurture - is integral to indigenous and farming cultures – as well as to the cultures of artisanal fishers, shepherds, forest inhabitants, and

other rural communities the world over. These communities, have created the basis of the agricultural diversity that we all, directly or indirectly, depend on. Their activity was always present in what is sometimes called “natural” biological diversity, since the resource management performed by these (local) communities was not restricted to their own plot or community. These peoples promoted interaction of elements present in their own plots and the surrounding biodiversity, thus influencing, modifying, and, generally, increasing the diversity of biodiversity.

Farmers and indigenous peoples did (and do) not produce greater diversity for ideological reasons or because of spiritual principles. They enhanced biodiversity to achieve better adaptation to - and better exploitation of - the conditions in which they (and the biodiversity) lived. In the past, like today, they simultaneously developed and grew several plants and crops, and different varieties of each crop, in accordance with the seasons and the qualities of the environment on each site available. From each harvest, they selected the seeds that better suited their objectives and planted them again, sometimes crossing them with

others, experimenting and developing local cultivars adapted to the need of each family in the community. Thus, in the process of nurturing and creating an enormous amount of biodiversity, these peoples created a resource base for themselves and for those with whom they chose to share. Diversity thereby came to be inextricably linked to the small scale and its actors: indigenous peoples, forest inhabitants, farmers, shepherds and small-scale fishers.

Even though every family, community, and village has certain resources and seeds that are part of its culture and identity, the interchange and free flow of knowledge and resources is ever-present, not only for practical and tangible reasons, but also social, cultural and religious ones. For example, in many cultures, the wedding dowry consists of seeds given by one family to the other; it is very common for farmers to give seeds as gifts.

This process of nurturance and development is similar in the case of medicinal plants. It is estimated that 80 per cent of the Third World's population makes use of medicinal plants and the resources of traditional medicine for health care. (2)

This practice has its roots in indigenous and traditional knowledge gained over time and generally shared for common benefit. Although it is possible to differentiate among “general knowledge” held by most members of a community, “specialized knowledge” held by those who specifically develop such knowledge, such as midwives, herbalists, bone setters and others, and “sacred knowledge” held by very few, such as shamans, the knowledge has always been considered “collective”, in the sense of being part of the community that developed it. Even knowledge whose circulation is culturally restricted, such as knowledge considered sacred, may be a public and collective good in the context of the culture which nurtured and developed it.

The above descriptions are not about artifacts of the past, except perhaps in the sense that, over time, indigenous and community biological resources and knowledge have been greatly threatened and eroded by many forces, including, but not limited to, the industrial/chemical/mechanized agriculture of the Green Revolution, the agricultural export orientation imposed on the South’s economies, and the concentration of land

ownership that followed the stripping of farmers and indigenous peoples from their traditional lands. Despite all that has transpired, the process of creating agricultural diversity has persisted - to one degree or another - on at least 60% of the world's land under cultivation, on the area managed by traditional farmers and families. The "modernization" processes notwithstanding, it is estimated that the Third World's population depends on the biological resources to satisfy up to 90% of its needs, and that 60% of the world's population essentially depends on self-sustenance for its food. (3)

The further enclosures of the commons

The real "benefit sharing" has already been accomplished by the "true biodiversity actors", i.e., by indigenous peoples, artisan fishers, shepherds, and other rural peoples. They have created and nurtured biodiversity for millennia and the rest of us have become dependent on the benefits they have provided. Now, if we wish to conserve biodiversity, it is unavoidable that we protect the both the processes indigenous peoples and local

communities have pioneered and the actors themselves. To do so would require us to affirm their inalienable rights to their own lands, culture, and economic and political systems.

Over the last two decades, several factors have led companies to intensify biopiracy of traditional knowledge and resources. One is technological change. New technologies - biotechnologies, genomics, bioinformatics, and nanotechnology among them - have increased the possibility of finding new components and applications of traditional knowledge and resources. Another factor fueling biopiracy is the globalization of the patent system imposed by the World Trade Organization's intellectual property agreements. Today, by merely performing a transformation or an extraction in a laboratory, resources that were once collectively nurtured and developed, perhaps part of a community's commons, can be privatized by patent. Given the market control that comes with patents, it is easy to see that patents make piracy worthwhile. A third factor encouraging biopiracy is the high level of corporate mergers, concentrating the seed, agrochemical, chemical, and pharmaceutical multinationals into an ever more

powerful handful of “genetic giants” that control greater and greater shares of the market and exercise more and more political influence

In the scenario dominated by these factors, the Convention on Biological Diversity (CBD) and the World Intellectual Property Organization (WIPO), among others, have recommended the “protection” of traditional knowledge in national legislation - as if that were a solution to biopiracy. This recommendation comes instead of the more logical solution, which would have been to affirm the existence of traditional cultures and their inalienable cultural, land, and resource rights. With that solution, indigenous and local communities might continue to share their resources and knowledge without seeing them subjected to privatization or becoming the topics of dubious “benefit sharing” agreements offered by multinationals and other institutions. In the CBD and WIPO recommendation, the privatization of resources is legislated to facilitate the flow of some minimum percentage of royalties from patents to communities whose resources have been stolen. Going further, these international institutions also recommend that countries promote the patenting of

knowledge and resources by the indigenous and traditional communities *themselves* - for purposes of commercialization or as a “defense”- before the multinational companies do it.

This last recommendation is particularly perverse because it has led some indigenous groups to believe that patents might be a useful mechanism. Apart from the cultural transgression that intellectual “property” represents to most of these traditional cultures, the proposal is no more than an illusory assertion, illusory because intellectual property right systems are designed so that only the bigger and more powerful can use them to advantage. The cost of applying for and maintaining a single patent over its “lifetime”(often twenty years) can amount to hundreds of thousands of dollars, if the patent is applied for in the United States, Japan, and Europe. Further, acquiring a patent does not guarantee that the patent won’t not be violated or challenged. How could an indigenous or local community monitor and control violations of patents? How could they prevent others from applying for very similar patents? How could they afford the enormous expense of patent litigation? And even if they

manage to overcome the barriers to obtaining patents - a patent cannot be granted to a community, for example - how could they avoid the conflicts that a concept as alien as patents might lead to in their communities? Indeed, how could they avoid the conflicts that might arise between themselves and other traditional communities or cultures who might hold the same remedy, knowledge, or resource that is the subject of the patent?

The patent system is not the only system that operates to legitimize and amplify the deeper problem, the privatization of common and collective resources. In the current political and economic context, other less obvious types of intellectual property - such as denominations of origin or "recognition" of such cultural elements as design - lead to the same privatization consequence. Once a resource is "delimited", the result is not recognition and protection for the common benefit, but rather conversion of the resource into an object defined as someone's property and, therefore, susceptible to commercialization in the marketplace. Whether such commercialization serves a given community or not is, of course,

debatable. For example, if the clothing styles typical of a given indigenous community were to be given intellectual property design protection, those styles and the exclusive rights associated with them could then be bought by or licensed to a multinational. The same might be the outcome with whatever is “protected” by “denomination of origin” and other intellectual property mechanisms. The issue, then, is not whether it is desirable to fragment everything in order to gain legal recognition in a market-based economy, but rather whether the process of fragmentation operates to protect diversity and local cultures from the forces that threaten them.

Closing In

National Enclosures: Late 18th century European governments nationalized and sold common land (“the commons”) to wealthy landlords. As a result, entire communities whose birthright had once included open access to a commons suddenly lost access to their grazing lands, medicinal plants, non-cultivated foods, and fuel wood. This drove millions of Europe’s Indigenous Peoples to live in

factory towns or to emigrate overseas. Vast reservoirs of traditional knowledge and biodiversity were lost. In the 19th century, Europe's enclosure strategy spread to many of their colonies, with the same devastating results.

Corporate Enclosures: Even as land enclosure was taking place in Europe, a new system of knowledge enclosure (intellectual property) was underway. In Britain, between 1770 and 1850, almost 12,000 patented inventions were financed by the wealth stolen through land enclosures. Today, the patent enclosure system has spread to biological diversity. Through life patenting and nano-scale patents, the material building blocks and processes that comprise everything in the world, including people and plants, are being transferred into private hands.

Global Enclosures: The most sweeping biopiracy coup occurred in 1993, when the CBD came into force and thereby legalized "recognition" of national sovereignty over genetic resources. That effectively meant that all the resources collected and banked in countries in the North, in botanical gardens, aquariums, zoos, etc., regardless of their

source, belonged to the countries that housed them. The CBD, by asserting the sovereignty of a State over the genetic resources found within its borders, effectively enclosed the genetic “commons” State by State and subverted the human rights of Indigenous Peoples and communities.

Self Enclosures: The pressure to sign bilateral contracts, particularly those with intellectual property provisions that promise acquisition of “a share of the benefits”, means that communities are being encouraged to convert their knowledge and genetic richness into merchandise, thereby breaking with their values and cosmologies, eroding their customary systems of exchange, and damaging their community’s resilience.

Biopiracy: what is in a term?

More than ten years have passed since RAFI , now known as ETC Group, coined the term “biopiracy”. Some understand biopiracy to be the act of collecting biological material from a local group of people without the consent of those people or when there is no agreement to share the financial profits

that may derive from the collected material. Some of those who share this view of biopiracy see intellectual property (IP) protection as a useful weapon to combat biopiracy. They hope that the appropriating party will be legally-bound to share profits at the local level. This narrow definition of biopiracy – based in the context of intellectual property – allows corporations to claim that they, too, are victims of biopiracy. According to the agricultural biotechnology corporations, for example, when farmers save patented seeds from one year’s harvest to the next year’s planting without paying a royalty to the corporation, that is also an act of biopiracy.

More than a decade has passed, too, since the CBD entered into force (December 1993). (4) The Convention’s stated aims are the “conservation of biological diversity, the sustainable use of its components and the fair and equitable sharing of benefits arising out of the utilization of genetic resources.” Despite these apparently laudable aims and the efforts of Indigenous Peoples, civil society organizations, and some government delegates, the Convention is, in fact, less about protecting the wealth of nature and the custodians of biodiversity

than it is about protecting the wealth of the few powerful economic actors in the gene business. Rather than safeguarding genetic resources, the Convention's particular notion of "benefit sharing" and the interpretations that have been formulated subsequent to the Convention's adoption, have provided a legal framework for plundering resources and knowledge through the legitimization of intellectual property on life forms. Further, the CBD's endorsement of bilateralism through contracts has also legitimated and facilitated biopiracy.

For ETC Group, and for many groups in the global South, biopiracy refers to the privatization of genetic resources (including those derived from plants, animals, microorganisms, and humans) from those peoples who hold, maintain, embody, develop, breed, or otherwise create, foster, or nurture those resources. The biopirates' most frequent *modus operandi* is intellectual property (e.g., trademarks, patents, Plant Breeders' Rights), asserted to gain monopoly control over genetic resources that were formerly in the control of farmers and Indigenous Peoples and traditional communities. The resulting privatization of

biological resources and related knowledge is biopiracy, even though this process may be legal according to national law and even though it may engender a signed “bioprospecting agreement” that includes provisions for so-called “benefit-sharing”.

Because existing legal frameworks and voluntary guidelines do nothing to prevent intellectual property and other means of privatizing resources, they remain inadequate to protect the integral rights of farmers and indigenous and traditional peoples and, therefore, all bioprospecting unavoidably falls into the category of biopiracy. The ancestral tradition of sharing knowledge and freely exchanging seeds, plants, and other resources – which has formed the very basis of diversity – may be transformed by engagement into a dangerous activity, because once Indigenous Peoples share information or genetic resources with bioprospectors, it is possible they will lose control over those resources. Given that the majority of livelihoods in the South are dependent on biodiversity, losing control over their own genetic resources is one of the biggest threats to Indigenous Peoples and traditional communities. If a resource is privatized through

the patent system, it is likely that a community that once had access to the resource no longer will have the legal right to use it or no longer may be able to afford to buy it. If privatizing the resource does not limit the community's access to the resource (e.g., because the resource "owner" deems it too difficult or expensive to prosecute the community at the local level), a fundamental change has taken place, nonetheless: what had been a common and routine part of everyday life is now subversive and illegal. In addition, the privatization of water, services, and other vital resources means that rural communities may find themselves in a situation where all of their everyday actions are illegal and potentially subject to fees or prosecution.

An equally dangerous impact of biopiracy is that bioprospecting contracts encourage communities, groups, or individuals to participate in commodifying and selling the commons and collective heritage, pitting them against the other People or inhabitants of the same region. In this case, the contract not only legitimates the robbery, but also erodes the resilience and solidarity of communities or peoples. Consider the cultural wealth lost to the market system when members of

an Indigenous People or a rural community begin to see their traditional knowledge and the nature around them - not as the bases for life and health - but as merchandise to be sold before their neighbors get the chance.

Once we start looking at organisms as bank accounts, then we are missing the entire view of what is in front of us. Curiosity of the living world ends and so does the meaning of being here. (5)

*- Ricardo Callejas, professor of biology
University of Antioquia,
Medellin, Colombia*

Old piracies, new enclosures, same intentions

The flow of exchange of genetic resources and knowledge is as old as civilization, and it is one of the main contributors to the development of biodiversity and of food, medicines, clothes, and many other elements vital to the survival and well-being of humankind. Biopiracy happens when this flow is interrupted and these resources are

misappropriated, privatized, and/or monopolized. The Dutch, for example, did not benefit humankind, when in 1621 they destroyed every clove and nutmeg tree on all save three well-guarded islands in the Moluccas. As a result of their actions, fully three-quarters of the plant diversity were lost on the other islands of the Moluccas. (6)

Following the trail of conquerors and travelers, plant collectors from industrialized countries ventured southward throughout the twentieth century in search of valuable genetic material for agricultural plant breeding and for medicinal uses. (7) In most cases, no money changed hands, no profits were shared, nor was any other kind of acknowledgment given to the farming or indigenous communities that selected, maintained, and improved traditional crop varieties or selected and made use of plants with unique properties. In more recent times, the process continued, fueled by the enormous economic value of these resources. For example, urging the US Senate to ratify the CBD back in 1994 - which the US failed to do and still has not done - Warren Christopher, then Secretary of State,

pointed out that foreign germplasm added over US \$10 billion to the (then) \$28 billion annual maize and soybean market in the US. (8)

With the development of broader intellectual property systems, farmers are losing the right to use and develop plant diversity. Patents increase the control that institutional plant breeders have over plants, seeds, and genetic resources and they decrease the farmers' control over seeds and local plant breeding. Today, under some national patent laws, it is illegal for farmers to save patented seed for replanting the following season. Why does this matter? Farmers have been selecting seeds and adapting their plants for local use for over 200 generations. Up to 1.4 billion people in the developing world depend on farm-saved seeds as their primary seed source. Crop genetic diversity enables farmers to adapt crops and make them better suited to their own needs. Communities that lose traditional varieties, developed over centuries, risk losing control of their farming systems and they risk becoming dependent on seeds from outside sources and the chemical inputs needed to grow them. Without an agricultural system adapted to a community and its environment, resilience in

agriculture is impossible.

Valuable chemical compounds collected from plants, animals, and microorganisms can be more easily identified when indigenous knowledge is accessed beforehand. Biopirates use indigenous knowledge (often referred to as Traditional Knowledge) to increase their chances of finding active properties or 'hits' in the search for biologically active compounds. In a recent example, only one among many, a researcher at the University of Bonn (Germany) attempted to treat diabetic rats using a medicinal plant that shamans in the highlands of Mexico use to treat "sweet blood". Initially, the "scientific" research produced unpromising results. Then the researcher studied the shaman's preparation of the plant and learned that its efficacy depends on proper preparation. When the medicinal plant is mixed with maize and allowed to stand for a period of time, it becomes an effective drug against diabetes. (9)

Pharmaceutical companies have profited enormously from natural product drug research. (10) A recent study demonstrated that the base compound in most of the top 150 commercial

pharmaceuticals is also known and used in a comparable way by traditional healers. (11) It is estimated that the annual market for products derived from genetic resources in the pharmaceutical industry alone is between US \$75 and 100 billion. (12) A 1999 study revealed that, for every one of the top ten pharmaceutical companies, natural products contributed at least 10 percent and, in some cases, more than 50 percent to total sales. (13) Zocor, a cholesterol-lowering drug derived from a genus of fungi, for example, made Merck & Co. \$6.7 billion in 2001, over 50% of the company's total sales. (14)

The strategy of relying on natural products and indigenous knowledge in drug-discovery research ebbs and flows. Natural product research is often seen as slow and costly and advanced technologies, such as combinatorial chemistry (the synthesis of chemical compounds as ensembles known as 'libraries' and the screening of those libraries for desirable properties), offer alternatives that can provide unprecedented numbers of compounds that are potentially biologically active. Beginning in the early 1990s, some companies scaled down or closed natural products research

programs, although all of the top pharmaceutical companies continued to engage in some natural-products discovery in-house or through subsidiaries. (15) This is because natural products have yet to be surpassed in efficacy or profitability. A recent survey conducted by the (US) National Cancer Institute revealed that 61% of the 877 small-molecule new chemical entities introduced as drugs worldwide during the period from 1981 to 2002 can be traced to natural products. (16) On the other hand, for the same time period, not a single *de novo* combinatorial compound was approved as a drug. (17) And, remember, this was a time when the US Food and Drug Administration (FDA) was reforming the drug-approval process to help speed-up drug development, and advances in proteomics (the study of proteins), genomics, and combinatorial chemistry were raising hopes that more drugs would be developed more quickly. So far, the hopes have not been borne out. (18) According to FDA Commissioner Mark McClellan, new chemical entities approved by the FDA reached an all-time low of 21 in 2002 (42 were registered in 1996). (19) Some speculate that the recent dearth of new drugs may be a reflection of the diminished interest in natural-products drug

discovery of the last decade. . . so it looks like we are about to go back to the rain forest. (20)

Oiling the Monopoly Machinery through “benefit sharing agreements”

When most people hear about how private interests have made enormous profits parasitizing collective resources and knowledge, and how intellectual property systems have fueled the process of misappropriation and privatization of resources originally serving the common good, one frequent reaction is that the privateers should pay something back to those who created this wealth. Therefore, many well intentioned people think that “benefit sharing agreements” could at least offer some compensation. The problem is that this measure, instead of being a solution, creates new problems. Assimilating benefit sharing with intellectual property royalties, for instance, is a way of making the victims into accomplices of the crimes, as it legitimates the use of the same tools that underpin privatization.

Of course, companies plundered genetic

resources before intellectual property systems, bioprospecting contracts, and benefit-sharing agreements existed. Of course, they have the power to continue doing the plunder. But instruments of legalizing biopiracy are important to these companies, not only as legal or moral legitimization, but also because the instruments serve as red “traffic lights” in the world of corporate competition, providing a kind of barrier to the claims of other companies or even countries. And last, but not least, these legalized instruments of biopiracy help convince victims that they, too, will gain. If a signed contract promises that they will get a share of the profits, then everyone can feel like “a winner.” And having gained these psychological and financial comforts, the victims may never notice the loss of control of their collective resources, or the fact that, by their own standards, they may have sold their souls.

CBD: Good COP or Bad COP?

The Convention on Biological Diversity has been hailed for having established in international law the need for a “fair and equitable sharing of benefits

arising out of the utilization of genetic resources.” The reality, however, is that the text of the CBD and interpretations of the text formulated at subsequent Conference of the Parties (COP) negotiations have upended the CBD’s stated aim. The CBD is not about equity but about facilitating legal access – mainly by corporations from the North – to the genetic resources and knowledge of indigenous and other traditional peoples, mainly in the South. The facilitation is furthered by the fact that the CBD, although a multilateral agreement, strongly encourages bilateral deal-making and commercial exploitation of biodiversity.

The implications of the concept of “benefit sharing” within the CBD cannot be fully appreciated if separated from the emphasis on bilateralism. The CBD states that access to genetic resources “shall be facilitated” (Article 15.2) and that States are the designated entity authorized to determine the conditions for this access (Article 15.1) under an over-reaching claim that a State has sovereignty over the genetic resources found within its borders.

The apparently reasonable statement that

States have sovereign authority over their own genetic resources ignores the pre-CBD reality. The majority of the known genetic resources and associated knowledge originated and is still present *in situ* in the political South (roughly 83% of the world's *in situ* genetic resources and *in situ* technologies). However, thanks to the march of conquerors and diverse "scientific" expeditions, more than 75% of all *ex situ* resources (resources that have been collected and banked) are present in institutions such as botanical gardens, aquariums, zoos, and microbial collections, in industrialized countries of the North. (21) As mentioned earlier, all resources that were collected prior to the ratification of the CBD are included in this "sovereignty" legitimized in 1993, when the Treaty came into force. In other words, if a resource was taken from the Malaysian rain forest in 1983 and is now happily ensconced in a botanical garden in the Netherlands, the Netherlands owns the resource to the same degree that Malaysia does. Because Malaysia has no legal standing as the original "provider" of the resource, there will be no benefits coming South if the plant turns out to cure cancer and if scientists in the Netherlands develop it into the blockbuster drug-of-the-century before

Malaysian scientists do. The botanical chess game that colonial powers have played since the time of Columbus has finally been formalized, legalized, and legitimated through the CBD.

But beyond that, these genetic resources were not in the State's domain previously, and most importantly, they were not for sale. They were public and collective goods, exchanged and shared, developed and nurtured by farmers and Indigenous Peoples over thousands of years for the welfare of their own communities and, as a consequence, the welfare of communities throughout the world. Furthermore, the same knowledge and resources may be present in more than one State, as eco-regions and traditional cultures do not necessarily coincide with modern geopolitical divisions. Modern States are often hostile to the Indigenous Peoples, farmers, fishing and other local communities living within their borders. States have a poor record for respecting the rights of indigenous cultures so that further plundering will likely be perpetrated by Indigenous Peoples' "own" States.

It is commonly believed that the CBD would

help prevent these abuses by recognizing the rights of traditional people and insisting that they be consulted on the use of their resources and knowledge, mainly through Article 8(j). Article 8(j) states that: “Each Contracting Party shall, as far as possible and as appropriate, subject to its national legislation, respect, preserve, and maintain knowledge, innovations and practices of indigenous and local communities embodying traditional lifestyles relevant for the conservation and sustainable use of biological diversity and promote their wider application with the approval and involvement of the holders of such knowledge, innovations and practices, and encourage the equitable sharing of benefits arising from the utilization of such knowledge, innovations and practices.”

In fact, 8(j) might have been a good article, but it has serious flaws. The most obvious flaw is the inclusion of the clause “subject to national legislation,” which appears throughout the text of the CBD (as well as other multilateral agricultural and environmental agreements). The clause leaves it up to each State to enforce the article, which, in many cases, renders it useless in its entirety.

Another shortcoming is that by apparently recognizing “communities,” it denies at the same time the wider concept of “Peoples” preferred by many First Nations groups. The term “communities” suggests that there is one easily identifiable actor (e.g., the representative of a “community”) who is authorized to negotiate on that community’s behalf. In fact, the strategy of many bioprospectors – companies or intermediaries such as universities, international conservation NGOs, etc. – has been to look for “cooperative” communities willing to enter into contracts to sell their resources and/or knowledge, despite the fact that the same resources and knowledge may be historically present in and shared by many other communities and peoples within the same culture and/or region. Those other communities may not want to sell their resources. Identifying “communities” as opposed to “Peoples” is a very useful tool to facilitate the privatization of resources, and it has been used not only to obtain genetic resources, but also to obtain “consent” for mega-projects with negative impacts, such as the sale of shared land and exploitation of other natural resources.

The Bonn-Bomb?

The “Bonn Guidelines on Access to Genetic Resources and Fair and Equitable Sharing of the Benefits Arising Out of their Utilization” were adopted, after several years of discussion, at the Sixth Conference of the Parties of the CBD in The Hague in April 2002. Although the Bonn Guidelines are not revolutionary in their content, they do, in some cases, introduce alarming elements that will further facilitate and mainstream biopiracy. As the name indicates, they are a set of recommendations that provide a framework for bioprospecting contracts on genetic material (excluding human genetic material). Although they are “voluntary”, they will very likely become a powerful document used to justify and promote biopiracy. Indeed, the Secretariat of the CBD has stated that the Guidelines’ unanimous adoption by 180 countries “gives them a clear and indisputable authority.” (22)

Many transnational companies already claim compliance with the CBD in order to justify their

resource privatization. These guidelines make their work much easier. Despite the fact that they are not legally binding, the Guidelines will be seen by governments as a template for national legislation, which is the final step in the process of legalizing biopiracy.

Among other problems, points that are wrong with the Bonn Guidelines are:

- The use of the term “stakeholders”- to define supposedly involved parties. This puts multinational companies, NGOs, universities, governments, and farmers and indigenous communities on an equal footing, differentiated only by the meaning attributed to the terms “users” and “providers”. Thus, the recommended “stakeholder” box contains both those who steward and nurture biodiversity for the common good (e.g., farmers, indigenous peoples, fishermen, etc.) and those that predate and privatize biodiversity (e.g., companies). The two kinds of “stakeholders” don’t “hold” anything in common, and negotiation over “benefit

sharing” can not solve or eradicate this contradiction.

- The use of intellectual property agreements on life and traditional knowledge as tools for benefit sharing. This creates problematic outcomes that have already been discussed above. These outcomes (privatization, legitimization, and community erosion) are not acceptable, even if the “benefit sharing” includes both a “monetary benefit” (from payment of a percentage of the royalties collected from patents), and a “non-monetary benefit” (such as, for example, joint-ownership of a patent).
- The reaffirmation of the narrow use of the term “communities”. This fragments rights and understanding of indigenous peoples, ignores broader cultural and historical contexts, and strengthens the role of States. Such usage acts to support the entitlement of States to give access to resources

without the prior informed consent of prime biodiversity actors, even in the face of refusal by those actors to allow access. Thus the usage effectively dispossess Indigenous peoples and communities of their right to say “No”.

- The requirement that restriction to access must be based on “legal grounds”. This denies ethical, cultural or other values that are held by farmers or indigenous peoples and that are most often not recognized in law.
- The definition of “salaries” as benefit sharing. This neglects the reality that salaries are not “benefits” but only payment - and often a cheap payment - for labor.
- The encouragement of capacity building in indigenous and local communities to develop skills to negotiate contracts, and do economic valuation of biodiversity. This capacity building does not so much serve the

communities in question as serve to commodify biodiversity and legitimize its monopolization by transnational corporations.

- The reaffirmation of the idea that capacity building for the use of biotechnology should be seen as “benefit sharing”. This ignores the widespread critique of this technology and its potential impacts on peoples, countries, and ecosystems.

The main effect, then, of use of the Bonn Guidelines would be not to protect and recognize the real benefit sharing that Indigenous Peoples, farmers, and traditional or local communities have done for millennia. Nor would be the main effect be to protect those Peoples and communities, their sharing mechanisms, resources, and knowledge from theft and privatization. Instead, the Guidelines seem to be about seducing some of these very communities and Peoples into robbing themselves and taking part in a process that will ultimately devastate their livelihoods and cultures.

A Biodiversity “Cartel”: The Like-Minded Megadiverse Countries

Another recent biodiversity initiative of the same ilk as the Bonn Guidelines is the Cancún Declaration of Like-Minded Megadiverse Countries. This Declaration is often misinterpreted as a pro-South initiative that will conserve and utilize biodiversity and stop biopiracy.

The Cancún Declaration was issued by environment ministers and delegates from Brazil, China, Colombia, Costa Rica, Ecuador, India, Indonesia, Kenya, Mexico, Peru, South Africa and Venezuela in Cancún, Mexico on February 18, 2002. Unfortunately, this Mexican-led initiative - which, according to the Declaration itself, covers 70% of the world’s biodiversity – does not defend the interests of the participating countries’ own populations or Indigenous Peoples or local communities. This is particularly clear in the case of Mexico, where a law on indigenous rights failed to pass into legislation in the form that had been agreed upon by the National Indigenous Congress and other indigenous groups. Instead of

recognizing the interdependency of cultural and biological diversity and seeking to protect both, the Group of Like-Minded Megadiverse Countries can be seen to have acted primarily in the interest of gaining maximum payment for biological diversity. According to the Cancún Declaration, the participating nations sought to introduce and/or harmonize intellectual property systems and increase the use of biotechnology as a means of conserving diversity. Like the Bonn Guidelines, the Cancún Declaration only paid lip-service to the need to take into account the concerns of indigenous communities and to share benefits equitably. Like the Bonn Guidelines, the initiative serves to facilitate (legalize) biopiracy rather than to stop it.

Conclusion

The practice of biopiracy will not ebb as long as genetic resources are feedstock for industry profits. Nor will the piracy ebb while those resources can be legally monopolized. Tragically, the legitimization of monopolies has been given a moral halo by a presumably “neutral” forum, the

CBD. Thus has an offense been transformed into a virtue. The underlying message would seem to be: "Robbery of resources is a fact of life, like progress and science; it can't be stopped, so let's face the inevitable and try to get something out of it. Let's become merchants instead of victims, and do it before our neighbors do." The Bonn Guidelines say, "Beggar thy neighbor." The Megadiverse Countries initiative says, "Beggar thy biodiversity."

Looking back over the past decade, the CBD has been toothless in halting the plundering of resources and knowledge from Indigenous Peoples, farmers, and traditional communities, but it has become a powerful tool to condone it. The Convention's particular notion of "benefit sharing" has become more akin to "compensation for damages" accrued from biopiracy. By connecting "benefits" to intellectual property systems, biopiracy has been legitimated, some companies have been able to increase their competitiveness in the marketplace, and community partners have sometimes been made unhappy pawns in harming the interests of others.

No one denies that benefit sharing is needed.

The issue is that the real “benefit sharing” – to the benefit of all people – has been practiced for millennia by the real “biodiversity actors”- i.e., by Indigenous Peoples, peasants, small farmers, fisherfolks, forest dwellers, pastoralists and other traditional communities. All agriculture and health care systems are based on their past and present contributions, which, in turn, have been based on reciprocity, on the free flows of exchange of resources and knowledge among and between Peoples, communities, and regions across the world. The process is not comparable to a commercial transaction. Rather, it is based on the collective and intergenerational nurturing and development of biodiversity. This is what has to be protected and maintained along with Peoples’ social, economic, cultural, and political rights. Protection is not about paying fees as compensation, but about respecting and restoring the right to land, territory, resources, identity, and diversity. It is also about ending the privatization and monopoly of resources through intellectual property regimes, new technologies, or other kinds of enclosures.

Endnotes:

- (1) This article is based on —and partly taken from— *ETC Communiqué*, Issue # 83, From Global Enclosure to Self Enclosure: Ten Years After - A Critique of the CBD and the 'Bonn Guidelines' on Access and Benefit Sharing, January/February 2004, available on the Internet at <<http://www.etcgroup.org/article.asp?newsid=432>>. While most of the research and concepts used in this chapter are taken from the collective work of ETC Group, the final composition remains the responsibility of the author.
- (2) Shand, H., *Human Nature: Agricultural Biodiversity and Farm-based food security*, FAO: Rome, Italy, 1997, p. 13.
- (3) Shand, *op.cit.*
- (4) The text of the Convention is available on the Internet at <<http://www.biodiv.org>>.
- (5) Quoted in Agres, T., When Sharing Means Less for All: New rules on biodiversity prompt frustration with treaty, *The Scientist*, October 20, 2003. Available on the Internet at <http://www.the-scientist/yr2003/oct/prof4_031020.html>.
- (6) Brockway, L., *Science and Colonial Expansion: The Role of the British Botanic Gardens*, Yale University Press: New Haven, 1979.

- (7) Laird, S.A. and ten Kate, L., Biodiversity prospecting: the commercial use of genetic resources and best practice in benefit-sharing, in Laird, S. A., ed., *Biodiversity and Traditional Knowledge: Equitable Partnerships in Practice*, Earthscan: London and Sterling, VA, 2002, p. 241.
- (8) Letter from Secretary of State Warren Christopher, 16 August 1994. Note: The United States' failure to ratify the CBD should not be taken as a sign that the Convention is a "good" treaty for Indigenous peoples and traditional communities of the developing world or that the treaty has sufficient legal force to extract and compel compensation from an industrialized superpower such as the US. The reason for US failure to ratify the treaty stems largely from US general wariness of all multilateral treaties that might imply a threat to the intellectual property rights of US corporations.
- (9) University of Bonn news release, *Shaman Medicine Antidote to 'Sweet Blood,'* available on the Internet at < www.uni-bonn.de/en/News/29_2003.html>. Note: although this seems to be a case of biopiracy, a search (December 2003) of patent databases did not reveal patent applications or patents on this treatment for diabetes.
- (10) Natural product drugs are those that occasionally are manufactured partially or wholly by chemical synthesis but which are chemically identical to a naturally-occurring genetic resource. (From Laird and

ten Kate, *op. cit.*, p. 250.) Note: The task of drug discovery and development is substantial; the high cost and great effort required account for the need to turn to indigenous knowledge (as a shortcut). \$802 million (in 2000 US dollars) is often quoted as the price of developing one new drug . The figure comes from DiMasi, J. A., et. al. , 2003, The price of innovation: new estimates of drug development costs, *Journal of Health Economics* 22: 151–185. The quote often forms part of an *apologia* justifying the high cost of drugs.

- (11) The study was made by Grifo, F., et *al.* and is cited in Laird and ten Kate, *op.cit.*. (2002), p. 270.
- (12) ten Kate, K. and Laird, S.A., *The Commercial Use of Biodiversity: Access to genetic resources and benefit-sharing*, Earthscan: London, 1999, p. 2.
- (13) Laird and ten Kate, *op. cit.* (2002), pp. 249.
- (14) *Ibid.*, pp. 249-50. The 2001 sales figure for Zocor comes from Anon., "Zocor patent extended," February 27, 2002. Available on the Internet at <<http://money.cnn.com/2002/02/27/companies/merck>>.
- (15) Laird and ten Kate, *op.cit.*. (2002).
- (16) Cited in Rouhi, M., Rediscovering Natural Products, *Chemical & Engineering News*, October 13, 2003, p. 78.

(17) *Ibid.*

(18) 12 biopharmaceuticals were approved in 2002; 27 were approved in 1998. (Mullin, R., *Drug Discovery Perspectives, Chemical & Engineering News*, Aug. 18, 2003, p. 14.)

(19) *Ibid.*

(20) Rouhi, *op. cit.*, p. 77.

(21) RAFI *Communiqué*, "Geopolitics of Biodiversity," Issue #46, 1996. Available on the Internet at <<http://www.etcgroup.org/article.asp?newsid=203>>.

(22) Zedan, H., *Introduction to the Bonn Guidelines on Access to Genetic Resources and Fair and Equitable Sharing of the Benefits Arising out of their Utilization*, Secretariat of the Convention on Biological Diversity: 2002, p. IV.

The BS in Access and Benefit Sharing (ABS): Critical Questions for Indigenous Peoples

Debra Harry and Le`a Malia Kanehe

Introduction

There is a lot of discussion about access and benefit sharing (ABS) these days. Countries that historically have been robbed of their genetic resources by more powerful states are determined to establish level playing field rules that allow them a fair share of the benefits arising from use of their resources. Countries relatively poor in biodiversity, a poverty sometimes exacerbated by destructive development practices, do not want to

lose access to the genetic resources of those countries rich with biodiversity. The tension between the two sides, between states of the South and the North, has led to the articulation of "fair and equitable sharing of the benefits arising out of the utilization of genetic resources" as a primary objective of the 1992 Convention on Biological Diversity (CBD). Now, more than ten years later, the discussion at the CBD has arrived at the elaboration and negotiation of an international regime on access and benefit sharing.

Unfortunately, the CBD fails to recognize Indigenous peoples as owners of a vast amount of the world's genetic resources. In fact, the CBD only recognizes states as sovereigns over genetic resources and ignores the proprietary rights of Indigenous peoples in the same territories. In the international debate, discussions about Indigenous peoples' rights are recast in watered down or bracketed language. For example, the CBD refers to "indigenous and local communities" instead of "Indigenous peoples". (1) Thus, it ignores Indigenous peoples' status as rights holders and instead demotes Indigenous peoples to the status of "stakeholders", a category that includes

corporations, academic institutions, non-governmental organizations, and just about any other non-state entity.

That said, what does benefit sharing mean for Indigenous peoples? What incentive do we have to participate in these agreements, particularly if our ownership rights are sidelined or marginalized? What are the implications of participating in benefit sharing arrangements for genetic resources? How do Indigenous peoples move beyond the narrow market-oriented models being presented to them? These are some of the questions to be discussed in this chapter.

I. Conflicting Sovereignties over Natural Resources

Indigenous peoples' struggle for self-determination is occurring on many fronts, globally, nationally, and locally. The corporate hunt for genetic resources within our territories raises new difficulties for those maintaining permanent sovereignty over natural resources that have long been sought after by colonial governments.

Intellectual property rights are being used to turn nature and life processes into private property. Once deemed private property, genetic material becomes alienable; that is, it can be bought and sold as a commodity. This, in the eyes of many Indigenous peoples, is an attempt to legalize thievery, a thievery that we recognize as "biocolonialism" -- the extension of colonization to the biological resources and knowledge of Indigenous peoples. (3) Below, we discuss Indigenous peoples' right to permanent sovereignty over genetic resources and the conflict raised by the CBD's proposal for an international regime on access to our resources and the sharing of benefits that may arise thereafter.

A. Indigenous Peoples Permanent Sovereignty over Genetic Resources

Article 1 in both the International Covenant on Civil and Political Rights and the International Covenant on Economic, Social and Cultural Rights, begins with these words: "All peoples have the right of self-determination. By virtue of that right they freely determine their political status and freely pursue their economic, social and cultural

development." (4) United Nations Human Rights Special Rapporteur Miguel Alfonso Martinez states in his study on treaties that, "Indigenous peoples, like all peoples on Earth, are entitled to that inalienable right." (5) He further explains that the United Nations Charter itself "recognizes the importance of respect for 'the principle of equal rights and self-determination of peoples' (Art. 1.2), a simple, direct and unqualified way of saying all peoples, bar none." (6)

Despite the existence of these international human rights standards, it is widely recognized that States often deny or diminish the ability of Indigenous peoples to exercise the right of self-determination. Nevertheless, the right of self-determination is the fundamental premise upon which Indigenous peoples have asserted our proprietary, inherent, and inalienable rights over our traditional knowledge and biological resources.

Although several international human rights instruments recognize the collective nature of Indigenous peoples' rights of self-determination, (7) the U.N. Draft Declaration on the Rights of

Indigenous Peoples is the international instrument that is the most representative of Indigenous thought and participation, (8) and its standards constitutes the minimum standards for the survival, dignity, and well-being of the Indigenous peoples of the world. (9) The U.N. Draft Declaration states, "Indigenous peoples have the right to own, develop, control and use the lands and territories...which they have traditionally owned or otherwise occupied or used." (10)

A fundamental part of the right of self-determination is a people's exercise of permanent sovereignty over the natural resources within its territories. The right of permanent sovereignty over natural resources embodies the principle that "peoples and nations must have the authority to manage and control their natural resources and in doing so to enjoy the benefits of their development and conservation." (11) Furthermore, "the principle was and continues to be an essential precondition to a people's realization of its right of self-determination and its right to development." (12)

In the final report of the U. N. Human Rights

Special Rapporteur on Permanent Sovereignty of Indigenous Peoples over their Natural Resources, Erica-Irene Daes, finds that, "the developments during the past decades in international law and human rights norms in particular demonstrate that there now exists a developed legal principle that indigenous peoples have a collective right to the lands and territories they traditionally use and occupy and that this right includes the right to use, own, manage and control the natural resources found within their lands and territories. (13)

Special Rapporteur Daes further finds that genetic resources are among the natural resources belonging to Indigenous peoples. (14) In relation to the right of permanent sovereignty over natural resources of Indigenous peoples, Special Rapporteur Daes concludes, "[I]t is a collective right by virtue of which States are obligated to respect, protect, and promote the governmental and property interests of indigenous peoples (as collectivities) in their natural resources."(15)

B. CBD and an International Regime on Access and Benefit Sharing

Indigenous peoples' rights to the natural resources within their territories have been marginalized by the CBD. It was not the right of nation states to make agreements that undermined the rights of Indigenous peoples, agreements such as were made in the CBD. (16) Under the CBD, states are the only recognized entities with sovereignty over natural resources. The right of Indigenous peoples to permanent sovereignty over natural resources is particularly threatened by Article 15.1 of the CBD, which states, "Recognizing the sovereign rights of States over their natural resources, the authority to determine access to genetic resources rests with the national governments and is subject to national legislation." Furthermore, Article 15.5 requires that "access to genetic resources shall be subject to prior informed consent of the Contracting Party providing such resources, unless otherwise determined by that Party." Thus, according to the CBD, sovereign rights to control access to genetic resources are only recognized for the contracting Parties, i.e., the states.

Thus far, the only link between Indigenous peoples and genetic resources that the Parties to the CBD have been willing to make is the recognition that Indigenous peoples may possess traditional knowledge about such resources. The Parties have yet to recognize Indigenous peoples as sovereign or proprietary owners of genetic resources within their territories. Article 8(j) of the CBD contains a provision to encourage the equitable sharing of the benefits arising from the utilization of knowledge, innovations, and practices of indigenous and local communities embodying traditional lifestyles relevant for conservation and sustainable use of biological diversity. (17) Article 8(j), however, is subject to national legislation. Although 8(j) requires that wider application of traditional knowledge, innovations, and practices of indigenous and local communities should be "with the approval and involvement of the holders of such knowledge, innovations and practices," it does not couch the standard for approval in terms of prior informed consent, as it does in the case of states and access to genetic resources.

A major step towards the development of an international regime on access and benefit sharing

was taken at the sixth Conference of the Parties (COP 6) held in The Hague, in April 2002. At that meeting, 180 Parties adopted the voluntary Bonn Guidelines on Access to Genetic Resources and Fair and Equitable Sharing of the Benefits Arising out of their Utilization. The Guidelines were "expected to assist Parties, Governments and other stakeholders in developing overall access and benefit-sharing strategies, and in identifying the steps involved in the process of obtaining access to genetic resources and benefit-sharing. More specifically, the guidelines [were] intended to help them when establishing legislative, administrative or policy measures on access and benefit-sharing."(18)

It is important to note that the vast majority of Indigenous peoples represented at COP 6, viewing their participation in the development of the Guidelines as facilitating biopiracy of their own resources and knowledge, made a conscious decision not to actively participate in the discussions on the Guidelines, and therefore later rejected implementation of the Guidelines.

Consistent with Article 15 of the CBD, which recognizes the "sovereign right of States over their

natural resources," the Bonn Guidelines suggest that access to genetic resources should be controlled by competent national authorities.

Paragraph 26 states:

The basic principles of a prior informed consent system should include: . . . Consent of the relevant competent national authority(ies) in the provider country. The consent of relevant stakeholders, such as indigenous and local communities, as appropriate to the circumstances and subject to domestic law, should also be obtained.

Paragraph 31 further elaborates on this issue by stating:

Respecting established legal rights of indigenous and local communities associated with the genetic resources being accessed or where traditional knowledge associated with these genetic resources is being accessed, the prior informed consent of indigenous and local communities and the approval and involvement of the holders of traditional knowledge, innovations and

practices should be obtained, in accordance with their traditional practices, national access policies and subject to domestic laws.

This language makes evident that the Bonn Guidelines promote national sovereignty over natural resources and subject Indigenous peoples' rights to domestic policies and laws. Although the Guidelines are not binding, the Parties do consider them "a useful first step of an evolutionary process" and see them as serving as some basis for a future regime. (19)

A few months after COP 6 adopted the Bonn Guidelines, the World Summit on Sustainable Development (WSSD) called for action to "negotiate, within the framework of the [CBD], bearing in mind the Bonn Guidelines, an international regime to promote and safeguard the fair and equitable sharing of benefits arising out of the utilization of genetic resources." (20) Further, UN General Assembly resolution 57/260, adopted at its fifty-seventh session, invited COP 7 to take appropriate steps with regard to the commitment made at the WSSD. (21) Then, at the CBD's Inter-session meeting on the Multi-Year Programme of

Work of the Conference of the Parties up to 2010, held in March 2003, a recommendation was made that the Ad Hoc Open-ended Working Group on access and benefit-sharing (ABS Working Group) consider the process, nature, scope, elements, and modalities of such an international regime on access and benefit-sharing at its second meeting in December 2003. Subsequently, at its December meeting, the ABS Working Group prepared recommendations on the terms of reference for the negotiation of an international regime and submitted those recommendations to the Seventh Conference of the Parties (COP 7, scheduled to be held in February 2004, in Kuala Lumpur, Malaysia. (22)

At COP 7, the Parties engaged in extensive discussions about the mandate and the terms of reference of the ABS Working Group and decided that the Working Group would "elaborate and negotiate an international regime on access to genetic resources and benefit sharing with the aim of adopting an instrument/instruments to effectively implement the provisions of Article 15 and Article 8(j)." The Working Group is expected to meet twice before the next COP in 2006 and is

mandated to work “with the collaboration of the Ad-Hoc Open-ended Working Group on Article 8(j) and related provisions.” (23)

For Indigenous peoples, the preambular language of the COP 7 decision relating to an international regime, wherein the COP reaffirmed “the sovereign rights of States over their natural resources and that the authority to determine access to genetic resources rests with the national Governments and is subject to national legislation, in accordance with Article 3 and Article 15, paragraph 1,” (24) set a dangerous stage for future negotiation of the ABS regime. The International Indigenous Forum on Biodiversity (IIFB), which was the full caucus of the Indigenous peoples present at the COP, made an intervention in Kuala Lumpur in opposition to this language, stating that international human rights law recognizes that states do not have absolute sovereignty over natural resources. The parties, however, of course, refused to be moved.

Although Indigenous peoples are only considered observers at the COP, we vehemently insisted that the parties must recognize our rights

throughout the elaboration of the international regime. In the end, Canada and Australia blocked language that had gained the agreement of the other states and had been proposed by the EU. That language had stated that the international regime *shall recognize* the rights of Indigenous peoples. In the end, the preambular language of the decision that was adopted merely stated that “the international regime should recognize and shall respect the rights of indigenous and local communities.” (25)

At the COP 7 meeting, Indigenous peoples did successfully lobby for international human rights law, as set forth in the Universal Declaration of Human Rights, the International Covenant on Civil and Political Rights, and the International Covenant on Economic, Social and Cultural Rights, to be included in a long list of other instruments and processes to be considered as possible elements in an international regime. Although such inclusion gives some foothold for lobbying at future meetings, there is no guarantee that the regime that emerges from negotiations will be consistent with international human rights law. At past CBD meetings, Indigenous peoples have

pointed out that Article 22.1 of the Convention requires that the decisions of the COP must be consistent with other international conventions, including international human rights law. (26) Unfortunately, some parties (Canada, Australia, New Zealand) and some observer governments not party to the Convention (i.e., the United States) do not agree and have requested an opinion from the CBD legal counsel to support their position.

Prior to the end of the COP 7 deliberations, several Indigenous organizations in attendance sent an alert to Indigenous peoples around the world, warning them about the impending international regime:

For the Indigenous peoples anxiously following the discussions in Kuala Lumpur, the agenda of the parties is clear. The parties are developing a regime that will facilitate a biopiracy free-for-all. . . "Sadly, all we can do is call upon Indigenous peoples to prepare themselves. The biopiracy regime is coming. They must do whatever is necessary to protect their resources and knowledge at the local level. Their most basic rights to self-determination are not going to be recognized

at this level." (27)

II. Case Study: An Indigenous Critique of a Benefit Sharing Agreement

Because the CBD is remiss in recognizing Indigenous peoples as sovereigns over, owners of, or rights holders in the genetic resources within their territories, an ideal framework for nurturing biopiracy has been created. Indigenous peoples are seen only as traditional knowledge holders and not as territorial rights holders whose consent must be sought before accessing resources within their territories. The much-touted benefit sharing arrangement involving the San peoples of the Kalahari desert in southern Africa evidences the problems embedded in such a framework.

The traditional knowledge of the San peoples about the stem of a cactus called Hoodia led the UK-based pharmaceutical company Phytopharm to a potential anti-obesity drug. The San had traditionally used Hoodia to stave off hunger while hunting. Phytopharm claimed to have discovered a potential cure for obesity derived from the Hoodia

plant. South Africa's Council for Scientific and Industrial Research (CSIR) sold the development rights for Hoodia to Phytopharm, which later patented P57, the appetite-suppressing ingredient in the Hoodia. Phytopharm later sold the rights to license the drug for \$21 million to Pfizer, the U.S. pharmaceutical giant, without even notifying the San, let alone getting their consent to such a transaction. Phytopharm representatives later claimed they believed the San peoples who used Hoodia were extinct. In actuality, the San number 100,000 across South Africa, Botswana, Namibia, and Angola. (28)

Only after CSIR and Phytopharm were widely criticized for failing to get the consent of the San or to recognize the role that San knowledge had played in identifying the Hoodia's ethnobotanical properties were the San offered a benefit sharing arrangement. The San's share in the arrangement amounted to less than 0.003% of net sales and was only to come out of CSIR's share in the deal; Phytopharm's and Pfizer's earnings are to go untouched. (29) In fact, Phytopharm and Pfizer are exempted from sharing any benefits directly with the San and are specifically released from any

further financial demands by the San. (30) In the benefit sharing contract, the San are rewarded on a one-time-only basis for their knowledge of Hoodia and, further, they are explicitly prevented from using that knowledge in any other commercial application. (31) Effectively, Phytopharm and Pfizer have bought a perpetual monopoly on the San's traditional knowledge of the Hoodia.

It is important to note that the San were compensated for their traditional knowledge and not for any right they might have in the genetic resource itself. It was the CSIR, and not the San who consented to access to the genetic resource itself.

Article 28 of the Bonn Guidelines promotes "competent national authorities" as the appropriate gatekeepers to *in situ* genetic resources. In matters of access relating to genetic resources within Indigenous territories or Indigenous knowledge associated with such resources, Article 31 of the Guidelines only refers to "established legal rights" and prior informed consent regarding such access as being subject to domestic laws. Therefore, what transpired with the Hoodia was totally consistent with the CBD and the Bonn Guidelines; that is, the

CSIR acted as the South African national authority granting access to the Hoodia. The indigenous San peoples had no established legal right vis-à-vis Hoodia under South African law and so their consent was not required.

The San-CSIR deal has been hailed as a success story for the San who are among the most marginalized peoples in southern Africa. The story has been used to promote benefit sharing as a means of poverty alleviation. The monies derived from the agreement, we are told, are held in the San Hoodia Benefit Trust to be used for health care, infrastructure, and social security. (32) Additionally, a report by the German Development Institute has asserted that, because the arrangement includes various San communities across southern Africa, it “strengthens the cross-border identification of the San as an indigenous people of southern Africa and may do a great deal to improve the position of the San communities in some of the other countries.” (33)

What such an analysis neglects to notice is that quality health care, education, and other essential services are among the basic human rights

for all peoples. Access to these fundamental needs should not be tied to a requirement for an exchange of traditional knowledge or biological resources. Furthermore, it is outrageous to promote selling a monopoly on traditional knowledge to a Western corporation so that marginalized communities can earn recognition as Indigenous peoples. The San do not even possess complete decision-making power over their minute share of the royalties, royalties to be deposited in "their" Trust. It is instructive to note that although "their" Trust includes representatives of various San communities, the CSIR and the Department of Science and Technology also sit there, apparently as paternalistic trustees. (34)

The intent here is not to criticize the San for their participation in the benefit sharing agreement. In hindsight, it is clear that the only option presented to the San was to accept a share in the deal, or get nothing at all. And had CSIR and Phytopharm not been "caught red-handed", appropriating San knowledge, the San may have simply remained unknown victims of theft. We see the case as a recent, very instructive example of the power dynamics typical when Indigenous peoples

are forced to contend with the actions of colonial states and multinational corporations. The San case also illustrates how the profit potential of genetic material tends to evoke unscrupulous practices.

Indigenous knowledge systems reflect the totality of the intellectual traditions of Indigenous peoples from whom they are derived. While Western knowledge systems tend to be compartmentalized and specialized, and are often times reductionist in nature, Indigenous knowledge systems are intricately interconnected with our rich cultural heritage and the territories from which they came. And in that sense, Indigenous knowledge cannot belong to a single individual or a single generation. Thus, how could anyone possibly claim a right to sell Indigenous intellectual traditions when those traditions are a gift from previous generations and the birthright of future generations? For many Indigenous peoples, traditional knowledge is not something their community can sell because it is priceless and its value cannot be calculated in terms of or in service to economic exploitation. Indigenous knowledge passed from generation to generation is an inherent and inalienable part of a peoples' collective

heritage and patrimony. When such knowledge is subjected to a benefit sharing agreement, as illuminated by the San's experience, the knowledge becomes a commodity to be bought and sold on the market.

III. Some Considerations for Indigenous Peoples Before Entering into Benefit Sharing Agreements

For Indigenous peoples, who are often the most marginalized and economically poor peoples of the world, the promises of benefit sharing agreements may be alluring. By virtue of their right of self-determination, it is, of course, the prerogative of Indigenous peoples to make their own decisions about benefit sharing agreements. Inevitably, some will decide to enter into such arrangements. Those who make such decisions, whether or not they recognize it, will be accepting Western legal frameworks and concepts that do not respect Indigenous laws and customs, and which, in essence, may compromise their right of self-determination. In this next section, we discuss some of these conflicts and the potential difficulties that

may arise in the context of such deal-making.

A. Patents

Before entering a benefit sharing agreement, Indigenous peoples must understand that they are submitting to a legal jurisdiction entirely foreign to their own systems of management and protection of natural resources and knowledge. Primarily, the difference involves patents. Those who agree to benefit sharing must accept that patent laws will govern the ownership of the products derived from their genetic resources. A patent is a necessary step in securing a commercial control over a product derived from a genetic resource.

Patents are a Western intellectual property right originally meant to apply to inventions. The basic tenets of patents are quite foreign to Indigenous concepts. A patent covers a novel invention, not age-old traditions; a patent is issued to an individual, not to a collective peoples; and a patent lasts for a determinate amount of time (often 20 years), after which the information in the patent becomes part of the public domain – free and open for all the world to use without penalty.

Genetic researchers and the pharmaceutical, agricultural, and chemical corporations and academic institutions for which they work claim that "engineered organisms or molecules are separated from nature through the concepts of 'isolation' and 'purification.'" (35) Thus, in response to numerous comments asserting that genes were nonpatentable products of nature, the United States Patent and Trademark Office asserted that "the inventor's discovery of a gene can be the basis for a patent of the genetic composition isolated from its natural state and processed through purifying steps that separate the gene from other molecules naturally associated with it." (36)

Many Indigenous peoples have strongly advocated against the patenting of life. For example, in 1999, Indigenous peoples steadfastly opposed the World Trade Organization (WTO) Trade-Related Aspects of Intellectual Property (TRIPs) Agreement in a statement entitled, "No to Patenting of Life." The statement, in part, proclaimed, "Nobody can own what exists in nature, except nature, itself. Humankind is part of Mother Nature. We have created nothing and so we

can in no way claim to be owners of what does not belong to us.” (37)

Further, the report of the “Workshop on Biodiversity, Traditional Knowledge and Rights of Indigenous Peoples,” in summarizing the conclusions of the Indigenous rights experts at the workshop, noted, “Patenting and commodification of life is against our fundamental values and beliefs regarding the sacredness of life and life processes and the reciprocal relationship which we maintain with all creation.” (38)

Those words remembered, it becomes important for Indigenous peoples to evaluate whether the patenting of life, which will necessarily occur in a benefit sharing arrangement concerning genetic resources, is consistent with their fundamental values.

B. Some pitfalls in benefit sharing agreements

Indigenous peoples may be asked to establish contractual arrangements with intermediaries such as academic institutions or governments, who in turn have direct contractual arrangements with the

commercializing companies. For example, the San's contractual agreement was with the CSIR; the San have no legally enforceable agreement with Phytopharm in the commercialization of the Hoodia plant. A similar arrangement was established by the University of the South Pacific (USP). The USP directly entered into a bioprospecting agreement for coral reef biological resources with the Strathclyde Institute of Drug Research (SIDR) of Glasgow, Scotland. (39) The University then established a separate agreement with the villages that were regarded as the traditional owners of the reef areas. Thus, USP became the effective dispenser of the coral reef resources.

Such arrangements are obviously paternalistic and violate the basic tenets of self-determination. These kinds of agreements treat Indigenous peoples as interested third parties and not as principals in benefit sharing agreements. In these types of arrangements, Indigenous peoples can be left with no legal means of enforcement, and their rights as owners of the knowledge and resources can be subverted. Indigenous peoples thus can be perceived as "worthy" participants in

the benefit sharing discussions not because the other parties recognize their rights, but because the other parties consider Indigenous peoples a part of the trickledown system of beneficiaries that they themselves, as "principal" parties, have construed.

Another pitfall of benefit sharing agreements is that they often simply compensate Indigenous peoples for use of their associated traditional knowledge, and not for use of the actual biological resources. The only remedy for this is for Indigenous peoples themselves to be proactive in asserting their propriety rights over their knowledge and their resources.

The interests of the Indigenous peoples involved must be reflected in any legal agreements about their traditional knowledge and resources. Otherwise, the hoped-for outcomes will never happen and never be enforceable. On the part of Indigenous peoples, this requires strong skills in negotiation as well as a comprehensive understanding of what rights and interests must be protected in the agreement. Further, Indigenous peoples must remember that even the most brilliant agreement will be a challenge to monitor and

enforce on a global scale. Resources for litigations costs will be greatly outmatched by corporate/institutional opponents in the courtroom or the patent office.

It is difficult to see how benefit sharing agreements that allow for the monopolization and alienation of traditional knowledge and genetic resources under the veil of intellectual property protection can be of any meaningful benefit to Indigenous peoples. Certainly, there will be a promise of some potential income, an income that could make a difference in the lives of those terribly lacking in resources. But, at what cost? In the end, the benefits that come to Indigenous peoples are likely to be quite insignificant compared to those reaped by the pharmaceutical, agricultural, or chemical companies and the academic institutions with which they are dealing.

C. Culturally-based Decision-making

The potential income or other benefits derived from benefit sharing agreements may entice Indigenous peoples to commercialize their knowledge and resources, often in violation of their own cultural

principles and values. The profit potential may loom large while other critical factors may remain hidden or even undisclosed.

Indigenous peoples would be wise to utilize their own frameworks for evaluating the usefulness, potential, and appropriateness of ventures that affect their knowledge, resources, and culture. One such framework, a five point test utilizing a tikanga Maori framework, has been articulated by Hirini Moko Mead (Ngāti Awa, Ngāti Tuwharetoa, Tuourangi) of Aotearoa (New Zealand). The tikanga framework facilitates decision-making on contemporary issues based upon the ethics inherent in Maori principles and philosophies.

Mead takes "the position that tikanga is the set of beliefs associated with practices and procedures to be followed in conducting the affair is of a group or an individual. These procedures are established by precedents through time, are held to be ritually correct, are validated by usually more than one generation and are always subject to what a group or an individual is able to do." (40) He further explains that, "They help us to differentiate between right and wrong, in

everything we do and in all of the activities that we engage in. There is a right and proper way to conduct one's self." (41)

Thus, critical questions are filtered through a five-point test. If an issue fails to withstand this kind of evaluation, then it is determined that the question at hand violates the tikanga or the cultural, ethical standards of Maori.

All Indigenous peoples have their own cultural frameworks and worldviews to draw upon in making such judgments. For example, Lopeti Senituli, former director of the Tongan Human Rights and Democracy Movement, articulated the Tongan concept of "NGEIA", which means "awe inspiring, inspiring fear or wonder by its size or magnificence" and "dignity". NGEIA was central to the Tongan people's opposition to an Australian company's proposal to collect tissue samples and health data from consenting individual Tongans in the hope of identifying genes that cause diseases such as diabetes. (42) In exchange for the samples, the company, Autogen Ltd., had offered a benefit sharing arrangement that would have provided annual research funding to Tonga's Ministry of

Health, paid royalties on revenues generated from any discoveries that might later be commercialized, and given whatever new therapies might be developed from the research to the Tongans free of charge. (43) As a result of the Tongan community's opposition to the proposal - an opposition based on the community's understanding of NGEIA and corresponding belief that "the human person should not be treated as a commodity" - the project did not proceed. (44)

Mead says, "A culture that sets aside its pool of tikanga is depriving itself of a valuable segment of knowledge and is limiting its cultural options." (45)

Conclusion

Nearly every aspect of what we value as Indigenous peoples – our technologies, our knowledge, the seeds that produce our foods, and our medicines – is at risk of appropriation. Indigenous peoples, and particularly our leadership, must be active in the discussions related to Indigenous knowledge and genetic resources. There is no shortage of non-

Indigenous peoples engaging in these debates in various international fora, allegedly on our behalf. Indigenous peoples must remain vigilant in order to protect their peoples and territories from acts of biocolonialism. Most importantly, Indigenous peoples must be proactive in asserting their rights, particularly those based on long-established international human rights standards. We are referring to the right to free prior informed consent concerning any access to or disposition of our knowledge and resources, the right to deny access to our knowledge and resources, and the right to manage our knowledge and resources based upon our own customary laws, to mention a few examples. Legal historian Steve Newcomb (Shawnee/Lenape) reminds us that, “We have to make the case that they have to respect our systems of law. There isn’t ‘the law’ - there’s our law and their law. We have to articulate what our law is as far as the protection of our genetic materials, and make that case, and resist their system and their law with every fiber of our being.” (46)

Endnotes

- (1) See *Convention on Biological Diversity* (CBD), Article 8(j).
On the Internet at <<http://www.biodiv.org>>.
- (2) See *Decision VI/24: Access and benefit-sharing as related to genetic resources*, UNEP/CBD/COP/6/6, para. 56 (“The involvement of relevant stakeholders, in particular, indigenous and local communities, in the various stages of development and implementation of access and benefit-sharing arrangements can play an important role in facilitating the monitoring of compliance.”).
- (3) For more discussion on “biocolonialism,” see Harry, D. et al., *Indigenous Peoples, Genes and Genetics: What Indigenous People Should Know About Biocolonialism*, 2000. On the Internet at <<http://www.ipcb.org>>.
- (4) *International Covenant on Civil and Political Rights*, adopted Dec. 19, 1966, entered into force Mar. 23, 1976, 999 U.N.T.S. 171; *International Covenant on Economic, Social and Cultural Rights*, adopted Dec. 19, 1966, entered into force Jan. 3, 1976, 999 U.N.T.S. 3.
- (5) Martinez, M.A. *Study on treaties, agreements and other constructive arrangements between States and indigenous populations*, Final Report of the Special Rapporteur, E/CN.4/Sub.2/1999/20, para. 256.
- (6) *Ibid.*, para. 210.

- (7) See *Convention 169 Indigenous and Tribal Peoples Convention, 1989*, International Labor Organization conference site, available on the Internet at: <<http://www.ilo.org/ilolex/cgi-lex/convde.pl?C169>> and *The Draft of the American Declaration on the Rights of Indigenous Peoples of the Organization of American States*, draft approved by the IACHR at the 1278 session held on 18 September 1995. For latest revisions, see <<http://www.oas.org/consejo/CAJP/Indigenous%20documents.asp>>.
- (8) Venne, S.H. , *Our Elders Understand Our Rights: Evolving International Law Regarding Indigenous Rights*, Theytus Books Ltd: Canada, 1998, p.137.
- (9) *Ibid.*
- (10) United Nations, *Draft Declaration on the Rights of Indigenous Peoples*, E/CN.4/Sub.2/1994/2/Add.1 of 20 April 1994 (Article 26).
- (11) Daes, E.-I. A. *Indigenous Peoples' Permanent Sovereignty Over Natural Resources*, Final Report of the Special Rapporteur, E/CN.4/Sub.2/2004/30, para. 6, July 13, 2004.
- (12) *Ibid.*
- (13) Daes, *op. cit.*, para. 39
- (14) Daes, *op. cit.*, para. 42

- (15) Daes, *op. cit.*, para. 40
- (16) For a compilation of relevant legal standards concerning Indigenous lands and resources, see Daes, E.-I. A., *Indigenous Peoples and Their Relationship to Land*, Final Working Paper Prepared by the Special Rapporteur, E/CN.4/Sub.2/2001/21, Annex. For a summary about the recognition of Indigenous peoples' sovereignty, see Daes, E.-I. A., work cited in note (11) above, para. 20-30.
- (17) The text of Article 8(j) states that, "Each Contracting Party shall, as far as possible and as appropriate: . . . Subject to its national legislation, respect, preserve and maintain knowledge, innovations and practices of indigenous and local communities embodying traditional lifestyles relevant for the conservation and sustainable use of biological diversity and promote their wider application with the approval and involvement of the holders of such knowledge, innovations and practices and encourage the equitable sharing of the benefits arising from the utilization of such knowledge, innovations and practices".
- (18) Secretariat of the CBD (SCBD), *Access to Genetic Resources and Benefit-sharing: Bonn Guidelines*. Available on the Internet at <<http://www.biodiv.org/programmes/socio-eco/benefit/bonn.asp>> (viewed December, 2004).

- (19) *Ibid.*
- (20) United Nations, *Plan of Implementation of the World Summit on Sustainable Development*, para. 44(o), in United Nations, *Report of the World Summit on Sustainable Development*, A/CONF.199/20*, 35, available on the Internet at <<http://www.johannesburgsummit.org>>.
- (21) United Nations, *General Assembly Resolution 57/260*, para. 8 (20 Dec. 2002), available on the Internet at <<http://www.un.org/Depts/dhl/resguide/r57.htm>>.
- (22) SCBD, *Report of the Ad Hoc Open-ended Working Group on Access and Benefit Sharing on the Work of its second Meeting*, 10 December 2003, UNEP/CBD/COP/7/6.
- (23) *International Regime on Access to Genetic Resources and Benefit-Sharing*, UNEP/CBD/COP/7/21, Decision VII/19 D., p. 300.
- (24) *Ibid.*, 299.
- (25) *Ibid.*, 300.
- (26) Article 22.1 states: “The provisions of this Convention shall not affect the rights and obligations of any Contracting Party deriving from any existing international agreements, except where the exercise of those rights and obligations would cause serious damage or threat to biological diversity.”

- (27) Press Release. *CBD's International Regime: Indigenous Activist Organizations Call for No Access Zones to Genetic Resources and Indigenous Knowledge*, February 19, 2004 , on the Internet at <<http://www.ipcb.org>>.
- (28) Barnett, A., *In Africa The HoodiaCactus Keeps Men Alive. Now Its Secret Is 'Stolen' To Make Us Thin*, The Observer, Jun 17, 2001.
- (29) Wynberg, R., *Sharing the Crumbs with the San*, available on the Biowatch South Africa website at <www.biowatch.org.za/csir-san.htm>.
- (30) German Development Institute, *Access and Benefit Sharing (ABS): An Instrument for Poverty Alleviation*, November 2003, p. 19. Available on the Internet at <http://www.die-gdi.de/die_homepage.nsf>.
- (31) *Ibid.*
- (32) *Ibid.*, p. 20.
- (33) *Ibid.*
- (34) In Wynberg, *op.cit.*, Biowatch South Africa reports that the trust will include representatives of the CSIR, the =Khomani, !Xun and Khwe, other San stakeholders in southern Africa, the Working Group of Indigenous Minorities in Southern Africa, and the Department of Science and Technology.

- (35) Kahn, J., 2003, *What's the Use? Law and Authority in Patenting Human Genetic Material*, Stanford Law & Policy Review 14: 417, 426.
- (36) *Ibid.*
- (37) Tauli-Corpuz, V., *Biodiversity, Traditional Knowledge and Rights of Indigenous Peoples*, Third World Network: Penang, 2003, p. 25.
- (38) *Ibid.*
- (39) Aalbersberg, W. G. et. al., *The Role of a Fijian Community in a Bioprospecting Project*, on the website of the CBD at <<http://www.biodiv.org/doc/case-studies/default.aspx>>.
- (40) Mead, H. M., *Tikanga Maori: Living by Maori Values*, Huia Publishers: New Zealand, 2003, p. 12.
- (41) *Ibid.*
- (42) Senituli, L., *Biopolicy and Biopolitics in the Pacific Islands*, Edmonds Institute: Edmonds, Washington, 2003, pp.1-3.
- (43) *Ibid.*, 1.
- (44) *Ibid.*, 3

(45) Mead, *op.cit.*,13.

(46) Personal interview with Steve Newcomb in San Francisco
in November, 2003.

The concept of benefit-sharing: A step forward or backward?

Michael Frein and Hartmut Meyer

Summary

This chapter describes and analyses the positions of various groups towards the UN Convention on Biological Diversity provisions and processes related to ABS, access to genetic resources and fair and equitable benefit sharing. To illustrate concrete problems and approaches concerning ABS, the authors present the case of the Hoodia plant from Southern Africa and examine the benefit-sharing agreement between the people of the San and the

South African research institution CSIR. Drawing upon their personal experiences in the ABS debate, the authors conclude with suggestions for elements that would constitute an effective international ABS regime - effective in the sense that it would strengthen the position of poor and marginalized communities and peoples facing requests from outsiders for access to their traditional knowledge and genetic resources.

I. ABS positions of major groups

The concept of benefit sharing as outlined by the Convention of Biological Diversity (CBD) is debated heatedly. The disputes range from technical issues, such as how to formulate appropriate agreements, to more basic questions, such as whether the debate should be entered into at all. Because benefit sharing always is the second step after the access to genetic resources, the promise of benefit sharing can be (mis)used for many purposes.

The worldwide ABS discussion and the ongoing negotiations within the CBD attract many

players, for many reasons.

Industry does not promote binding international rules under the Convention and insists on strong laws on patent on life. (1) As formulated by the International Chamber of Commerce, industry sees the advantages of national regimes that clarify the ABS situation and may support new systems of protection of communal or indigenous intellectual property - but only if they do not result in "changes that may undermine or subvert existing systems". (2)

Almost all **Governments in the North** work towards ABS concepts that remain on a more or less voluntary basis. Guidelines, such as the Bonn Guidelines on Access and Benefit-Sharing (ABS), do not run counter to this concept, as long as they are voluntary and not-binding. The Northern Governments want the whether and how of implementation to be sorted out within the network of governmental, industrial, and civil society users and providers without setting up minimal, legally binding international standards.

Governments of the South, particularly

those forming the Group of Like-Minded Megadiverse Countries, fight for strong ABS rules that give them more leverage to implement their claims for benefit-sharing. The Like-Minded Group came into existence prior to the negotiations of the Bonn Guidelines. The Group presented its positions in February 2002. (3) Its main criticism of the Guidelines was that the Guidelines failed to establish meaningful user obligations, especially in regard to bringing the patent system into conformity with the provisions of the CBD. Some members of the group - in particular, Brazil and India - had a lot of experience in the debates over the "biopiracy" Article 27.3(b) of the TRIPs (Trade-related Intellectual Property) agreement. The Group regards future ABS negotiations as a means to create more pressure for changing the patent system.

Although **civil society groups** (both in the North and in the South) condemn the continual and seemingly limitless acts of biopiracy and the patenting of life, they are divided on the questions of how useful the CBD is and, more to the point, whether benefit-sharing is the correct approach for enhancing global protection of biodiversity,

sustainable development, and justice. (4) At the last Conference of the Parties (COP 7) of the CBD in February 2004 in Malaysia, Via Campesina together with the Community Biodiversity Development Conservation Network in Latin America took the most radical position and rejected "the distribution of benefits derived from the privatization of biodiversity". (5) At COP 7, the following position on ABS was developed as part of the NGO Statement for the Ministerial Segment by the Malaysian Environmental NGO coalition and submitted on behalf of a large number of NGOs:

“Biopiracy continues to be a major problem that undermines efforts to conserve biological diversity, protect traditional knowledge and ensure sustainable use. Biopiracy makes a mockery of the CBD objective of ensuring fair and equitable sharing of benefits among countries and within countries. Existing regulations and practices have failed to stop biopiracy. A strong international regime is thus urgently needed, but we reject attempts to turn this into a facilitation of access. The mandate of Heads of States at the WSSD was to negotiate an international regime on benefit sharing. Piracy of natural resources and traditional

knowledge is the problem, not the gaining of access. We therefore call for the following principles in any new regime on benefit sharing:

- The principle of inalienable collective rights and customary laws of indigenous peoples, small farmers and local communities to land, natural resources (including genetic resources) and traditional knowledge;
- The requirement of free and prior informed consent of indigenous peoples, local communities and countries of origin which should be specific for each particular use or user/broker. The right to deny access to genetic resources and traditional knowledge should be upheld;
- Genetic resources and traditional knowledge must be free of intellectual property rights, and CBD Parties should halt and reverse the patenting of life forms.” (6)

The positions we have outlined above

describe in a nutshell the situation just before the CBD Working Group on ABS enters into the more serious discussions agreed upon by the Parties at COP 7.

Despite the COP 7 decision, however, the question remains: Was the decision a step forward or a step back or just a further step in the wrong direction? The answer is not a simple "yes" or "no". It all depends on who is answering the question. As already noted, different players harbor strikingly different attitudes towards the concept and content of an ABS regime. (7)

II. Without Access, no Benefit-Sharing?

"Without access, no benefit-sharing!" -- This formula was the most frequently repeated pronouncement of one of the German delegates at COP 7. It reflects thought typical of representatives of industrialized countries. From their point of view, the first step towards benefit-sharing is facilitating access to genetic resources. They consider the development of commercially successful products out of what for them are otherwise worthless raw materials to be

a highly risky business. Money and ideas have to be invested; existing regulatory impediments may have to be overcome. Any further regulatory barriers erected at the start of the process - at the point of access to genetic resources - might prevent researchers and companies from going abroad to look for genetic resources in the first place. Furthermore, the very speculative nature of the whole bioprospecting activity does not incline either researchers or companies to enter into benefit-sharing agreements. And, they will point out, if no benefits for the developers materialize in the future, there will be no benefits for the providers either. From this perspective, benefit-sharing becomes a kind of afterthought to be negotiated after access is granted.

We think this kind of argument should be turned upside down: "No access without benefit-sharing!" The reason is obvious. As things work now, most countries allow free access to their genetic resources. There are no negotiations about benefit-sharing related to the extraction and use of specific genetic resources. In most cases, this free access is not the result of reflection and deliberation but simply the result of inactivity. However, from a

CBD perspective, such access is illegal and has to be considered and censured as biopiracy. (8)

Countries that are party to the CBD and do not implement its ABS intentions also do not oblige the resource users who might be subject to their national legislation to comply with CBD rules. Only a few countries act or perceive themselves as both users and providers of genetic resources. Instead, most developing countries see themselves as provider countries and most industrialized countries see themselves as user countries. So, in accordance with the above described "No benefit-sharing without access" logic, the industrialized countries refuse to make use of their legal and administrative systems to implement CBD rules that focus on benefit-sharing unless and until the developing countries have set up access rules. Not surprisingly, then, we find ourselves in a world in which (uncompensated) access to genetic resources is an everyday event, rarely connected with serious benefit-sharing obligations.

From the current perspective of most providers of genetic resources, the often-heard threat from resource users that they will not come

again to collect resources from wherever too-strong ABS regimes are in place, is a joke. It is an empty threat because it entails no risk or harm to the provider. In a situation where there are no benefits, nothing can be lost or taken away - except for the resource. Perhaps because only a relative few developing countries have realized their relatively strong position, the "we won't come back to rob you" threat remains very popular.

That threat, of course, is not the only threat. If countries decide to create national ABS rules, a second threat is often launched: "If you regulate too much or too strictly, we will go to your neighbors for the same goods." This threat is a bit more serious and, in the coming years, is likely to be met by harmonized regional and international approaches.

III. No Access, no Benefit-Sharing?

There are more fundamental critiques of benefit-sharing than we have discussed so far. There is, for example, an intense debate among civil society groups as to whether the CBD concept of (access

and) benefit-sharing is a good concept or a bad one. This debate is grounded in more general discussions of the causes and consequences of the commodification of life - and whether the CBD is a cause or a consequence of that commodification. To illustrate some of the debate, we are going to look at three of the relevant basic issues:

- the sovereignty of States over genetic resources, as stipulated by the CBD,
- the relationship of the CBD to the patent system;
- the commodification of genetic resources and traditional knowledge.

Sovereignty

The CBD was negotiated in a political atmosphere strongly influence by the fall of the communist states and the worldwide rise of neoliberalism, but it also was influenced by proponents of progressive ideas about environmental protection and sustainable development. The Treaty gave Government the paradoxical role of protector, regulator, and trader of genetic resources and, to a certain extent, of traditional knowledge. Parties to the CBD were recognized as being sovereign over

the genetic resources within their borders, and were entitled and asked to set up national ABS regimes. In addition, CBD Article 15.2 breathed the spirit of free trade ideology into the bargain by insisting that national regimes *facilitate* access to genetic resources. Thus, genetic resources were made tradable, accessible assets of Government - of course, before the CBD existed, they were already being traded by individuals and companies .

“Facilitated access” is seen by some organizations as the governmental activity that makes it easier for potential users, e.g., multinationals, to find the genetic resources they seek. (9) In this view, the CBD can be construed as leading eventually to governmental assistance in bioprospecting and to scout brigades and global mapping schemes to point companies to valuable resources. Further, particular provisions of the CBD can be seen to act as important tools that aid and increase the effectiveness of Northern multinationals in their exploitation of nature and genetic resources. All this in mind, then, would justify calling the CBD an instrument that favors biopiracy, “biopiracy” meaning not an inattention to CBD rules and regulations but the

appropriation of resources and the exploitation of the poor by the rich. This view, consequently, leads to the assessment that the CBD can provide no path at all to making things better.

At COP 7, many observers and delegates were convinced that the CBD cannot be interpreted in a way that allows it to mandate an international ABS regime with rules for defining "facilitated access". This view prevailed and subsequent negotiations on ABS will not deal with this matter. (10)

Patents

Some civil society organizations (CSOs) have developed positions that both acknowledge some of the criticism of the CBD and offer fresh interpretations of those CBD provisions that support creation of ABS rules with potential to improve the current unregulated and unjust situation. (11) Regarding the argument that CBD itself contributes to patenting of life, for example, these groups counter that the CBD acknowledges patents, but does not favor them. These CSOs hold that patents on life should be forbidden, and they try to use the CBD to argue against such patents.

Their argumentation relies upon two provisions of the CBD - Articles 16.5 and 22.1. Article 16 acknowledges that patents and intellectual property rights might have an influence on the implementation of CBD, and therefore parties should cooperate (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". Article 22 deals with the relationship of CBD to other international conventions, and contains the admonishment that the CBD shall not affect other existing international agreements, "except where the exercise of those rights and obligations would cause a serious damage or threat to biological diversity".

Commercialization of nature

The argument as to whether or not the CBD promotes or even causes the commercialization of nature is particularly difficult to tackle. With the CBD principle of national sovereignty over genetic resources, the long-held view that biological diversity ought to be regarded as common heritage of humankind was abandoned. The common heritage view had meant that biological diversity

belongs to everybody, access is free and unregulated, and thus genetic resources can neither be bought nor sold when taken from their natural surroundings. Very positive sentiment is attached to this understanding and it can be traced to the thought of French philosopher Jean-Jacques Rousseau. Rousseau considered that things began turning bad in the state of nature when the first human being built a fence around a certain piece of land and claimed it as personal property. The sort of fence-building that Rousseau referred to existed long before he noticed it and certainly long before the CBD. Today, private ownership of and sovereignty over biological diversity and genetic resources are accepted rules in many cultures and in all States. Many States have implemented environmental laws and regulations that govern and may restrict private sovereignty over biological diversity - and thereby over genetic resources. The restrictions are allowed because biological diversity and genetic resources are judged to serve as important goods for the community. What the CBD has added to the fence-building is the idea that not only are biological resources subject to the rules and interests of private owners but they are also subject to the sovereignty of the State. Thus,

access to genetic resources and use of those resources as commodities should be governed by a regulatory framework, taking into account that the intended use must comply with the requirements of sustainability.

If non-regulation, free access, and free use were still the prevailing concepts, that would mean that biological diversity belongs as much to the poor as to the rich - an inviting idea, at first glance. The U.S. philosopher John Rawls has dedicated much work to the theory of justice, and Rawls has concluded that equal treatment of the unequal leads to more inequality and injustice. Thus, in a common heritage framework, those who have the capacity to develop products out of genetic resources and commercialize them - for example, the multinationals - would be the ones to derive the most benefit from any resources they could find. Genetic resources might not be bought and sold initially but, in a common heritage framework, they might simply be taken and sold afterwards. Moreover, in that framework, it would be difficult, if not impossible, to support claims of biopiracy. In a worldwide system where everything biological belongs to everybody - or, if you like, to nobody -

nothing can be stolen or used in an illegal manner. In such a world, the potato belongs as much to the Incas as it does to the Prussians.

The CBD rejection of the concept of common heritage insofar as genetic resources are concerned is not the cause of increasing commodification of nature, including the patenting of life, but a response to that commodification. The real problem the CBD has created is that it accepted the view that genetic resources on public land should in future be governed by the States, but it failed to recognize that colonial States had disrespected indigenous property and use systems when those States had forced their own systems of individual property rights upon indigenous peoples and communities. And now, those peoples and communities are still calling for the respect and restoration of what they considered to be their inalienable rights. Indigenous and community groups regard the modern States as illegitimate owners of their resources.

Effectively, this means that the CBD does not respect a property and use system which is prevalent in many indigenous and traditional

societies - the Commons. The concept of the Commons must not be confused with the concept of common heritage. The first is a non-individual, community-based property system in which the users develop commonly agreed-upon rules about use; the second is a "non-property" system in which the users may also develop commonly agreed-upon rules but - supported by ever-more-potent international rights on intellectual property - also can claim individual property rights on some elements received from the custodians and thereby can exclude others from free access to those elements. Emerging property laws in the European feudal and early capitalist societies did not cover the Commons. In those settings, the concept of the Commons did not develop further or survive as a system of ownership and use of biological resources. Given this experience in the Northern cultures which now dominate much of the world, and given the strong influence of neoliberal policies on the CBD negotiations, it is not surprising that the CBD treaty ignored the Commons.

While indigenous groups do not complain about the end of the system of common heritage, understanding that the principle of national

sovereignty was promoted by developing countries to defend their national interests against foreign governments and transnational corporations, they do criticize the "serious shortcoming of the CBD", the fact that in ABS matters, the CBD only recognizes the sovereignty of *states*. As one indigenous leader put it, "If these resources are found in our territories, then we should have the primary authority to determine how these biodiversity will be conserved and used." (12)

In reality, nobody believes that the concept of benefit-sharing is perfect. Nevertheless, the arguments and concerns about the commercialization of nature have to be taken seriously. Whatever the outcome of the debate, the problems of implementation are likely to be the same. At all costs, we should avoid the situation in which a basically good principle legitimizes very bad conduct, especially bad conduct at the expense of the South and/or the poor and marginalized peoples who live there and may have views and goals different than those who seek access to their resources.

IV. No Access without Benefit-Sharing

One of the most serious problems of the CBD is that it is not properly implemented in most places.

Where states decide to employ biodiversity strategies which impact laws other than environmental regulations, Ministries of Environment often find themselves unable to exert the necessary influence to bring about the sought-after changes in other sectors, for example, in patent law. Thus, the ensuing debate at the national level and among the members of civil society frequently hinges on the practicability of a set of legal instruments that are not yet implemented or, even worse, not yet really elaborated. Such debate can languish in the realm of the hypothetical.

Unfortunately, this happens too often in ABS debates. There is, for example, no satisfying solution to the problems posed when particular traditional knowledge or a particular genetic resource is found in more than one community or country. Accessing the knowledge or resource through only one community and setting up benefit-sharing agreements with just that group can

cause unrest in all the communities who may "hold" that same knowledge or resource. Any ABS regime or benefit-sharing instrument will have to address this problem carefully.

In the following sections, we use the example of the San in Southern Africa to describe a typical case of biopiracy of traditional knowledge with subsequent patenting and to analyze a benefit-sharing agreement the San were able to negotiate when their case became public.

The San became victims of biopiracy when, as they reported, the Hoodia, a cactus-like plant growing in their region, was stolen and patented by the state-owned South African Centre for Scientific and Industrial Research (CSIR). For centuries the hunter-gatherer San had used Hoodia to suppress hunger and thirst on long hunting trips. In 1986, CSIR scientists identified the hunger suppressing active substance, naming it P57. The patent was received in 1997 at which time Hoodia was heralded as the answer to the West's multi-billion dollar obesity problem. The San were not informed of the activities of the CSIR; no access and benefit sharing negotiations were undertaken, and none of

the elements suggested by the CBD - no prior informed consent (PIC) nor any mutually agreed upon terms - were elaborated. The San were not even informed of what happened to their traditional knowledge and their Hoodia until long after CSIR began to look for a corporate partner to commercialize P57. In 1998, CSIR gave a license to a rather small British company, Phytopharm, for the exploitation of the Hoodia related patents. Later, Phytopharm entered into a \$21 million dollar agreement with a US-based transnational, Pfizer, to further develop the drug. At that stage, the biopiracy became public.

When Phytopharm was accused of exploiting the San in Southern Africa, Phytopharm's CEO, Richard Dixey, said: "We're doing what we can to pay back, but it's a really fraught problem ... especially as the people who discovered the plant have disappeared." (13)

Under public pressure, Phytopharm had another look in Southern Africa and actually found the San so that benefit-sharing negotiations could begin. The rightfulness of access to Hoodia was never questioned by Phytopharm. In March 2003, a

benefit-sharing agreement was signed. It was based on a two-tier approach. First, the San were to receive eight per cent of the milestone income received by CSIR from Phytopharm; the income from the development phase might last from five to eight years, starting in 2001. Once the drug is on the market and for 15 years thereafter, the San are to reap six per cent on the royalties paid to CSIR from Phytopharm. As small a share as this may seem, it could prove to be a substantial amount of money if the drug is successful. The San expect to earn 2 to 3 million South African Rand per year when the drug is fully commercialized.

The San were poor. For them this deal may have seemed good news. However, the deal also posed a challenge for the San communities: How should the money be distributed? Should it be saved, and if not, for what should it be spent?

The San live in several countries in Southern Africa: in Angola, Botswana, Namibia, and the Republic of South Africa. Initially, there were conflicts over the royalties and heated debates among the San groups. The first question they faced was who was the real owner of the knowledge

and who could legitimately negotiate and conclude a benefit-sharing agreement with CSIR. The decision they made drew upon the argument that, before the colonial era, there had been no borders separating the San, and thus competition among the groups was a legacy of colonial times. In the end, instead of emphasizing and increasing the differences among their communities, the San went for unity. The outcome was seen as extremely positive. Axel Thoma, an expert of the Church Development Service (Evangelischer Entwicklungsdienst, EED) and advisor working with Working Group of Indigenous Minorities in Southern Africa (WIMSA), the umbrella organization of the San communities, concluded: "In our efforts to bring together and strengthen the San peoples of Southern Africa, the Hoodia has pushed us a considerable step forwards." (14)

One reason that civil society groups are wary of the concept of (monetary) benefit-sharing is that the prospect of distribution of unaccustomed wealth can exacerbate existing conflicts and give fuel to new fights. The San have demonstrated that monetary benefit sharing deals do not automatically lead to or deepen conflicts within or

between local communities and indigenous peoples. To the contrary, the San example indicates that if communities are able to manage their differences and come to agreement on an approach, their social circumstances and structures may even be improved.

There is another lesson to be learned from the San. Early on, when the San recognized that their traditional knowledge - their property - was simply stolen, they became very angry. But when it became obvious that the communities could gain some money out of the theft, the San saw an opportunity for regaining their land and for educating their children. And they concluded that another such opportunity would be extremely unlikely to present itself. Thus any sympathy the San might have held for the arguments that condemn ABS mechanisms for commodifying nature, can be expected to be very limited. The San answer to the ABS dilemma was very pragmatic. They understood Hoodia to be their best chance - maybe their only chance - to escape poverty. As Axel Thoma points out: "Over the past centuries the San have lost their land and their natural resources, and have become increasingly dependent on others.

What is left is their knowledge about nature and their culture. And this is something that can be put on the market to help them to survive." (15)

Roger Chennells, WIMSA lawyer, seconds this view: "To criticize the San for signing the agreement is like criticizing a drowning person for accepting the saving hand." (16)

V. Power to the Powerless

The case of the San is a unique, perhaps even an extreme, one. The San acted out of a tragic situation in which they had little to lose and much to gain. Their approach and experience might not necessarily be useful for communities or peoples living in social and economic circumstances with more room - and freedom - to act. Further, it should not be forgotten that the San did not had the opportunity to go through the entire ABS process. Their prior informed agreement to the access was never sought. They never had the chance to say no or yes to the matter of access, only to the matter of benefit sharing.

For any future ABS regime, the precondition must always be a free and informed decision on granting access and connecting any allowed access with conditions and benefit sharing provisions. As Victoria Tauli-Corpuz from Tebtebba, an indigenous peoples organization in the Philippines, points out, "On access and benefit-sharing we should be clear on our strategies. For those of us who want to keep our heritage out of the market, we should see what mechanisms and capacities we should develop to achieve this. Some of us who opted for this strategy are now more involved in strengthening the local organizations so that they can assert their right not to allow access to their genetic resources and traditional knowledge. This position has been taken because of increasing biopiracy taking place in our communities where instead of us getting benefits we even have to spend a lot of resources and energies to fight against these. . . For those of us who decided to be engaged with the market we are strengthening and building mechanisms so that we will get the maximum benefit from the exploitation and use of our biodiversity and our knowledge. The experience of the San peoples is one way in which indigenous peoples managed to get an agreement on benefit-

sharing.” (17)

One lesson learned from the San is that the unity of local communities and indigenous peoples is crucial. The best that an international regime for benefit-sharing can hope to achieve is the elaboration of rules and obligations that give the most power possible to the powerless. Such a regime would act as a framework to ensure justice and equity.

The San avoided what could have been a more tragic situation. When CSIR offered the San negotiations on benefit-sharing, the San were in a poor bargaining position: the Hoodia and the related knowledge were already appropriated and patented. So, it should come as no surprise that they made a rather modest deal. The only advantage they had was that their case had gained the attention of civil society groups worldwide.

If future injustice is to be avoided, it must be accepted that the bargaining over benefit sharing must begin before the granting of access. It does not benefit the owners to start the haggling after the goods have been taken away. Those who wish to

trade their traditional knowledge and genetic resources need a solid bargaining position. They need to be certain of their right to deny access. In this regard, it should be recognized that the reasons for denying access are diverse and often legitimately based in religious, ethical, and moral considerations. Consequently, denial of access to traditional knowledge and genetic resources may not depend on the same reasons that make access to knowledge and resources desirable. The reasons for which those who seek access do so - whether their motives are economic exploitation or medical research - may be irrelevant to the resource holders.

The real winners in the Hoodia story were not the San but CSIR and the companies associated with the Hoodia deal. As Hoering writes: "Imagine if a thief could get away with his crime as long as he gave his victim a few percent of whatever the receiver paid him for the stolen goods." (18)

National patent law system in the case of the San was on the side of CSIR. Although CSIR acknowledged the importance of San traditional knowledge regarding the use of Hoodia and the existence of that enabling knowledge prior to the

development of any “modern” product, neither South African patent law nor CSIR's own philosophy prevented that knowledge from being patented. Further, the benefit-sharing agreement signed by both sides does not give the San the right to be informed about any further uses of their knowledge. CSIR that retained that control for itself.

When Phytopharm transferred its license to Pfizer, the San's expectations for (bigger) benefits increased. Then Pfizer in 2003 ended its drug research program for genetic resources and returned the license to Phytopharm.

At the end of 2004, Phytopharm announced that it had signed an agreement with a food company, Unilever, to “develop an appetite-suppressing snack or drink from the Hoodia cactus to complement Unilever’s existing weight-loss products, such as Slimfast.” Phytopharm received an initial payment of 6.5 million British pounds (\$12.5 million US), and the total payment may reach as high as 21 million British pounds. (19)

The San had no say in any of this. The

licenses were given and taken back without any opportunity for the San to influence the process.

Today, the main problem for the San is the patent system itself. A patent grants rights to the patent holder. Those rights concern the exploitation of the subject of the patent. However, in most places, neither the patent nor the patent system recognizes the rights of the original owner(s) of the knowledge or resources that enabled the invention.

Any ABS agreement should recognize the rights of the original holder(s) of traditional knowledge and genetic resources. Further, we suggest, the original rights-holders should insist that, in order for them to sign any ABS agreement, the provisions of that agreement must specifically exclude any patents on the knowledge and resources under negotiation. When Pfizer decided not to further develop and merchandise the knowledge of the San, it should have been the San who were entitled to look for another company, one that might have served their interests better than Phytopharm. In the absence of patents on the knowledge and genetic resource, but with a fair

ABS agreement, the San could have been the owners and masters of the process instead of mere spectators.

As long as arguments against patents on life are based only on ethical grounds, it may be easy for CBD negotiators to exclude such arguments from the ABS discussions. (20) But criticism of the patent system goes beyond ethical arguments. The patent system does not protect the rights of the original holders of traditional knowledge and resources. Instead, it puts patent holders in a strong legal position, adding, in most cases, to the financial and organizational advantage of the patent holders. Thus, the patent system is in itself inherently anti-poor and anti-development.

If the intention of governmental negotiators is to create an ABS system that can strengthen the weak, protect their rights, and gain fair prices for their resources, the negotiators must limit the influence of the patent system in the field of traditional knowledge and genetic resources. The resulting system might also help the strong to recognize that the new arrangement is in their interest as well.

In the final chapter of the Hoodia case, currently being written, CSIR has asked the San to broaden CSIR's rights regarding bioprospecting, to extend CSIR's rights to all the San's knowledge and related genetic resources. There are still many things to be discovered. The Hoodia is a multipurpose plant: the San use it for its Viagra-like effect; they also treat allergic eye infections and severe stomach pain with Hoodia. Every use the San know of represents a potential source of new profit. Foreseeing such developments, the CBD decided that for every new use of a genetic resource, a new prior informed consent process ought to be pursued. (21) In the case of the San, this would mean that for each new use, a new ABS negotiation might be necessary.

VI. Necessary elements of an international regime

In the coming years, as a result of decisions taken in Kuala Lumpur at the Seventh Conference of the Parties to the CBD, an international regime on access and benefit sharing will be negotiated. Such a regime only makes sense if it effectively

strengthens the bargaining position of the poor and marginalized. If the future ABS regime does not serve to do that, the ongoing practices of biopiracy will be legalized and sustained until the last genetic resource and the last bit of traditional knowledge is exploited.

In Kuala Lumpur, it was rather obvious that strengthening the poor was not in line with the goals of the developed countries. They fought for their own industries and made strong statements in support of a voluntary regime on benefit-sharing. During the negotiations, many delegates from the South also did not seem to be fighting for the poor and marginalized peoples back home, although the Southern delegates did at least push for a legally binding instrument. The fight over whether the future ABS regime would be binding or voluntary was intense and resulted in a classic compromise: the regime to be negotiated can contain both legally binding and non-binding instruments. (22)

Another issue of great importance in any future ABS regime is, of course, the right to deny access to the resources or knowledge in question. As already mentioned, the right to say "no" is an

important bargaining tool in the negotiation process. Recognition of the right to say "no" is supported by many things, not least of which is respect for the religion and culture and intelligence of other peoples. Finally, and perhaps most importantly, if our goal is to empower the weak, then it is unavoidable to leave the final decision to them and to expect that on some occasions they will say "no".

An international regime has to be based on the full acknowledgment of the inalienable rights of indigenous peoples. Prior to COP 7, governments could claim that the CBD was not the right place to create any linkages between land rights and ABS negotiations. With the adoption of the ABS decision at COP 7, however, the situation has changed. The preamble of the COP 7 decision to negotiate an ABS regime recognized, for the first time in the history of the CBD, the rights of indigenous peoples - without any reservations, including reservations linked to national legislation. With words "[r]ecalling that the international regime should recognize and shall respect the rights of indigenous and local communities", (23) the CBD gained a momentum

that must not be lost in the coming years but instead must be used to help frame the ABS negotiations and the future.

Endnotes

- (1) See the work of the International Chamber of Commerce Commission on Biosociety and Commission on Intellectual Property. Available on the Internet at <<http://www.iccwbo.org/biosociety/>> and <http://www.iccwbo.org/home/menu_intellectual_property.asp>. Note in particular their *Discussion Paper - Access and Benefit-Sharing for Genetic Resources*, October 2004. Available at <http://www.iccwbo.org/home/statements_rules/statements/2004/212-12E.pdf>.
- (2) International Chamber of Commerce, "Global Roadmap for Modern Biotechnology", July 2001. Available on the Internet at <<http://www.iccwbo.org/biosociety/mainpages/programme/roadmap.asp#iii5p2>>.
- (3) The Like-Minded Group, with its twelve initial members Brazil, China, Colombia, Costa Rica, Ecuador, India, Indonesia, Kenya, Mexico, Peru, South Africa and Venezuela, presented its analysis and demands in Cancun, Mexico, on February 18, 2002. Bolivia, Malaysia and the Philippines joined the group. For more details, see the group's website at

<<http://www.megadiverse.org>>.

- (4) See, e.g., ETC Group, *From Global Enclosure to Self Enclosure: Ten Years After - A Critique of the CBD and the 'Bonn Guidelines' on Access and Benefit Sharing*, originally presented 11 February 2004 at COP-7. Available on the Internet at <<http://www.etcgroup.org/article.asp?newsid=432>>. Statements from NGOs at COP-7 *not* in support of the idea of an ABS regime under the CBD, e.g., Oilwatch/Ecuador and Friends of the Earth International, can also be found in the Special Edition on ABS, *ECO* 10(4), 12 February 2004. Available on the Internet at <http://www.itdg.org/docs/advocacy/eco_cop7-4.pdf>.
- (5) Joint Declaration by the international social movement – Via Campesina and the Community Biodiversity Development and Conservation Network in Latin America, *ECO* 10(8), 18 February 2004. Available on the Internet at <http://www.itdg.org/docs/advocacy/eco_cop7-8.pdf>. Note: CBDC network partners in Latin America are Assesoria e Servicos a Projetos em Agricultura Alternativa (AS-PTA, Brazil), Centro de Investigacion, Educación y Desarrollo (CIED, Peru), Centro de Educacion y Tecnologia para el Desarrollo del Sur (CET-SUR, Chile), and Instituto Mayor Campesino (IMCA, Colombia).
- (6) *ECO* 10 (9), 19 February 2004. Available on the Internet at

<http://www.itdg.org/docs/advocacy/eco_cop7-9.pdf>.

- (7) The Secretariat of the CBD invited indigenous and local community representatives and relevant stakeholders to submit their views on ABS systems in *Notification - Decision VII/19 on Access and Benefit-sharing as related to genetic resources*, 29 April 2004.
- (8) The provisions of Art. 15 of the CBD set up following elements of an ABS regime:
- “Each Contracting Party shall endeavour to create conditions to facilitate access to genetic resources for environmentally sound uses by other Contracting Parties...”
 - “... genetic resources being provided by a Contracting Party ... are only those that are provided by Contracting Parties that are countries of origin of such resources or by the Parties that have acquired the genetic resources in accordance with this Convention.”
 - “Access, where granted, shall be on mutually agreed terms ...”
 - “Access to genetic resources shall be subject to prior informed consent of the Contracting Party...”
 - “Each Contracting Party shall endeavour to develop and carry out scientific research based on genetic resources provided by other Contracting Parties with the full participation of, and where possible in, such Contracting

Parties.”

- “Each Contracting Party shall take legislative, administrative or policy measures ... with the aim of sharing in a fair and equitable way the results of research and development and the benefits arising from the commercial and other utilization of genetic resources with the Contracting Party providing such resources. Such sharing shall be upon mutually agreed terms.”

The CBD text is available on the Internet at <<http://www.biodiv.org/convention/articles.asp>>.

(9) See contributions in *ECO 10(4)*. Available on the Internet (see endnote 4 above).

(10) See CBD COP-7, February 2004, *Decision VII/19 - Access and benefit-sharing as related to genetic resources (Article 15)*. On the Internet at <<http://www.biodiv.org/decisions/default.aspx?m=COP-07&id=7756&lg=0>>.

(11) See *How TRIPs threatens Biodiversity and Food Sovereignty - Conclusions and recommendations from NGO perspectives*, June 2003. Available on the Internet at <http://www.eed.de/fix/files/Internetversion_englisch.pdf>. Note: This NGO statement was supported by Centre for World Solidarity, India; Deccan Development Society (DDS), India; Participatory Action Collective – Tamilnadu (PACT), India; PREPARE, India; Third World Network (TWN),

Malaysia; Institut Africain pour le Développement Economique et Social (INADES): INADES, Tanzania / INADES International, Ivory Coast; Participatory Ecological Land-Use Management (PELUM): PELUM, Tanzania / PELUM International, Zimbabwe; The Biological Farming Association (ELKANA), Georgia; Commissioners for the Environment of the Protestant Churches in Germany (AGU), Germany; Church Development Service – An Association of the Protestant Churches in Germany (EED), Germany; Forum on Environment and Development, Germany; Grupo de Estudios Ambientales (GEA), Mexico; Red de Coordinación en Biodiversidad, Costa Rica: Mesa Nacional Campesina & Federación Costarricense para la Conservación del Ambiente (FECON) & Comunidades Ecológica La Ceiba (COECOceiba) & Mesa Nacional Indígena & Coordinadora de Organizaciones Civiles con Proyectos Alternativos de Desarrollo (COPROALDE).

(12) Tauli-Corpuz, V., *Biodiversity, Traditional Knowledge and Rights of Indigenous Peoples*, Third World Network Intellectual Property Rights Series: Penang, 2003, p.33.

(13) See Anonymous, The diet plant with a rich future: How hoodia could help the San survive, *The BIG Issue Namibia* 2(10), October 2003. Can be ordered on the Internet at <<http://www.bigissuenamibia.org>>. See also Barnett, A., In Africa the Hoodia cactus keeps men alive. Now its secret is 'stolen' to make us thin,

The Observer, June 17, 2001. On the Internet at <<http://observer.guardian.co.uk/international/story/0,6903,508162,00.html>>.

- (14) Hoering, U., *Biopirates in the Kalahari? - How indigenous people are standing up for their rights – the experience of the San in Southern Africa*, November 2004. Available on the Internet at <http://www.eed.de/fix/files/San_E.pdf>.
- (15) See *The BIG Issue Namibia* (cited in endnote 13).
- (16) See Hoering, *op. cit.*
- (17) See Tauli-Corpuz, *op.cit.*, p.36.
- (18) See Hoering , *op.cit.*
- (19) Potter, M., *UPDATE 2-Phytopharm shares spike higher on cactus diet deal*, Reuters: 15 December, 2004. On the Internet at <<http://www.investor.reuters.com/business/BusNewsArticle.aspx?ticker=UNc.AS&fullstoryurl=http%3a%2f%2fwww.reuters.com%2ffinanceQuoteCompanyNewsArticle.jhtml%3fstoryID%3d7100427%26ric%3dUNC.AS%26infotype%3dnews%26articletype%3dRTR&target=%2fstocks%2fnews%2frecentnews&page=busnewsarticle>> .
- (20) For examples see CIDSE, *Biopatenting and the Threat to Food Security - A Christian and Development*

Perspective, February 2000, on the Internet at <<http://www.cidse.org/pubs/tg1ppcon.htm>>; GAIA/GRAIN, *TRIPS versus CBD - Conflicts between the WTO regime of intellectual property rights and sustainable biodiversity management*, April 1998, on the Internet at <<http://www.grain.org/briefings/?id=24>>; and GRAIN, *Of Patents & Pi@ates - Patents on life: the final assault on the commons*, July 2000, available on the Internet at <<http://www.grain.org/briefings/?id=141>>.

(21) See CBD COP-6, April 2002, *Decision VI/24 - Access and benefit-sharing as related to genetic resources*. on the Internet at <<http://www.biodiv.org/decisions/default.aspx?m=COP-06&id=7198&lg=0>>.

(22) See endnote 10.

(23) *Ibid.*

Benefit-Sharing from the Use of Genetic Resources: Real Myths or Mythical Realities?

Elpidio V. Peria

The matter of benefit-sharing from the use of genetic resources appears to be straightforward and obvious, but the topic actually is fraught with difficulties, particularly when groups of people or sectors working on benefit sharing for quite some time have fixed views on what it is and how it should be carried out.

Does this mean that debates about benefit

sharing are hopeless? I am not willing to answer yes to that question, for now. Sometime in 2001, members of the government and the scientific sector and the local and indigenous communities in the Philippines were brought together to discuss their views on access and benefit-sharing. I was part of that experience and couldn't help but notice that participants mainly talked past each other, each only trying to drive home his/her point of view. Most of the participants agreed on the need for some kind of bioprospecting regulation, but we were not able to find common grounds on benefit-sharing.

I think therefore that there is a need to reexamine some of these views on certain aspects of benefit-sharing, especially since discussions are about to start on an international regime on access and benefit-sharing. These discussions purportedly will iron out a set of rules at the international level - rules which should be binding but may not be - to govern how benefit-sharing should be accomplished among other concerns related to access to genetic resources.

What follows then is an attempt to look again

at some persistent views on benefit-sharing and see how they stack up against what is going on in actual situations on the ground and in practice. The discussion will look at some misconceptions or myths that are still associated with the idea of benefit-sharing. The analysis is based purely on my own experiences as an NGO advocacy officer who worked with local and indigenous communities, government officials and scientists and policy-makers in the Philippines and in South East Asia, and who later served as a legal adviser of the country delegation of the Philippines to the Conference of the Parties to the Convention on Biological Diversity.

Alongside these reflections, I will look very briefly at what has been documented about benefit-sharing agreements so far. Hopefully, this will help clarify the real issues that need to be examined more closely or need more collective attention from the key players. Admittedly, the idea of benefit-sharing operates is still evolving and what will happen in the future, particularly in the international arena, will largely depend on the positions that taken up by the key players.

I. Benefit-Sharing in the Convention on Biological Diversity (CBD)

A. Early Beginnings

Even if the Convention on Biological Diversity (CBD) is considered the first international treaty to put the issue of benefit-sharing in a definite legal framework, it is not the first international document that looked at the issue. Benefit-sharing was also discussed in the Brundtland Report, the outcome of a four-year effort of the World Commission on Environment and Development created by the United Nations General Assembly in 1983 and chaired by Mrs. Gro Harlem Brundtland, former Prime Minister of Norway. When the Commission submitted its report to the United Nations General Assembly in 1987, it recognized that protecting wildlife species was necessary for humanity's survival, but it also acknowledged that developing countries, where most of these species could be found, had a right to expect economic return from these unique specimens:

Many developing nations recognize the need to safeguard threatened species but lack the

scientific skills, institutional capacities, and funds necessary for conservation. Industrial nations seeking to reap some of the economic benefits of genetic resources should support the efforts of Third World nations to conserve species; they should also seek ways to help tropical nations - and particularly the rural people most directly involved with these species - realize some of the economic benefits of these resources. (1)

The report of the World Commission on Environment and Development explicitly stated that, "developing countries must be ensured an equitable share of the economic profit from the use of genes for commercial purposes." (2)

B. The CBD Compromise

The Brundtland Report eventually led to the Earth Summit in Rio de Janeiro, where the Convention on Biological Diversity (CBD) was opened for signatures in June 1992. A year and a half later, the CBD came into force, bringing with it all the compromises that had made the treaty possible.

The negotiations on access to genetic

resources had resulted in a compromise. In exchange for facilitating access by others to their genetic resources, developing countries gained - for the first time - recognition of sovereign rights to their genetic resources. It was only the United States which disagreed with the text of the Convention, issuing an interpretive statement and raising as one of the key issues the matter of benefit-sharing from work in biotechnology, an emerging industry in the US. Another problematic item for the United States was the matter of access to and transfer of technology. The US did not want an open-ended commitment to share technology on concessional terms. The matter was resolved by the use of the such phrases as "where mutually agreed" in the texts concerning technology transfer and handling of biotechnology and distribution of its benefits. (3)

C. Later Developments

In early meetings of the Parties to the Convention on Biological Diversity, access and benefit-sharing (ABS) made little headway. Very few countries developed national ABS legislation between the time the Convention entered into force in 1993 and

the present day. The lack of progress on ABS was used as an excuse by developed countries and industry to go slow on ABS discussions at the CBD level. There were CBD calls to share country experiences on ABS and eventually, fed up by the inaction of countries in fulfilling these requests and perhaps in hope of getting some ABS action going, in April 2002, the Conference of the Parties adopted the Bonn Guidelines, a set of voluntary measures which may be adopted at the firm, community, or country level. Two months earlier, perhaps sensing that the ABS matter might take forever to be resolved, a group of biodiversity-rich countries met in Mexico. They formed the Group of Like-Minded Megadiverse Countries which lobbied for and obtained from the environment ministers at the Johannesburg Summit in September 2002 a commitment to negotiate a legally-binding, international regime on access and benefit-sharing.

As late as 2003, the Chair of the International Chamber of Commerce Task Force on Access and Benefit-Sharing noted that his group was still trying to figure out these developments and needed more time and effort to find the right balance. He stressed that countries need incentives to adopt and

gain experience with ABS systems and need help to better understand those elements that truly facilitate access while providing for reasonable benefit-sharing. He saw looming shadows over the whole effort, emanating from the uncertainties surrounding traditional knowledge and the ill-founded efforts to link benefit-sharing and prior informed consent to the patentability of products.

(4)

At the moment, every stakeholder involved in the ABS issue is awaiting the outcome of discussions relating to the proposed international regime on access and benefit-sharing. Talks are due to start in Thailand in February 2005.

II. The Myths

Several beliefs have persisted about benefit-sharing. It may be useful - even beneficial - to reexamine these beliefs to see how closely they correspond with the way things really are:

A. Benefit Sharing is the proverbial “pot of gold” at the end of the rainbow.

Whatever else benefit-sharing may mean to different groups of people, one commonly held metaphor about benefit sharing is the “pot of gold” -- the wealth and plenty that is expected to come to those who provide genetic resources.

A lot of planners in government and even in local and indigenous communities look at biodiversity as something that will yield a lot of money. In fact, crude estimates of the combined annual global markets for the products derived from genetic resources in such industry sectors as pharmaceuticals, botanical medicines, major crops, horticulture, crop protection products, applications of biotechnology in fields other than healthcare and agriculture, and cosmetics and personal care products range from US \$500 billion to US \$800 billion. (5)

But have such values actually been realized? Maybe by those who are in the position to benefit from such resources, be they in the developed countries or in developing countries. Looking at it

from the perspective of resource economists, the value of biodiversity rests on its being a public good, the value of which is dependent on the way it is perceived by its users and its eventual function in the economy. Very recently, economists David Simpson and Roger Sedjo claimed that commercial interests are not willing to pay much for biodiversity, for it is not worth much to them. (6)

This kind of economic thinking may hold true *prior* to the utilization of resources. At that stage, what resource holders are dealing with is the willingness to pay of corporations who have two choices in developing - to use one product example - drugs. The corporations may choose to develop drugs through the natural products route, collecting living materials and identifying whatever unique compounds they contain that can eventually be developed into useful chemical compounds with therapeutic properties. Or, they may use methods whereby various synthetic or natural compounds found in databases or chemical libraries are combined, using automated methods that mimic possible combinations found in nature. They then test for the reactive and therapeutical properties of each combination.

Given the present perceived difficulties in doing bioprospecting at the national or even international level, corporations - and perhaps even "independent academic researchers" - may have second thoughts about going the natural products route and may turn instead to combinatorial chemistry and laboratory work.

But that choice does not reflect the actual earning potential of natural products. A recent analysis indicates that, in the period 1981-2002, the utility of natural products as sources of novel structures, but not necessarily as sources of final drug entities, is still alive and well. In the area of cancer, the percentage of new chemical structures that are non-synthetic has remained at 62% while in the anti-hypertensive area, of the 74 formally synthesized drugs, 48 can be traced to natural product structures. (7)

Economics is not called the dismal science in a rhetorical sense, for the problem with most economic models is that they can only approximate reality. (8) With biodiversity, the reality at present is that there are companies using natural products

to develop commercial products and, further, that these companies have markets awaiting the commercialization of these natural products. (9)

Further, if we heed the notion that biodiversity hold little value for commercial interests, then it is worthless to engage in discussions about benefit-sharing. If countries believe that there is no value in their resources, they would not bother to come up with access and benefit-sharing regulations and bioprospectors could go their same old ways, exploiting genetic resources for their private - and hidden - gain. But that is not the present reality; today, countries are aware that, left to themselves, the companies exploiting resources will tend to keep to themselves the gains earned from the commercialization of products derived from bioprospecting. Countries recognize that economic assertions about the relative worthlessness of genetic resources may not actually reflect the realities and existing demands for genetic resources.

So is there merit in putting value to biodiversity at all? In a sense, the answer should be yes, but not only in the economic sense, even if that is the only

sense that prompts industries using genetic resources to look for alternatives to natural products.

We have to value biodiversity in the way local and indigenous communities do, as an integral component of a way of life, not subject to economic or monetary measurements. Thus, even if the so-called "pot of gold" from genetic resources is contingent on the eventual use of the compounds that may be extracted or derived from the resources, the resources themselves - whether understood as "genetic resources" or as "biodiversity" - have innate value from the point of view of the communities who use those resources (or share them) in their day-to-day living. It may be that government planners are aware of this innate value, but the fact of their awareness is obscured each time they come up with monetary estimates about the value of biodiversity. Unfortunately, the planners are usually acting in response to the demands of political superiors who are hoping for very optimistic figures to demonstrate their own effective work for the good of the people. (10)

*A. B. Benefit Sharing will develop the technological
B. capacity of developing countries.*

Another commonly held understanding of benefit sharing relates to one possible gain to be made from granting access to genetic resources - the gain of technologies to enable the resource providers, whether countries or communities, to add value to their resources or to accomplish broader industrial objectives.

The first question to ask in regard to this possible benefit is whether the expected development of technological capacity really materializes, or are there other more pervasive considerations in technology transfer that need to be taken into account.

If we look at all the benefit-sharing case studies profiled by the Convention on Biological Diversity, (11) the actual transfer of technology happened only when it was demanded up-front by the countries or communities providing the resources. Thus, we have the case of the Sarawak State Government in Malaysia demanding that it become a co-developer of the drug from the *bintangor* tree. We also have

the local communities in UZACHI in Oaxaca, Mexico, who were able to demand know-how transfer from Novartis for the processing of micro-fungi taken from their forest concessions. (12) And we also have the University of the Philippines-Marine Sciences Institute (UP-MSI), the grantee of the first commercial research agreement from the Philippines, which, due to the long-term nature of its engagement with the University of Utah, was able to develop its natural products laboratory and is currently developing a Technology Park in a former Vietnamese refugee processing center in the Philippines.

These experiences tell us that technology transfer is possible, in the rare instances in which it is demanded outright by the provider of the resource, or in the rare places where some technology infrastructure already exists, composed of research institutions and personnel ready and able to benefit from the transfer of new technology. In addition to these elements, it helps to have pre-existing relationships facilitative of technology transfer. The relationships of the people involved in access and benefit-sharing arrangement can make all the difference. For example, the Novartis-

UZACHI deal would not have happened but for the close links between Dr. Ignacio Chapela, the adviser of the four communities comprising UZACHI, and Dr. Dreyfuss of Novartis, who worked on the details of the benefit-sharing arrangements and had it revised in accordance with the wishes of the community. In another example, the UP-MSI and University of Utah collaborative research partnership can be traced to the ground-breaking work done by Dr. Baldomero Olivera on cone snails when he was still with UP-MSI. Olivera moved to the University of Utah in the 1970s. His professional and personal partnerships with the local experts of UP-MSI evolved into a sustained research collaboration which continues to this day.

Another question to ask about benefit-sharing and technology transfer is whether the “transfer” will eventually result in technology mastery? Technology mastery is a concept which involves learning both a set of skills and a body of knowledge that set the context for the implementation of those skills. (13) Because there has been little study and documentation of these aspects of technology transfer in benefit-sharing arrangements, the question about mastery cannot be

answered yet. More research is needed.

Further, it should be acknowledged that intellectual property rights (IPR) are also part of the technology transfer package and experience. In fact, as noted by the Commission on IPR, “the effective transfer of technology also requires the transfer of ‘tacit’ knowledge which cannot be easily codified. . . The acquisition of technology requires the ability to negotiate effectively based on an understanding of a particular technology. This process requires a determined approach on the part of the recipient of technology to acquire the necessary human capital and the appropriate institutions.” (14)

Thus, there can be no guarantee that benefit-sharing alone will enable a developing country to develop its technological capacity, especially if the country’s own research infrastructure is not fully developed and its capacity to absorb and commercialize technology on its own is in question. It might be possible to gain technological capacity if one undertakes several ABS deals to achieve mastery in a certain field of technology. INBio in Costa Rica, in over twenty industrial and academic

bioprospecting agreements during its twelve years of existence, appears to have done just that. (15) It remains to be seen, however, if the INBio experience is repeatable or if other developing countries can or wish to follow the INBio path. Such an experience in capacity building may turn out to be a unique outcome of Costa Rica's scientific and political institutions.

C. Benefit sharing will happen only after commercialization.

Some spokespersons in the bioindustry say that there is no problem with the sharing of benefits as long as access is given first to bioprospectors. They ask what benefits could be shared if no product can be developed that will be commercialized later?

This view seems reasonable enough. It requires that access must be a precondition for benefit-sharing discussions to begin.

But is commercialization really necessary before benefits occur? Is commercialization the only source of money from which benefits can be derived?

If we look, for example, at the development of drugs from discovery to clinical trials, we note that companies usually come up with clear budgets for the development of a product. The costs of bioprospecting, including access costs, could - and should - be included as part of the product development cost.

The benefits sometimes asked in a typical ABS agreement are a mere fraction of the total drug development costs, (16) costs which since 2001 have been pegged at US \$802 million. (17)

In reality, it is difficult to confirm drug development costs. Carlos Correa, a legal expert from Argentina, has pointed out that estimates of drug costs usually have no clear basis to back them up. Correa notes that, "the amount effectively invested by pharmaceutical companies for the development of new drugs is a highly disputed issue, in part because there is little transparency on the real expenditures made." (18) Correa further observes that, "the figures on R&D provided by the industry do not correspond to actual expenditures, but to expenditures adjusted for cost of capital and

to compensate for R&D failures.” (19)

It would also not be right to say that large costs will be incurred at the moment of access as these benefits are actually spread out over the product development phase. Thus, benefits do not happen only at the point of commercialization.

If that view of benefit-sharing - that it should happen only after commercialization - were to persist, there would be no incentive to grant access, except in the rare instances where commercialization is a sure thing, and the practices of industry, the condition of biodiversity, and the lot of poor countries would be unlikely to improve.

D. Benefit-sharing will be difficult to realize when too many competing rights are involved.

One advocate for science and technology has noted that the problem with access and benefit-sharing discussions, at least in the Philippine setting, is that it has resulted in a seeming imbalance between “the rights of the indigenous people over genetic and biological resources in the lands they occupy and the need of researchers to obtain access to these

resources for purposes of legitimate scientific research". (20) This same advocate then went on to say that the grant of entitlements to indigenous communities to prior informed consent and benefits-sharing "has resulted in a situation similar to the tragedy of the anticommons". (21) He was referring to the tragedy that occurs when, among multiple owners, each has a right to exclude others from scarce resources; the result is that no one has an effective privilege of use. (22)

The creation of an anticommons is a myth insofar as the local and indigenous communities in the Philippines are concerned. Even when these communities are given rights to participate in the discussions relating to access and benefit-sharing, and even when their views are factored in during decision-making, indigenous and local communities are still not in a position to become equal partners in a negotiation which could result in denying access to researchers seeking access to their biological or genetic resources.

Apparently, what has happened in the Philippine setting is that scientists have been shocked to see, some for the first time, assertive

local and indigenous communities. These researchers have grown accustomed to the “traditional” situation where they just come in and out of local and indigenous regions without bothering with issues of rights. Now the researchers find themselves encountering a crisis in which they have to change their old habits and take into account the rights of these communities.

If equity in negotiation becomes the norm, there should be no problem, for indeed a benefit-sharing discussion entails a bargaining situation between parties who are equal. The presence of competing rights should not be seen as an impediment to the achievement of a fair and equitable sharing of benefits. If one examines it closely, the presence of many competing rights, all equal to each other, should result in harmonized relationships among the parties involved in the ABS discussion. They are all placed, theoretically, on equal footing and the ABS discussion provides a forum where their rights can be asserted.

Sadly, we do not have that kind of situation yet. Even with Article 8(j) of the CBD, which calls on national governments to enact legislation to respect,

preserve, and maintain the knowledge, innovations, and practices of local and indigenous communities, the local and indigenous communities are still far from having their rights recognized by their national governments. The Philippine situation, where a law was passed to recognize the rights of indigenous peoples, is an aberration or a unique condition which may not be easily replicated anywhere else.

There is another problem with overemphasizing the myth of the anticommons that results from the presence of too many rights-holders in benefit-sharing discussions. Giving credence to the myth - and weight to the inconvenience it recognizes - may lead to calls for diminishing the rights of disadvantaged communities just at a time when their political and legal rights are being recognized after a long period of denial. If indigenous and local community rights were to be denied again, what "balance" would have been achieved in the situation and what would be the meaning of benefit-sharing?

III. The Realities

There have been very few benefit-sharing experiences documented, and the only easily accessible, public information at present is the compilation of case studies made available by the Secretariat on the Convention on Biological Diversity (CBD) website. (23) There may be more experiences in the field, but there have been very few systematic efforts at putting them in one accessible venue for closer study and scrutiny.

In a previous advocacy and research program, I helped coordinate documentation of cases of biopiracy. There too it was difficult to validate identified instances of illegal taking of biological and genetic resources because of the confidentiality clauses usually invoked by those under investigation and because patent applications rarely require the submission of documentation about the sources of genetic materials used in inventions. This matter of confidential business information, so easily invoked by those who have benefitted from it, will hamper any serious effort at compiling any form of ABS database,

notwithstanding any efforts at the World Intellectual Property Organization to compile a database of intellectual property or benefit-sharing clauses of access and benefit-sharing agreements.

In spite of the glaring lack of documentation, it is difficult to believe that the various industry sectors using genetic resources in the past have stopped using such resources. These resources are, after all, a crucial part in the drive for growth of many industries. It is not only the pharmaceutical industry that is interested in useful natural products.

A. Documented benefit-sharing deals have been few, but there may be other bioprospecting arrangements that might be considered as biopiracy.

The benefit-sharing case studies profiled on the website of the CBD were a good attempt to document what was done in the 1990s when fairness and equity were attempted. Unfortunately, these case studies are a bit dated. It might be worthwhile to ask what has happened to these benefit-sharing agreements since then. Have the benefits identified

in the original profiles proved long-lasting or sustainable?

As such research might prove too costly, we may have to content ourselves with asking what these studies can indicate to those who may wish to repeat the experiences. Here it is worth noting that most of these deals were the first of their kind at the time they were entered into; the parties involved were experimenting in the hope of finding the kind of benefit-sharing arrangement that would suit their circumstances. What seemed fair and equitable in these early cases was mainly the result of close discussions between resource providers, collectors, and communities, notwithstanding the fact that any close discussion or mutually-agreed-upon understandings between or among the parties always reflects the relative bargaining strength of each of the parties at the outset of the discussion. The Columbia University case study, for example, demonstrated a trend towards non-monetary benefits. (24) This reflected the difficulty in achieving clarity on royalty-based payments when commercialization was destined to happen far-off into the future, long after the source biodiversity was accessed. These non-monetary benefits, which

consisted of capacity-building activities and trainings, should be examined closely to discern what kinds and levels of technology were introduced or augmented. Were they advanced technologies and capacities or were they mostly trainings in more efficient resource extraction and exploitation and other work catering to the needs of those interested in accessing biological and genetic resources?

Another point worth noting from these case studies is the existence of other less well-documented bioprospecting deals. The fierce secrecy of industry in invoking the confidentiality of their activities and the terms and conditions of existing benefit-sharing deals should be examined. There have been very few publicly-described benefit-sharing case studies and there may be a number of bioprospecting activities which have gone unnoticed and which may legitimately be classified as biopiracy. Until we know the details of all the deals and activities, any rational discussion of what is fair and equitable in benefit-sharing will elude us.

B. Benefit-sharing deals have not completely addressed the question of rights of local and indigenous communities involved in the deal.

The benefit-sharing deals so far documented have not adequately addressed the question of the rights of the local and indigenous communities involved. The reason for this is that most of these deals have been among governments or government agencies or between a government and a company. There have been very few agreements in which local and indigenous communities were directly involved; one of these “few” was the Novartis-UZACHI deal. In that agreement, negotiations took place directly between the local communities and the collector.

(25)

In many national contexts, there is still a lot of work to be done to ensure the involvement of indigenous and local communities in the disposition of their resources. The lack of clear resolution of the rights of local and indigenous communities is often caused by the absence of a legal framework or policy recognizing the rights of local and indigenous communities to those resources. Resolution of these issues will come

with great difficulty, for many countries are still in denial about the existence of indigenous communities. A set of minimum international standards might remedy the dire situation of local and indigenous communities, but until such standards are made binding on all countries, they will not be of much help in addressing rights issue involving local and indigenous communities.

C. Benefit-sharing deals treat conservation as an add-on, not as the main rationale.

The benefit-sharing agreements that have been profiled by the CBD so far have identified conservation as one of their key objectives. In all these cases, efforts were made by provider communities to conserve the resource. Unfortunately, the reason for conservation had to do with sustaining the supply of a raw material. There is nothing wrong with this aim, but conservation should be based in broader and longer-term objectives. Because of the sustainable use orientation in existing conservation efforts, we may have to wait a while until we know whether the key conservation goals of bioprospecting have been achieved. We may learn that sustainable use was

actually in conflict with the goals of conservation. That possibility will have to be investigated thoroughly. Likely, the investigation will take a long time. Impacts to biodiversity often take some time to appear and be noticed.

D. Benefit-sharing deals will be secured, but not without a fight.

After more than a decade of new mandates from the CBD, industry still clings to its old habits of keeping costs down, getting resources on the cheap, and preventing competitors from sharing key technologies. This strategy is rational from a business point of view, but it has to change, if fair and equitable sharing of benefits from the use of genetic resources is ever to happen.

Sadly, even research scientists doing bioprospecting work remain obstinate. Their continuing hostility to any regulation of bioprospecting does not augur well for improved regulation in the future. The scientists keep on pointing to shrinking research budgets as justification for keeping things just as they are. Perhaps what is beneath their hostility is a

continuing intention to avoid those things that are non-scientific, an avoidance which prevents them from being socially aware and adept at dealing with communities.

The Convention on Biological Diversity has already changed the way biodiversity research is done. Today, local and indigenous communities must be involved every step of the way from the moment that access to their resources is sought. Countries and researchers seeking access find themselves in unfamiliar social territory. Attitudes have to change and a lot of work remains to be done.

IV. What should happen now ?

Given the persistence of myths about benefit-sharing and the slowness of change on the ground, real benefit-sharing -- at least the scenario in which developing countries and communities gain benefits they can use to achieve their own visions of development -- is still a long way off.

This does not mean that we should do away with

existing legal frameworks on access and benefit sharing. On the contrary, we should negotiate further arrangements, mandatory arrangements that require change in the behavior of industry and the scientific community. We should negotiate arrangements that push us all towards doing what is just and what uplifts the conditions of all in the benefit-sharing relationship. Voluntary measures will only distract us from the real task of changing the way things are done. Voluntary measures will not require fundamental change in the existing relations among the parties to an ABS agreement.

Real technology transfer must happen, and if it cannot be gained through bioprospecting contracts, then the agencies in the United Nations system, the World Trade Organization, and of course the Convention on Biological Diversity should do something about it, particularly in the area of intellectual property rights.

The developing countries should clarify what they want to get out of bioprospecting deals. They should prepare their institutions and personnel for technology capacity building and mastery of the processes of production and marketing. They

should maximize every benefit that can be achieved through ABS agreements.

The forthcoming debate on the international regime on access and benefit-sharing (ABS) may distract us from the main issues of ABS; the negotiators may stop real work where work is needed; everybody may find themselves awaiting an analyses when there is very little data on which to base an analysis. Nevertheless, in spite of the inevitable frustrations, work on the international ABS regime is important. It can act as a catalyst for effecting real change in the way things are done, particularly in the matter of disclosure of the sources of genetic resources used in patented inventions.

Finally, the legitimacy of benefit-sharing deals will hinge on the way the consent of local and indigenous communities is secured. It is not enough that these communities are aware of the issues and participate in the discussion. Their rights should be clear and respected and elaborated in the benefit-sharing arrangement.

Endnotes:

- (1) The World Commission on Environment and Development, *Our Common Future*, Oxford University Press: 1987, pp. 156-157
- (2) *Ibid.*, p. 160.
- (3) Fletcher, S. R., *Biological Diversity : Issues Related to the Convention on Biological Diversity*, Congressional Research Service (CRS) Report for Congress (CRS Report 95-598), May 15, 1995.
- (4) Jacob, T., Global Industry's View on ABS Issues, presentation during a UNU-IAS/JBA Symposium on *Commercial Prospects of Access to and Benefit-sharing of Genetic Resources*, UN House, Tokyo, Japan, 30 September 2003. Organized by the Japan Bioindustry Association (JBA) and United Nations University Institute of Advanced Studies (UNU-IAS).
- (5) ten Kate, K. and S. A. Laird, *The Commercial Use of Biodiversity: Access to Genetic Resources and Benefit Sharing*, Earthscan Publications Ltd.: London, 1999, p.1.
- (6) Simpson, D. and R. Sedjo, Letter, 12 August 2004, *Nature* 430: 723, available on the Internet at <<http://www.scidev.net>>, viewed August 2004.

- (7) Newman, D. J., et. al., 2003, Natural Products as Sources of New Drugs Over the Period 1981-2002, *J. Nat. Prod.* 66 (7): 1022-1037.
- (8) In fact, a respected economist in Latin America has quoted the conservation biologist David Ehrenfeld saying about the same thing in this way: "It is not possible to figure out the true economic value of any piece of biological diversity, let alone the value of diversity in the aggregate. We do not know enough about any gene, species or ecosystem to be able to calculate its ecological and economic worth in the larger scheme of things. I cannot help thinking that when we finish assigning values to biological diversity, we will find that we don't have very much biological diversity left.", from Vogel, J. H., Case Study 6 : *Bioprospecting, The Successful Use of Economic Instruments to Foster Sustainable Use of Biodiversity, Six Case Studies from Latin America and the Caribbean*, final report commissioned by the Biodiversity Support Program on behalf of the Inter-American Commission on Biodiversity and Sustainable Development, in preparation for the Summit of the Americas on Sustainable Development, Santa Cruz de la Sierra, Bolivia, Dec. 6-8, 1996.
- (9) See Jacob, *op. cit.*, whose list of industries using genetic resources includes the pharmaceutical industry, the botanical medicine industry, seed industry, horticulture industry, crop protection, biotechnology in fields other than healthcare and agriculture, the

natural personal care and cosmetics industry.

- (10) In a recent workshop I attended, a ranking official of an environmental ministry of a South East Asian country said that his government estimated the potential income from bioprospecting at around US\$ 2 billion.
- (11) For more than 20 case studies of access and benefit sharing, see the *website of the Convention on Biological Diversity*, at <<http://www.biodiv.org/programmes/socio-eco/benefit/cs.aspx>> on the Internet, viewed December, 2004.
- (12) Baruffol, U., Contractual Regulation of Access to Information on Biodiversity for Scientific and Commercial Use – The Novartis-UZACHI Biolead Project, Swiss Federal Institute of Technology, Zurich, August 2003, on *CBD website* cited in note (11) above.
- (13) Nelson, R., On Technological Capabilities and their Acquisition, in Evenson, R. E. and G. Ranis, eds.,, *Science and Technology : Lessons from Development Policy*, Westview Press: Boulder, Colorado, 1990, pp. 71-80.
- (14) Commission on Intellectual Property Rights, *Integrating Intellectual Property Rights and Development Policy*, London, September 2002, p. 24
- (15) Gamez, R., *The Link Between Biodiversity and Sustainable Development : Lessons from INBio's*

Bioprospecting Program in Costa Rica, available on the Internet at <<http://law.wustl.edu/centeris/Confpapers/PDFWordDoc/gamezfinal1.pdf>>, viewed 23 July 2004 .

- (16) In the Novartis-UZACHI deal, for example, the identified expenses of Novartis in obtaining 6- 7,000 samples of microorganisms did not exceed US \$1 million altogether, for the entire duration of the agreement with the community, excluding those items which were not disclosed by the case study.
- (17) *Nature Reviews Drug Discovery*, April 2003, 2: 247.
- (18) Correa, C. M., *Some Assumptions on Patent Law and Pharmaceutical R&D*, Occasional Paper 6, Quaker United Nations Office: Geneva, June 2001, p. 4.
- (19) *Ibid.*
- (20) Ochave, J. M., 1999, The Anticommons in Bioprospecting: Regulation of Access to Genetic and Biological Materials in the Philippines, *World Bulletin*, 15 (1-6) : 151.
- (21) *Ibid.*
- (22) Heller, M. A., and Eisenberg, R. S., 1998, Can Patents Deter Innovation? The Anticommons in Biomedical Research, *Science* 280: 698, as cited in Ochave, *op. cit.*

(23) See case studies on the website mentioned in note (11) above.

(24) Columbia University School of International and Public Affairs, *Access to Genetic Resources : An Evaluation of Development and Implementation of Recent Regulation and Access Agreements*, Environmental Policy Studies Working Paper # 4, prepared for the Biodiversity Action Network, Environmental Policy Studies Workshop, 1999, School of International and Public Affairs, Columbia University.

(25) See note (8) above.

Benefit-sharing

Tewolde Berhan Gebre Egziabher

Introduction

Throughout the major part of human history, knowledge and technologies have been exchanged without legal barriers. Geographical and, to a lesser extent, cultural barriers have been the only constraints to diffusion. The first legal barrier erected was the patent system in Venice in 1474. (1) The first seed law, the 1920 Seed Act of the United Kingdom of Great Britain and Northern Ireland, aimed only to ensure seed quality, but eventually proved a barrier to unhindered access to living things. (2)

The Agreement on Trade-related Aspects of Intellectual Property Rights (TRIPs) of the World Trade Organization (WTO) has now universalized seven kinds of intellectual property rights (IPRs) as legally binding barriers that must be erected by all WTO members to stem the free flow of information, technologies, and living things presumed to be useful. (3) Of these IPRs, a copyright is explicitly given a minimum of 50 years of protection. A trademark is also given an explicit indefinite protection - that is, no upper time limit is stipulated for the protection - provided that it is renewed periodically, as required by national law, with the period before renewal not being less than seven years. A geographical indication, that is, certification of the place of origin of a product, is also given protection for an indefinite period. An industrial design, which is for textiles, is protected for at least 10 years. A patent is protected for at least 20 years. A layout design of an integrated circuit is protected for at least 10 years. Undisclosed information (a trade secret) is given an indefinite period of protection.

The idea behind IPR protection is that a monopoly is given as a reward to an innovator for a

set period of time so as to ensure that the society at large can benefit from an eventual free flow of knowledge and technology. (4) This in mind, then, the standard by which an IPR protection may be judged is the degree to which the protection is fair. i.e., really operates to benefit society.

In principle, the protection of geographical indications would act to prevent false claims about the geographical origins of products and thus a grant of indefinite protection is fair. Similarly, the protection of trademarks would prevent false claims about the institutional origins of products and so the grant of perpetual protection is likewise fair. The layout-designs of integrated circuits are of relevance only to the modern industrial sector and this sector is quite competent to look after its own interests. Therefore, the question of fairness and societal benefit of protection of layout designs will not be pursued here. The protection of undisclosed information - trade secrets - goes against the idea of society allowing a period of monopoly in exchange for making knowledge and technology available to all. There would seem to be no good reason then why society should accept a rule for the perpetual protection of trade secrets. In the comparable case

in traditional communities, those who are expected to keep components of, say, traditional medicine secret, do not expect the state to enforce the protection of those secrets. Therefore, perpetual protection of undisclosed information would seem to be an abuse of the contemporary state, which is meant to serve all citizens equally, by those who have money and wield power.

Patents are used to protect technologies and products that could, in principle, be invented by anybody anywhere. Their impact is pervasive and and worth further examination.

TRIPs does not deal directly with crop variety protection, although its Article 27.3 (b) implicitly includes breeders' rights with the requirement that states "provide the protection of plant varieties either by patents or by an effective *sui generis* system or by any combination thereof". (5) Some types of breeders' rights - like patents - interrupt the customary free flow of genetic resources and thereby give good grounds for any call to share the monopolized benefits.

In what follows, I examine patents and plant

variety protection laws and, because of their importance to the South, I also look briefly at copyrights, geographical indications, and industrial designs. However, before proceeding further, I think it essential to make it clear that TRIPs consists only of rights given to natural or legal individual persons, (6) while innovations in the non-industrialized world of the South are collective, originating in local communities. (7) It would be helpful in understanding the issues before us to see how this focus on the individual natural or legal person as the locus of innovation arose in the industrialized countries of the North to the total disinheritance of the local community, while in the developing countries of the South. the local community persisted as locus of innovation and flourished.

The Evolution of Innovations, the Local Community, and Gender Inequality

The earliest remains of technological achievements, stone tools, are found in the areas of human origin in the Rift Valley of Eastern Africa. With increasing distance polewards and upwards from this area,

technological remains have been shown to become increasingly more recent and incremental, technological additions more and more complex. (8) These findings are supported by the dating of the oldest stone tools by, among others, Clark, Kurashina, and Kraybill. (9) The empirical data are consistent with the biogeographical fact that species move into new areas provided that those areas are suitable for their growth and reproduction and provided that their progeny can physically disperse into them. (10) More than any other species, humans drastically change new areas into which they move to make them more like the areas in which they evolved and thus more suitable for their physiology. I.e., they make the new areas they go into like those of the Rift Valley in Eastern Africa, to the extent that their physiology requires.

In the Rift Valley of Eastern Africa, humans co-evolved with their predators, prey, food plants, disease-causing organisms, and competitors. The path of evolution that gave them a competitive advantage, that of modifying their environment, enabled them to selectively favor the plants and animals that were useful to them, thereby producing agriculture. Their effort to modify their

environment to more closely approach the temperature they evolved in gave rise to the construction of shelters and the making of clothing through tanning leather, weaving, etc., and thence through other industries. This meant that, with the success of their environmental modification, the technological frontier was pushed, moving further and further polewards. (11)

While early humans lived with biota that had co-evolved with them, their predators and competitors could be expected to be effective. And, since the individual human was neither as strong as the lion nor as fast as the gazelle, human survival came to depend on group action. Human evolution came to reflect the choices made by those communities with the organizational strength to defeat their predators and surround their prey. This meant that, since the individual continually interacted with others except when asleep, community considerations were always paramount. This is not to imply that individual needs could remain unmet, but that the room for antisocial traits in the individual was very limited.

When the economic system was a matter of

hunting and/or gathering, humans bands were mobile, having to always find new ground with new food, as they do now in hunter/gatherer societies in parts of all the continents. The mobile unit of society, the clan or subclan, was then the basic unit of organization, with the individual finding her/his role and share of power and benefits through the group. Genealogically related sub-clans and/or clans then constituted higher, and increasingly less clearly defined, levels of organization. An appreciation of this can be obtained by reading the history of the ancient Israelites in the Old Testament.

Crop cultivation, and, to a lesser extent, fishing, fixed the family to a specified spot. The interactions of the individual with society then came to be determined more and more by geography rather than by genealogy. Initially, kinship lines and geographical positions had been correlated, presumably, very strongly. But in time, with intermarriages outside lineage affinities at the edges and with population movement, the correlation became reduced. In accommodating the new, geographically-determined interactions outside the clan or tribe, a higher unit of

organization, one which incorporated both geographical and genealogical systems, had to be found. Therefore, culture, delimited by geographical proximity, replaced genealogical relationship, except at the extended or nuclear family level. Ironically then, by tying down the individual to a spot and acculturating the resultant society to accept being part of a bigger, more diverse group, crop cultivation bred a higher level of universalism than hunting and/or gathering with their/its wider spaces for the individual to move in and encounter diversity.

Pastoralism unrelated to crop production tends to be transhumant and has, in its geographical context, the same effect on social organization as hunting and/or gathering. Therefore, transhumant pastoralists retain organizational hierarchies based on lineage. The tragedy with Somalia, and, perhaps to a lesser extent, with Afghanistan, may be explained by the presence of strong clan/tribal allegiances fostered by dominant transhumant economic systems. The reduced acceptance of outsiders and the reduced levels of universality would have militated against peace. It is perhaps instructive to note in this regard that the long civil

war in neighboring Ethiopia, which is primarily a country of peasants (farmers), remained essentially a war of competitors for power, and it ended in 1991, as soon as one side won.

As humans moved downwards in altitude early on in their history as a species, temperature was the only environmental variable which required intervention to make the new (warmer) areas like that of their place of origin. Since the problem of heat was solved by merely sitting under shade in the early afternoon, the collective (community) organization that had been developed in their place of origin did not need to change. Similarly, when they moved upwards near the Rift Valley, keeping warm and dry at night was the main environmental problem, since seasonality was negligible. They could thus build their shelters for the night and continue with their usual community activities by day. But when they moved polewards, the increasing seasonality made it essential to stay indoors, even during the day, for increasingly longer periods of time the further poleward they moved. This can be presumed to have made the family rather than the local community more and more the functional unit of organization and the

focus of life. (12) Admittedly, this is a gross oversimplification, and cultural and historical factors can be expected to have influenced the balance between family and community allegiances. Further, as humans became technologically advanced, the impact of environment can be expected to have become less important, and the challenges experienced and responses made by humans to have become more diverse.

With increased progress in poleward movement and increased seasonality came reduced year-round presence of food of plant origin and increased dependence on hunting. Hunting was done primarily by men as a group. This would have given them an obviously prominent role in the survival of the family and an advantage over women. According to Gough, (13) for example, in 60% of hunting societies, marriage involves the woman moving into the unfamiliar band of the man while the reverse happens in only 16-17% of the societies. These figures would seem to reflect the woman's disadvantage in hunting societies. In contrast, the closer one came to the equator, the more likely gathering was to be the main food-

acquisition activity, owing in part to the greater likelihood of year-round availability of food plants. Gathering was done by women. This helped them stand their ground against the physically stronger men. Where crop cultivation was adapted by these societies, it tended to become an extension of gathering and thus to help sustain the relatively high-status of women. Brown attributes the relatively high position of women in the crop cultivating Iroquois society, for example, to their control of the economy. (14) In contrast, as crop cultivation moved polewards, the hitherto hunting men adopted farming and continued to play the controlling role. Both crop cultivation and animal rearing increased production, and resulted in the (polewards) subjugation of women by men. (15) Since men no longer got together to hunt in these societies, the pressure for the demise of the local community increased polewards, exacerbating the impact of seasonality. The state and its associated institutions took over the functions of the local community. Thus, the local community of known individuals with whom a given individual might interact and enjoy a sense of belonging was swallowed up by an impersonal chiefdom, dukedom, principality, etc. Institutions, including

places of worship, then began to regulate the lives of, at first, individual families, and then gradually, single individuals. The institutions also began to provide for individual needs. (16) In the direction of the equator, on the other hand, where local communities continued to provide for the individual, some development of institutions did indeed also take place, but only as a result of either local community initiative and thus subject to local norms (as contrasted to state imposed norms) or as a response to influence and/or conquest from polewards. (17) Such influence and conquest came from the (polewards) direction in which the increase in technological capacity, the weakening of the local community, and the control of the individual by an impersonal state or other institution had made it progressively easier to raise and equip armies and regiment populations. These influences and conquests were also instrumental in the demise - equatorwards - of matrilineal inheritance and the fall of women into second class membership in society. (18)

The poleward movement of humans, therefore, produced incremental growth in science and technology, inequality between the sexes,

prominence of the family, demise of the local community, strengthening of state superstructures, and provision for and regimentation of the individual.

When we consider innovations and the barriers to their transfer in our present day world, therefore, the differences in the poleward and the equatorward societies, that is, in the individual dominated and more powerful North and the local community dominated and weaker South, stand out as incompatible counterparts. The former treats anything communal as a free good, as indeed does the latter, but for opposing reasons and towards opposing ends. (19) Because now the North dominates, legal norms for protecting the innovations of Northern individuals have been developed, but not for protecting the innovations of their Southern functional counterparts, the indigenous and local communities. As a result, thousands of Southern collective innovations are now not only used by Northern “natural” and “legal” individual persons without reciprocation, but are also given private intellectual property rights (IPR) protection, and thus are withdrawn from the common pool. Since the majority of these

innovations deal with living things, this process has been referred to as “biopiracy”. Of the thousands of instances of biopiracy that I can mention, the patenting of Endod (*Phytolacca dodecandra*) from Ethiopia by the University of Toledo in the United States of America stands out as an extreme example. (18)

Industrial Designs and Geographical Indications

The appropriation of Southern and indigenous innovation was not restricted to the world of living things. Article 25.1 of TRIPs requires the “protection of independently created industrial designs that are new or original” that “significantly differ from known designs or combinations of known design features.” (21) Although there are not many cases in which indigenous or local community traditional designs have been pirated and have become a cause for controversy, a few examples in Australia have surfaced. (22) Future cases, should they arise, will be, most likely, of similar nature to those involving geographical indications. Although the protection of geographical indications is, under TRIPs (Article

26.3), perpetual, the protections of industrial designs are not. (23) Nevertheless, because community textile designs are also perpetual in nature, to prevent piracy, they too would seem to merit perpetual protection.

The principle of prohibiting use of labels that mislead buyers about the place of origin of a product is a good principle. But, the TRIPs agreement effectively only protects the geographical indications of wines and spirits (see Article 23), and future tightening of the rules is envisaged only for wines and spirits (see Article 24). (24) These are products in which Europe and North America have a strong lead. Other products, especially those produced by farming communities of the South, e.g., tea, coffee, spices, do not enjoy such protection of geographical indication. For example, Basmati rice is a specialty of Northwest India and adjoining areas of Pakistan. RiceTec Inc., a company in Texas, in the United States of America, obtained a patent in the United States for a rice variety the company named Basmati. (25) India contested the patent in 2000, and RiceTec withdrew it, but still uses the qualifier "Basmati" for its rice. The stated reason for allowing the

qualifier to be retained by RiceTec is that, though a geographical indication in origin, the name "Basmati" has become generic over the last 20 years, and India should have lodged its objections when "Basmati" started being used as a qualifier. (26)

This argument would seem to imply that either all peasant societies are expected to keep track of the names under which products are sold in the various countries of the world, or that all governments are expected to have the capacity and will to enforce the intellectual property rights of all their citizens. Either implication would seem to suggest that only those with the capacity to defend their rights can actually be said to "have" them. Such a suggestion in turn would seem to grant a kind of outrageous legitimacy to the relationship between poverty and lack of power. For example, coffee in Ethiopia is produced by smallholder farmers, mostly in their backyards. Many geographical indications for coffee are in current oral use in Ethiopia, e.g., Harer, Dembi Dollo, Yirga Chefe, Zege. It is unrealistic of a global trading system to expect these smallholder farmers to keep track of how the Brazilians and the Colombians and others name the coffee varieties they produce and

sell.

The benefits of use of geographical indications are thus wrapped in layers of inequity and there is as yet no debate on benefit-sharing related to geographical indications.

Copyrights

In the indigenous and local communities of the South, knowledge is transmitted mostly through word of mouth. Copyrights, as recognized in TRIPs and other private IPR laws, deal with recorded (written or electronic) expression, and not with the knowledge transmitted (Article 9.2 of TRIPs). (27) For this reason, copyright is of little direct relevance to indigenous and local communities. However, it is a major barrier in modernization and indigenous and local communities must modernize. For, if they join the globalization process without understanding it, they will be squeezed out of this world altogether. (28)

Patents and Breeders' Rights

Patents are authorizations that give a monopoly for "making, using, offering for sale, selling or importing" for a period of at least 20 years (Articles 28 and 33 of TRIPs). (29) According to Article 27.1 of TRIPs, technologies are patentable "provided that they are new, involve an inventive step and are capable of industrial application." (30) TRIPs , perhaps in recognition by its negotiators that the treaty's language was vague, includes a footnote stating that the terms "inventive step" and "capable of industrial application" "may be deemed by a Member [country] to be synonymous with the terms 'non-obvious' and 'useful'." I find this footnote to be more confusing than illuminating. The confusion is further exacerbated by the current impasse between those who want Article 27.3 (b) to be amended to compel the patenting of living things and life processes, and those that want living things and life processes to be totally excluded from patentability.

The fact that many industrialized countries, led by the United States of America, have embarked on a path to stay ahead of the South in genetic

engineering by patenting genes only adds to the confusion and to the division of views about patenting living things and life processes. (31) Even those industrialized countries that do not patent genes per se are allowing the patenting of gene constructs and thus genetically engineered organisms. (32) Some types of breeders' rights give monopolies similar to those given by plant variety patents. Other types allow the free flow of genetic resources to farmers and breeders and thus are not as restrictive as patents are and do not elicit the same strong reactive calls for benefit-sharing as patents do. It should be noted here, however, that the Convention on Biological Diversity gives the owners of genetic resources the right to share benefits irrespective of IPRs. The claims for benefit-sharing are part of a global move by the South to gain/recover complete control and use of its own resources for its own sustainable development. But IPRs in the North have infused this move with a belligerence that reflects the South's frustration at being stymied in its legitimate attempt to use its own resources.

Just as a fair and equitable share of benefits is needed between a husband and a wife in order to

turn a house into a home, so is it needed between North and South to create a harmonious relationship in this globalizing world. Otherwise, just as the inhabitants of an unjust house live in terror and seek to break up, so will the world increasingly experience terror. But, while a husband and a wife can separate to end the terror, there is no room for such a separation of North and South in a globalized world. If we allow the existing plunder under tyranny to continue with a mere semblance of international law, globalizing terror will set fire after fire in both our houses and all that we possess will turn to ashes. However, there is still time for justice to extinguish the fire of the growing terror.

The Convention on Biological Diversity and the International Treaty on Plant Genetic Resources for Food and Agriculture

In an attempt to forestall the terror and tackle the global problem of continuing plunder by the mighty, the Convention on Biological Diversity (CBD) became the first international agreement to explicitly recognize the genetic resources found in

a country as belonging to that country, however weak the country might be. It is in Article 15.1 that the CBD states: "Recognizing the sovereign rights of states over their natural resources, the authority to determine access to genetic resources rests with the national governments and is subject to national legislation". (33)

Even more ground breaking than its recognition of national sovereignty over genetic resources was the CBD's recognition of the rights of indigenous and local communities (Article 8(j)) to have their "knowledge, innovations and practices...relevant for the conservation and sustainable use of biological diversity" legally respected. (34) The CBD also empowered indigenous and local communities to decide what use may be made by others of that knowledge and those innovations and practices and to share in the benefits that arise from that permitted use.

Further developments have fostered equity since the CBD was first opened for signature in 1992, and now there is very little resistance to the idea of fair and equitable sharing of benefits by states and their indigenous and local communities

when biodiversity and knowledge are used by others. But that idea is not yet enforceable through international law.

The Bonn Guidelines on Access to Genetic Resources and Fair and Equitable Sharing of the Benefits Arising out of their Utilization were adopted by the 6th Conference of the Parties (COP) of the CBD in the Hague in May 2002 as procedures for implementing these principles on a voluntary basis. The view of the South is that legally binding norms of benefit-sharing are required. After a lot of haggling, the industrialized countries grudgingly gave in. Therefore, the 7th COP of the CBD, which took place in Kuala Lumpur in February 2004, passed its decision VII/19 to create an ad-hoc open-ended working group on access and benefit-sharing to negotiate an international regime. The decision described the expected output of the negotiations as follows: "The international regime could be composed of one or more instruments within a set of principles, norms, rules and decision-making procedures, legally-binding and/or non-binding."

This same decision also "Invites Parties and Governments to continue taking appropriate and

practical measures to support compliance with prior informed consent of the Contracting Parties providing such [genetic] resources... and of the indigenous and local communities providing associated traditional knowledge. . . Such measures may include exchange of information . . . incentive measures . . . to encourage users to comply . . . development of model/standard contractual agreements . . . easy access to justice in case of violation of legal provisions in provider and user countries” and “administrative and judicial remedies, including penalties and compensation. . .” Therefore, this decision makes it possible to enforce benefit-sharing agreements across countries.

The decision also “Invites Parties to put in place mechanisms to ensure fair and equitable benefit-sharing at the national level with relevant stakeholders and indigenous and local communities.” Since indigenous and local communities usually lack the capacity to demand national implementation of this decision, one that has the potential to help them, non-governmental organizations probably will need to be active in raising their awareness and in supporting their attempts to protect their interests nationally.

Otherwise, the possibility is high that governments will try to enforce their own sovereign rights to benefit-sharing, but simply ignore the internal sharing that must take place with their own indigenous and local communities.

With this proviso, these decisions should enable a better implementation of benefit-sharing agreements, pending the completion of the work of the ad hoc open-ended working group. The realization that an international legal regime is in the making will also help ensure compliance with conditionalities set forth in benefit-sharing agreements made in the interim.

The International Treaty on Plant Genetic Resources for Food and Agriculture (ITPGRFA) was negotiated to make the conservation and use of crop genetic resources consistent with the requirements of the CBD. The call for consistency was made by the parties at the time of the adoption of the CBD and the provisions of the ITPGRFA, therefore, aimed both to conserve and sustainably use crop genetic resources, and to obviate the potentially drawn out process of fulfilling the CBD's requirement of coming to mutually agreed

upon terms between food genetic resources owners and users. Speed was seen as desirable in getting access to crop genetic resources because, as stated in the 6th preambular paragraph of the ITPGRFA, crop genetic resources "...are essential in adapting to unpredictable environmental changes and future human needs". (35)

Most of the provisions of the ITPGRFA apply to agricultural biodiversity in general. But, Articles 10-12 define a multilateral system based on a list of food crops and forage plants held by parties in the public domain and by the International Agricultural Research Centres of the Consultative Group on International Agricultural Research (CGIAR). (36) Genetic resources on that list can now be accessed automatically as needed without requiring the negotiation of a new bilateral agreement every time. In return for the automatic access given, the recipients will automatically give shares of the benefits that accrue to them from use of the accessed genetic resources. Article 13 describes how this will happen. (37) Information generated will be made available to all parties. Confidential business information will, however, be withheld. Technology will be transferred to parties,

especially to developing countries. But IPRs will be respected. Capacity will be built through, among other things, joint research programs with, and in, developing countries. Shares of financial benefits will go into a common fund. This will be compulsory in cases where the commercialized variety is not freely available to other parties for research and breeding. Otherwise, it will be voluntary. Within five years after ITPGRFA comes into force, the parties may review the situation with a view to making payment upon commercialization mandatory even when the varieties are freely available for breeding. Obviously, the outcome of the negotiations for an international regime on access and benefit-sharing under the CBD will decide whether this review happens and what form it will take. This is because the ITPGRFA was negotiated to apply the CBD to agricultural biodiversity. The money from the common fund shall be used for farmers, primarily those in developing countries and countries with economies in transition. Such use will be determined by the parties to the ITPGRFA.

Here it should be noted that the World Intellectual Property Organization (WIPO) is also

developing a system for protecting traditional knowledge. (38) But, considering the fact that IPRs are now used for market control and that maintaining them requires a big financial outlay, (39) it is not clear how useful such a protection will be to cash-starved and powerless rural indigenous and local communities.

The Elements that Should Go into a Benefit-sharing Agreement

The CBD has already defined the benefits that should accrue to an owner of genetic resources, knowledge, innovations and/or practices upon their use by another party. The Origination of African Unity (now the African Union) has incorporated these benefits in its "African Model Law on the Protection of the Rights of Local Communities, Farmers and Breeders, and for the Regulation of Access to Biological Resources". (40) The benefits have already been summarized elsewhere. (41) They include:

- research and development to be carried out in the country giving access [Article 4.1. of the Model Law, based on

- Article 15.6 of the CBD];
- prior informed consent of both the state and the indigenous or local communities [Article 4.2 of the Model Law, based on Article 15.5 & 8(j) of the CBD];
 - a list of other conditions to agree to before a contract is signed [Article 4.3 of the Model Law, based on Article 15.4 of the CBD], including commitments for the conservation of biodiversity [Article 4.3 (a), (g) & (h) and Article 4.9 of the Model Law, based on Articles 6.7, 8 (c), (d), (j), (k) & (l), 9(c) & (d) and 10(a) & (b) of the CBD];
 - commitment to provide information and duplicate specimens to the country giving access [Article 4.3 (b), (c) & (g) of the Model Law, based on Article 15.7 and 17.2 of the CBD];
 - commitment not to transfer genetic resources, knowledge, innovations or practices to third parties without authorization [Article 4.3 (d) of the Model Law, based on Article 15.5 of the CBD];
 - commitment not to patent [Article 4.3 (e) of

the Model Law. This is not directly based on the CBD but on the fact that patenting living things and life processes is disallowed in the laws of most developing countries. It should, however, be noted that Article 16.2 of CBD, though recognizing IPRs in general terms, does not specifically provide for the IPR protection of biological materials, showing that the choice of what and how to protect is left open. However, as already noted, the issue has caused a North-South divide in the call for the revision of Article 27.3 (b) of TRIPs. It is thus, at the least, best to avoid patents.];

- payment for the community labor that has gone into creating or finding out the specific useful characteristic of the biodiversity or for the knowledge, innovation, or practice being accessed and the work load borne by the state in making the access possible [Article 4.3 (f) of the Model Law, based on the common practice of recovering expenses incurred while giving a

service];

- commitment to abide by certain procedures aimed at ensuring the implementation of the mutually agreed terms [Article 4.4, 4.5, 4.6, 4.7, 4.8, of the Model Law, which are obvious and need no explanation, except for pointing out that in Article 4.7, a guarantor is required because, often, the person getting access will leave the country before the benefit accrues to him and there would then be no means of ensuring that each party abides by the mutually agreed terms. This is consistent with Decision VII/19 of the 7th COP of the CBD which requires states which are parties to the CBD to enforce compliance of their citizens with the mutually agreed-to terms.].

In fact, a model contract has been published in Ethiopia for use between the owner and user of genetic resources and/or technologies. (42) However, since legal systems vary from country to country, the above itemization of required elements

will suffice for the purposes of the present discussion and, in any case, model agreements are best developed by, and for, each country separately.

Concluding Remarks

IPRs have made it obvious that benefits derived from biodiversity, knowledge, innovations or practices accessed have to be reciprocated by giving a share of the benefits derived. But, even without IPRs, it is fair that benefits be shared. In this chapter, I have attempted to show this complex and evolving issue in its international context. I have deliberately avoided any attempt at even a partial review of actual benefit-sharing contracts. This is because those that I know of have not paid full attention to the entitlements of states and local communities as defined by the CBD. This tendency towards only a partial fulfillment arises from the fact that the CBD is only a framework convention and generally lacks enforcement provisions. The rigorous international implementation of these entitlements, therefore, has to await the finalization and coming into force of the international regime to

be negotiated by the ad hoc open-ended working group established by Decision VII/19 of the 7th COP of the CBD.

When this has happened, but hopefully also while it is happening, at least in regard to the use of genetic resources and traditional knowledge, globalization will shed off much of its present blatant unfairness. Also hopefully then, the likes of the devastation in the 1984-5 serious famine in Ethiopia that affected millions and killed thousands of smallholder farmers and their family members, will never recur. That famine was the result of the coincidence of a serious drought, which no doubt was exacerbated by global warming, and a civil war, which was fanned by the globalization of the capitalist-communist confrontation of the time. The major superpower and the biggest cause of both the global warming and the globalized confrontation was the United States of America. Doyle, who wrote at that very time, i.e., in 1985, tells us that “the genetic material found in one Ethiopian barley variety resistant to yellow barley mosaic now saves American farmers an estimated \$150 million a year.” (43) One wonders how that sum and the recognition it reflected might have altered the

famine and the war.

I would like to point out that, even during that Cold War period, American food aid came to Ethiopia, and the devastation would have been worse if it had not come. Nevertheless, in the cooperative world that will ensue when fairness based on just international law reigns, there should be no civil wars fanned from the outside, and droughts always should be kept manageable enough not to cause devastation.

Endnotes

- (1) Doyle, J., *Altered Harvest: Agriculture, Genetics and the Fate of the World's Food Supply*, Viking Penguin Inc.: New York, 1985, p. 301.
- (2) Clunies-Ross, T., 1996. *Farmers, Plant Breeders and Seed Regulations: An Issue of Control*, The Ecologist: Sturminster Newton, Dorset, U.K., p. 5.
- (3) World Trade Organization, (WTO), 1995. *The Results of the Uruguay Round of Multilateral Trade Negotiations*, WTO: Geneva, 1995, pp. 365-403.
- (4) Doyle points out that, "The social benefits... include

distributing the inventions and knowledge throughout society...". (Doyle, *op. cit.*, p. 301.) The first preambular paragraph of TRIPs states, "Desiring... to ensure that measures and procedures to enforce intellectual property rights do not themselves become barriers to legitimate trade,..." (WTO, *op. cit.*, p. 366.)

(5) WTO, *op. cit.*, pp. 379-380.

(6) The fourth preambular paragraph of TRIPs begins by, "Recognizing that intellectual property rights are private rights". (WTO, *op. cit.*, p. 366.)

(7) Egziabher, T. B. G. , The Convention on Biological Diversity, intellectual property rights and the interests of the South, in Tilahun, S. and S. Edwards, eds., *The Movement for Collective Intellectual Rights*, Institute for Sustainable Development: Addis Ababa, 1996, pp. 15-42.

(8) See Egziabher, T. B. G., 1991, Management of mountain environments and genetic erosion in mountain systems: the Ethiopian example, *Mountain Res. & Dev.* 11: 225-230. Note: Toynebee concluded that environment alone cannot explain the birth of civilizations, but that challenge and response can. (Toynebee, A. J., *A Study of History, Vol. 1 - The Genesis of Civilizations*, Oxford University Press: London, 1962, pp. 249-278.) I had not read Toynebee when I wrote the work cited above (1991). Nevertheless, I see both challenge and response as related primarily to

environment. In reading about stone tools left by ancient humans, I remain convinced that weather was the main challenge that elicited their technological responses. As humankind came closer to more modern times, the number of factors that served as challenges increased, as did the diversity of human technological response to those challenges.

- (9) See Clark, J. D., 1981, *Tools and ourselves*, 17th Raymond Dart Lecture, delivered 4 July 1979, Witwatersrand University: Johannesburg; Clark, J. D. and H. Kurashina, 1980, New Plio-pleistocene archaeological occurrences from the plain of Gadeb, Upper Webi Shebele Basin, Ethiopia, and a statistical comparison of the Gadeb sites with other early stone age assemblages, *Anthropology* 18: 161-187; and Kraybill, N., Pre-agricultural tools for the preparation of food in the Old World, in Reed, C. A., ed., *Origins of Agriculture*, Mouton Publisher: The Hague, 1977, pp. 485-521.
- (10) Good, R., 1964. *The Geography of the Flowering Plants*, Longmans: London, 1964, pp. 43-45.
- (11) See note 8 above.
- (12) J. R. Green in *A Short History of the English People* (The Folio Society: London, 1992, p. 4) describes individualism in ancient England, the country which gave the world its present industrial culture, as follows: "As every freeman was his own judge and his

own legislator, so he was his own house priest; and the common English worship lay in the sacrifice which he offered to the god of his hearth."

- (13) Gough, K., The origins of the family, in Reiter, R. R., ed., *Towards an Anthropology of Women*, Monthly Review Press: New York, 1975, pp. 51-76.
- (14) Brown, J. K., Iroquois women: an ethnohistoric note, in Reiter, *op. cit.*, pp. 235-251.
- (15) See, e.g., Draper, P., !Kung women: contrasts in sexual egalitarianism in foraging and sedentary contexts, in Reiter, *op. cit.*, 77-109 and Sacks, K., Engels revisited: women, the organization of production and private property, in Reiter, pp. 211-234.
- (16) Green has described this situation for ancient England. He notes that after killing off the Celts and chasing away the survivors, the English clans settled down in Southern England. Subsequent wars created a king and an aristocracy out of clan leaders. Former English freemen became serfs and slaves after being captured in battle or after failing to pay their debts. The kingdoms continued to coalesce. One of the kings, Offa, negotiated with Charlemagne "the first monument of foreign diplomacy, which secured protection for the English merchants and pilgrims" (See Green, *op. cit.*, pp. 1-43).
- (17) For example, Christianity became a state religion in

Ethiopia in 325 A.D. as a result of influence from Palestine.

(18) In Africa, e.g., women in the pre-colonial era, as the cultivators of the land, were in charge of what happened to its produce. (See Snyder, M. C., and M. Tadesse, *African Women and Development*, Zed Books: London, 1995, pp. 20-26.) M. P. K. Sorrenson, in his *Origin of European Settlement in Kenya* (Oxford University Press, London, 1968, pp. 177-179), points out that the customary land tenure was that of usufruct for the family, with ownership being that of the lineage. A. G. Frank, in *Dependent Accumulation and Underdevelopment* (Monthly Review Press: New York, 1979, p. 159), points out that, during colonialism, the land that was not taken by Europeans was recognized as belonging to chiefs. In post-colonial Africa, the system was simply adopted. African men replaced the Europeans, thus giving rise to the disinheritance of women who, nevertheless, remained the farmers.

(19) The individual dominated North considers anything communal to be a free good so as to enable entrepreneurs to privatize it and get rich; the community dominated South also considers anything communal to be a free good but, in contrast to the North, it does so in order to make the free good accessible to all and able to help all equally.

(20) See Rural Advancement Foundation International (RAFI, now called ETCGroup), *RAFI Communiqué 1993 -*

Endod: a case study of the use of African indigenous knowledge to address global health and environmental problems, RAFI: Ottawa.

(21) WTO, *op. cit.*, p. 378.

(22) For examples, see Anon., *Symbols, motifs and ownership: marketing and copyright issues*, available online at the website of Australia's Powerhouse Museum <<http://projects.powerhousemuseum.com/hsc/paperbark/symbols.htm>>. (Viewed December 24, 2004.)

(23) WTO, *op. cit.*, p. 379.

(24) *Ibid.*, pp. 376-379.

(25) Research Foundation for Science, Technology and Ecology (RFSTE), *Basmati Biopiracy*, RFSTE: New Delhi, 1998.

(26) Commission on Intellectual Property Rights (CIPR), *Integrating Intellectual Property Rights and Development Policy*, CIPR: London, 2002, pp. 87-90.

(27) WTO, *op.cit.*, p. 370.

(28) In order to understand the globalizing world effectively, indigenous and local communities have to be able to translate its recorded information into their own languages. Copyrights are barriers to such translation

for those with neither the financial nor technical capacity to unlock them. Without access to information, indigenous and local communities are at risk of remaining marginalized until they are either permanently relegated to the bottom of the socio-economic ladder or are wiped out by hunger and disease.

(29) WTO, *op. cit.*, 380 ff.

(30) *Ibid.*, pp. 379-380.

(31) Doyle, *op. cit.*, pp. 311-321.

(32) CIPR, *op. cit.*, p. 59.

(33) Secretariat of the Convention on Biological Diversity (SCBD), *Convention on Biological Diversity*, SCBD: Montreal, 2001, p. 13.

(34) *Ibid.*, p. 9.

(35) Food and Agriculture Organization of the United Nations (FAO), *International Treaty on Plant Genetic Resources for Food and Agriculture*, FAO: Rome, 2001, p. 1.

(36) *Ibid.*, pp. 6-8, 20-21.

(37) *Ibid.*, pp. 8-10.

(38) World Intellectual Property Organization (WIPO), *WIPO*

Member States lay foundations for protection of traditional knowledge, Press release 378/2004, March 19, WIPO: Geneva.

(39) CIPR, *op. cit.*, pp. 145-148.

(40) Ekpere, J. A., *The African Model Law*, Organization of African Unity: Addis Ababa, 2001, pp. 33-71.

(41) Egziabher, T. B. G., *Taxonomic Botany and Globalization*, Paper presented to the 17th AETFAT Congress, 21-26 September 2003, Addis Ababa.

(42) Egziabher, T. B. G., Biodiversity collecting: in the South, of course!, in Solomon Tilahun and Edwards, *op. cit.*, pp. 1-14.

(43) Doyle, *op. cit.*, p. 200.

Technical Questions in the Sharing of Benefits of a Complex Technology

Ossama M. El-Tayeb

Introduction

When the Convention on Biological Diversity (CBD) was formulated in 1992 as an international treaty, its objectives placed high emphasis not only on "conservation and sustainable use of biological diversity" – a theme which was promoted by the World Conservation Strategy of 1980 a dozen years earlier – but also on "the fair and equitable sharing of the benefits arising out of the utilization of

genetic resources" - a new theme in formal conservation literature. While "biological diversity" was defined as "variability among living organisms", the term "genetic resources" was more specifically qualified as "genetic material of actual or potential value". This is interesting since all religious creeds, and most scientists, believe that all genetic material has either actual (known to us today) or potential (yet to be discovered) value.

The Convention was careful to anticipate the impact of biotechnology by defining "genetic material" as "any material of plant, animal, microbial or other origin containing functional units of heredity". Again, when defining "biotechnology", the Convention anticipated developments which we have witnessed in the past few years by stating that "biotechnology" includes "applications that use biological systems, living organisms, or derivatives thereof, to make or modify products or processes for specific use". It is obvious that considerable scientific expertise and much less legal caution went into the drafting of these careful words. Unfortunately, when it comes to "benefit sharing", it will be the legal experts, and not the scientists, who will make decisions. The

duty of the scientists today is to make this extremely complex "science" clear to legal experts.

Biological diversity vs. genetic resources in an historical perspective

The distinction between "biological diversity" and "genetic resources" is less scientific than it is historical. During the debate in preparation for the 1972 Stockholm Convention on the Human Environment, all categories of organizations were called in to express views. Among these were organizations whose prime concern was economic exploitation and who regarded biological diversity as a source of tools and as reservoirs, for economic exploitation. There were also science-based organizations and nature lovers who cherished all God's creations as "valuable" regardless of any obvious and immediate "economic" return. Sometimes these people were labeled, sarcastically, as "green lizard lovers"!

The program which came out of the Stockholm Conference was tailored to satisfy both

parties, by including two separate components: wildlife (and protected areas) and genetic resources. As both programs developed, the evolution of both "bio-business" and of "modern biotechnology" (to mean application of molecular tools in biology) forced some interaction between the two programs. Initially the genetic resources program embraced biotechnology while the World Conservation Strategy, as a more comprehensive "instrument", attempted to merge genetic resources and biological diversity with ecosystem conservation by establishing lines of contact between the two programs. Major actors here included the International Union for Conservation of Nature, the World Wildlife Fund, and other well organized environmental groups, such as Greenpeace, and the Secretariats of some environmental treaties, such as the Convention on International Trade in Endangered Species, as well as the Food and Agricultural Organization of the United Nations – to cite a few examples.

While institutions which championed "genetic resources" saw merit in *in situ* ecosystem and biological diversity conservation as structure and reservoir for "mining" of genetic resources,

they could not take the further step of actually supporting ecosystem conservation. Major actors here included breeders (including crop seed companies), gene banks, and service microbial culture collections

The Stockholm Conference was followed by a multiplicity of issue-related efforts concerning genetic resources and/or biodiversity: the FAO/CGIAR International Board for Plant Genetic Resources, UNESCO's Man and Biosphere Program, FAO's International Undertaking for Plant Genetic Resources, the World Data Center for microbial culture collections, and others

By the time of the 1992 Rio Summit, thanks to patient and persistent efforts by the United Nations Environment Programme and its supporters worldwide, it became clear that the two programs - for genetic resources and for biodiversity - do not just interact but are inseparable. Developments in the area of "restrictive intellectual property rights", the collapse of the international system of *ex situ* gene banks for agriculture, and the rush into biopiracy reenforced the need for unity of biological diversity and genetic resources activities

in theory and in practice.

The Pre-Biotechnology Scene

Biological Diversity is the gift of God, millennia of interaction between living and non- living components of the ecosystem, evolution of genetic components, and human intervention which was largely positive with respect to a few species on which human survival depended. This fact was most recently reiterated on 15 October 2004 at the Annual General Meeting of the Catholic Institute for International Relations by Fr. Sean McDonagh, who was commenting on the patenting of life forms, telling members that it is "God and not Monsanto who created life". "Monsanto" here is a generic term, meaning all those who possess patents or other restrictive intellectual property rights (IPRs) on crop seeds.

By necessity, human kind fished nature for plants and animals which could be cultivated or reared instead of being gathered or hunted. With nothing but patience and intuition, our ancestors did an excellent job: we still rely on the species

they selected for the fulfillment of the vast majority of our basic needs. They looked in the wild and did some ingenious domestication and breeding. Again, successes were phenomenal. They also watched and tested nature for sources of medicine and produced extensive "pharmacopeias" which lasted for thousands of years as the "standard of the industry" for successive cultures and civilizations. They also mixed material from nature with mysteries to explain the unexplainable and produced spiritual combinations where material from nature, from culture, from ancestral heritage, and from religion merged in the mystery of the spiritual which we still need today. This could not have been achieved by individuals or even generations of individuals. It is one of the most remarkable achievements of human kind which we still strive to accomplish in the present modern day: cooperation and free exchange of knowledge and genetic material among individuals and cultures. No matter how far away an achievement was made, it moved freely from place to place and from one people to another. People took pride in disseminating their discoveries and handiwork! No economic return was sought. This trend continued in fact until the latter parts of the 20th Century.

Mexican corn, Middle Eastern wheat and barley, Mediterranean grapes, Yemeni coffee, Egyptian onions and garlic, Arabian camels and horses, Indian mangoes, Brazilian cinchona trees, and scores of other crops, drugs, and fruits sourced from many, many places were grown the world over, having been offered to visiting expeditions by ancient or more modern rulers free of charge, but with pride. This tradition continued for thousands of years with the question of "benefit sharing" never being brought up. Even during the darkest ages of colonialism, when colonial expeditions forced their way into the lands of "primitive people", they freely collected biological material and associated knowledge with the generous help of the "natives" and with the questions of "rights" and "benefit sharing" never arising.

In the name of science, biological material was donated time and again. It was given freely - for scientific investigation or even for investigation of its economic potential - with no questions asked. Scientists from the militarily more powerful states, applying the then modern scientific approach, conducted studies of biology, ecology, taxonomy, and even mythology and anthropology in the

colonies and the militarily less powerful states. Although these studies were often abused for political (really, economic) purposes and even for the formulation of theories of racism and the inequality of humans, encouragement of such investigations was universally taken as a mark of "modernity". Historically, these scientific investigations produced the bulk of our current knowledge bases in the biological sciences, including those bases on which current development of life forms depend and will continue to depend. It is ironic that this heritage of freely-acquired knowledge in biology is also the basis for current exploitation of IPR-protected life forms.

What motivated the original, massive, free for all attitude towards biological diversity and related knowledge? -- The answer to this question, while speaking well of the intrinsic nature of human kind, will remain to be debated by philosophers for ages to come. Maybe the answer will give reassurance to our grandchildren that the future of human kind is not as bleak as it looks today! My own guess lies not only in belief in the intrinsic goodness of humans but also in a religious conviction not

unlike that implied in Fr. Sean McDonagh's statement that it is "God and not Monsanto" who created life. In almost all religious teachings, what God has done, humanity cannot undo.

The Post-bio-business scene

Everything we were used to in biological diversity, and even in the broader area of biological sciences, has changed in the past 40 years or so. The driving force behind this change was the discovery by biologists that their research results could lead to monetary returns for the researcher. The same discovery was made by chemists earlier in the twentieth century and was followed by an outburst of chemists–turning-businessmen and patents on chemical processes. In the case of the biological sciences, several companies were established by biologists seeking to personally exploit specific discoveries, mainly in the health care field. The move did not escape the attention of big business concerns. Start-up establishments were quickly acquired by drug companies for an inflated price and the small (start-up) discoveries benefited from the development and marketing facilities of the

experienced drug companies. Products quickly (but cautiously) reached the market. (Considering the tradition of subjecting drugs to regulatory supervision and considering the small volume of "pharmaceutical commodities" in comparison to the volume of food and agricultural commodities, a certain degree of caution can be said to have been exercised.)

Market development raised the possibility of patenting life forms as a means of maximizing profits. Resistance to patenting emerged slowly in the health care field; few people wanted to oppose means for quickly delivering products which alleviate the suffering of the sick just to maintain ethical, environmental, or political norms. It is apparently part of human nature to make sacrifices for the sake of the sick. The question of the cost of such health care, and the disparity such expense will create between patients who can afford the cost and those who cannot, did not take front stage immediately. The patenting of life forms, however, immediately led to the questions of who owns life forms and whether such owners should share in the benefits. In the final analysis, it will be seen that biologists were "corrupted" into being businessmen

- rather than remaining scientists - and, as a result, near scandal-size competition, deception, unscientific behavior, and cheating became much less uncommon than they had been before.

Agri-business concerns, seeing the potential in what the pharmaceutical companies had done, followed suit. Having had considerable experience with monopolizing agro-chemicals, they turned their attention to small life form agricultural enterprises, the seed companies, and systematically acquired them. The potential for exploiting biological phenomena in the seed business was quite attractive: instead of simply monopolizing the chemicals needed for "industrialized" farm management, the entire food package could be controlled – from seed to farm product to table. If the drug business is one of the most profitable sectors, the food business may be even more profitable, considering its size, its truly global nature, and the absolute necessity for everybody on the planet, not only the sick, to eat. Since seed acquisition and subsequent development and patenting touched on the basis of human survival and did not go unnoticed, it needed a good public relations campaign. That was not difficult since

such campaigns only cost money and require experience, and Industry as a whole already possessed both.

The post-genomic era

With the progress we witnessed in molecular biology and molecular genetics, it became possible for scientists to attempt targeting not a whole plant, animal, or microorganism but a specific genetic determinant which imparts a specific character. A new scientific activity was born: gene mining. Just like scraping the earth for a mineral and discarding anything else that is found nearby, one could take an organism, explode it open, extract the genetic locus being sought for a target character and discard the rest as a waste – for the time being. One should remember that nature does not know the word "waste": the seeming "waste" in a natural system is actually a resource for another such system. Naturally, if you do not understand the entirety of the system – which is the case with biological systems – you will regard any product with no immediately known use as a waste. Plundering biological diversity for "genes" is truly

a shortsighted activity based on the assumption that the planet is the property of the current generation alone. One can argue that future generations will have their own technologies which will satisfy their needs, that, for example, as we exhaust fossil fuels, we can assume that future generations will invent novel technologies for alternative energy sources. But that kind of argument only encourages us to ignore unsustainable life styles and the real motives of those who pursue immediate profits with little or no regard for future generations.

When it comes to biological diversity, no right minded person could defend a resource-consumptive gene-mining approach unless he/she assumes that future generations will be able to make do without God-given life forms – other than human life. No one has yet been able to "invent" a useful biological entity from scratch and no serious scientist has yet proposed this as feasible in the foreseeable future. Natural biological diversity will probably remain the source of useful exploitable biological entities forever. The diversity which has evolved over millions of years should not be sacrificed for the financial gain of a few. What is being devastated through gene mining

will be lost for ever.

The patenting of life forms was an endeavor responsive to the needs of the new science of molecular biology, at least to the needs of the business that flowed from that science. In a short time, patent offices allowed not only the patenting of genes but also the patenting of specific sequences of genetic material. With these patents came certain exclusive rights, a kind of time-limited ownership, and a great degree of market control. The sequence might be completely natural; it might be the result of tens of thousands of years of breeding by other people as well as of interaction with the environment. But that did not matter at the patent office.

The implications for claims of ownership and benefit sharing were enormous. The question of linking a specific sequence to a specific genetic resource taken from a specific place is technically almost impossible to settle, legally or otherwise. Gene mining does not require continuing sources of the original genetic material. A minute quantity of genetic material can be mined for a sought-after sequence rather cheaply and quickly if the

characters being sought are well defined. An even simpler technique, one involving the "sequencing" of the metabolic expression product of the genetic sequence and the back-synthesis of the desired genetic sequence itself, is also an inexpensive exercise if you possess the right tools and knowledge. In many drug companies, the traditional approach of extensive extraction of massive collections of natural biological material for active ingredients has now been largely replaced with direct screening for specific functional activity (e.g., anti-tumor, anti-viral, immuno-modulating) as the initial step. Extraction follows only where a case is sufficiently promising for commercial exploitation. This is the ultimate in gene-mining. And expeditions from Northern private enterprises have been monitored in the South collecting every possible variety or land race of minor "crops" in quantities so minute that they could only suit this purpose (and perhaps the convenience of taking tiny samples in passenger-carried hand baggage onto airplanes). Similar collecting activities have been reported for samples taken from "extreme environments" from which, presumably, microbial sequences can be mined without even isolating the microbial strains which

harbor them. Such strains are regarded as "unculturable" in the scientific literature – meaning that the genetic resource was never isolated or recognized and may remain unknown forever even though an orphan sequence derived from that strain can be exploited under protection of restrictive intellectual property rights without ever answering the simple question: From where - what place - did you take the sequence?

The arguments for restrictive intellectual property rights on life forms

Perhaps the strongest argument for granting restrictive intellectual property rights (IPRs) in their present form is that such IPRs will encourage "innovations", will accelerate the delivery of novel products and services to alleviate human suffering and fight hunger, and will provide an incentive for further strides in science and technology.

It is sometimes quite educational to look back into history using a contemporary lens. If current rules on patenting were applicable 75 years ago, Fleming, Abraham, and Chain, with the right

advice from shrewd patent lawyers, would have obtained exclusive rights on penicillin and other beta-lactam based antibiotics (currently covering 50 to 60 percent of the volume of the antibiotic market) and their producing fungi and so would have reaped a fortune of several trillion US dollars. Needless to say, this probably would have put the drug beyond the reach of billions of pregnant women, one third of whom would have been expected to die (without the drug) of puerperal fever upon each pregnancy. The current population explosion on the planet would have not occurred. The hundreds of thousands of research publications on improved methods for production of the antibiotic and on modifications of the original drug, with expanded range of applications in fighting diseases, would not have been carried out. Naturally, "compulsory licensing" with "equitable fees" would have been granted during World War Two for the war effort, as an emergency, but the "inventors" would have certainly repealed the license once the war was over. The "inventors" would have had sole rights to release, or withhold, any new drug derived from their original "invention" on the basis of their own assessment of the impact of such release on profitability to their

enterprise. Once they decided to release, they would have put a price tag of their choice on the drug on a take-it-or-leave-it basis. One positive impact, had they decided to make their enterprise public: mutual and pension funds would have invested in the company's stock, with huge benefits to their members - benefits that, in the case of pensioners, probably would have more than offset the high bills they were forced to pay for the patent-protected medicines they were consuming.

One good reason why Fleming, Abraham, and Chain did not get a patent is that they published the results of their research for other scientists to read, learn from, and further improve. Lesson one in the patent world: do not publish your research before you obtain the patent. If your peers do not read about your research, you may lose some respect (not tangible) but you will retain the potential of gaining some money (tangible). Keeping quiet, you have a bonus benefit: more lead time on your research colleagues.

For discovering the double helix nature of the DNA molecule, Watson and Crick, with the help of experienced patent lawyers and a venture

capitalist, would have won the grand prize: a patent on exploiting the structure of DNA and possibly on all genetic materials. It is interesting that today people are allowed patents on sequences of DNA of much lesser importance, novelty, and utility than Watson and Crick's discovery. In fact, patents might have put all the fruits of molecular biology which humanity now enjoys into private hands and thereby made those fruits immensely more expensive.

Going further back, all the vitamins and the natural biodiversity of yeasts, bacteria, and fungi through which they were discovered might have been under patent. Extend this patent approach back into millennia and patents for the discovery of the use of naturally occurring or improved seeds for monoculture of crops and fruits would have been patentable. This may sound crazy, but any good present-day patent lawyer can surely lament the loss to his ancestors of trillions of dollars because of the "defective" patent laws of, say, 10,000 B.C. Imagine how flooded the patent courts of 10,000 B.C. would have been with conflicting claims of simple farmers for the various "inventions" which we now enjoy free of charge and without

even acknowledging the origin of the species or wild ancestor used in the "inventions" or the peoples who made the "inventions" in the first place.

Present day varieties of plants and breeds of animals are in fact based on "traditional" varieties and land races whose "inventors" are never referred to in patent applications. It is as if they never existed, or as if they are part of a "common human heritage" – which of course they are. Nothing can approach the scope of this scandal, given all that has transpired since. Most of these "parental" types have been collected freely from developing countries where they were originally "invented" and have since been maintained in gene banks of the North, having disappeared from their original "habitats" without data on their "inventors" being documented. With the newer trend of patenting nucleic acid sequences and genetic loci mined from such gene banks, the question of traceability of the patented material to a specific biological entity - and from there to an original owner - will be even more complicated. An already very complex and difficult problem - ascertaining the ownership of biological material - will be further complicated by

"gene mining" techniques.

The situation gets even more complex when we consider the fact that the CBD (Article 15.3) does not recognize the right to apply its rules (and hence share benefits) for biodiversity collected (and genetic material put in gene banks) before the Convention came into force. Intellectual property laws in some countries do insist on proof of "legitimate acquisition of the parental genetic material according to national laws" as a prerequisite for granting legal rights. However, the World Intellectual Property Organizations objects to such clauses. The use of a form of proof of "legal acquisition" through, e.g., a certificate of origin, is likely to be one of the hottest issues to be debated during the coming negotiations for an International Regime on Access and Benefit sharing under the CBD.

Public relations (and a good deal of political juice) succeeded in forcing more restrictive intellectual property rights on life forms into national and international legislation. Where patenting did not quite suit life forms because they were discovered and not invented, alternative

mechanisms for protection and interpretation were worked out; the UPOV convention was fashioned for this purpose. Further, the emergence of the WTO, the ultimate means for globalization, proved very helpful for dragging everybody into the patenting swamp.

Patents on life forms backfire

Eventually the whole approach backfired. The problem was: where do you get the resources necessary for the patented products based on genetic resources? It so happens that such resources tend to be found in countries which have very little technical capacity for exploitation. Thus, some ingenious means had to be developed to get the material from where it was to where it could be more readily "developed" and patented, i.e., it had to be moved from the South into the North. To start with, "international" efforts at joint collection of material, mainly for major agricultural crops, sucked most of the genetic material into *ex situ* gene banks in the North. Additional material was collected through "joint research projects" between research institutions, respectable and otherwise, in

the North and South. Such projects always involved generous rules: the North would fund the project in its entirety, hand over at least half of the material collected to the host country, help that country establish state-of-the-art *ex situ* conservation facilities for long term storage of the material collected, and train personnel of the South in both conservation and exploitation technologies. Northern institutions knew that such activities would essentially be successful only for the purpose of siphoning material from the South to the North. Countries in the South quickly discovered that the material collected came back to them as imported, useful, agricultural planting material with restrictive intellectual property rights and an inflated price tag.

Sometimes, the fallacy of the exercise dictated a change in approach but not in the end result. The approaches took many forms including working deals directly with unsuspecting (or otherwise) Southern scientists, signing legally binding (but practically worthless) Material Transfer Agreements for the material collected, and outright illegal collection and smuggling. Interestingly, the recipient countries deliberately

did not ask those who applied for patents to show evidence of legal possession of the original material on which the "invention" was based. This is equivalent to disregarding the need to ask a trader to show evidence that what is being traded is not stolen goods. The World Intellectual Property Organization (WIPO) still maintains that such a requirement would unnecessarily complicate patent applications. In some respects they are right, and biopiracy continues to be a flourishing business, feeding the patent literature.

The list of approaches towards access and benefit sharing has been endless (and mostly useless, insofar as the "benefit sharing" is concerned). A Code of Conduct was published by FAO several years ago and proved totally inconsequential. The Bonn Guidelines on access and benefit sharing was published by the CBD Convention in 2002 and so far has not made itself felt in international dealings. The African Union published a Model Law which was recommended by the Heads of States in 2002 as guidance to national legislation, but the Model Law has not yet influenced such legislation. There are scores of case studies on benefit sharing arrangements between

countries and/or institutions; they only demonstrate that, so far, benefit sharing is ill defined and hard to achieve. The ongoing negotiations of the CBD on establishing an "international regime" on access and benefit sharing - a project endorsed by the UN General Assembly in 2003 - are still a long way from producing a "system". And the recently adopted International Treaty on Plant Genetic Resources for Food and Agriculture, also anticipating the development of an access and benefit sharing system, is also awaiting a system to be negotiated.

The only choice remaining for the owners of genetic resources and related traditional knowledge is to restrict or ban access – and await the detrimental impacts on (the potentially sustainable) exploitation by humanity and on research, especially research in the areas of taxonomy, ecology and functional genetics. The trend in fact has already gone against the objectives of conservation and sustainable utilization of biological diversity. Restriction of access has unfortunately become so widespread that some drug companies have already warned that, if this trend is not reversed, they will entirely forgo

Nature as a source of medicines and revert back to synthetic chemistry. While the threat seems hollow, it would have serious impacts on healthcare worldwide, considering the known side effects of the products of synthetic chemistry.

Technical problems in benefit sharing

Benefit sharing relates to three areas: life forms as sources of "agricultural" products, life forms as sources of "drugs" and traditional knowledge related to both products. While these areas are interrelated, the technical problems are not the same in all three areas. The complications are most extensive in the case of drugs where extensive screening is necessary and the link between the original material and the final marketable product is harder to define or prove. Agricultural products, on the other hand, will largely be based on genetic material already in *ex situ* conservation in the North with no *public* documentation of original ownership. Such genetic material has been collected in the past, and is accordingly not covered by the CBD anyway. The material is nevertheless well documented, researched and

supported by extensive databases which could help breeders and developers exploit it to the level of specified genetic loci with specified characters. Unfortunately, access to such databases is either restricted or requires signing a Material Transfer Agreement linking the genetic resource to the current provider and not to the original supplier! It is ironic that many such gene banks were originally part of the international system of the International Board for Plant Genetic Resources where collection was supported by public funds and where the cooperation of the South and North did not anticipate such restriction or the moving of such gene banks into national rather than international jurisdiction. Proof of original ownership, hence rights to benefit sharing, will be difficult or impossible to establish, since the countries of origin have no real records of the transfer of material and will have no access to the salient databases, and further, it will be easy on the part of those who apply for patents to falsify such information anyway.

With genetic resources for drugs, the situation is different than with agricultural products. Most drug-related genetic material is

still in its "natural habitat" in the South and still generally linked to traditional knowledge - the access to which could be restricted. There are strong incentives for biopiracy in this area and once the genetic material and/or related knowledge is removed from its place of origin, it may become impossible to prove ownership. National legislation in the North as well as international agreements encourage denial of original ownership.

The list of technical problems associated with proof of ownership is extensive. The following are examples which demonstrate the scope of the problem:

- Biological diversity does not recognize political boundaries, and the same genetic material could be found in two or more countries.
- Biological diversity could lie outside territorial sovereignty.
- The exploitable character could be linked to traditional knowledge which does not necessarily occur in the same location as the genetic material.
- The ownership of the genetic material is the sovereign right of the country but its

stewardship could be linked more to a specific community or even to an individual or individuals who could claim benefits.

- The determination of the "value" of the benefit and its distribution between the "owner" of the genetic material and the "developer" of the exploitable technology or product will be extremely difficult to settle.
- The agreement on sharing benefits must start with access to material and knowledge at a time when benefits are still only potential benefits. By the time an actual product is ready for the market, the "provider" of the material could have lost track of the development process, which will necessarily be under the control of the "developer". The disparity in expertise between the two "collaborators" could be so great that it will be difficult for them to reach an agreement on how to split benefits. If splitting the potential benefits is agreed upon at an early stage, the

developer will often accuse the provider of "over-estimating" the value of the material provided and of "under-estimating" the efforts of the developer.

Is there a way out?

Obviously there is no easy way out, no one medicine for all ailments. With an atmosphere of suspicion and distrust, with histories of abuse, and with the continuing disparity of expertise between provider and developer, we should think more in terms of ethics and a common human heritage and destiny rather than in terms of our seemingly conflicting interests. The logical and ethical approach then would be to ban intellectual property rights on life forms, their derivatives, and their products altogether. This would require public involvement in the North, where these property rights have long been granted – and where democracy prevails not only on ethical, spiritual, and humane grounds but also on practical grounds of self-interest. The voters in the North need to realize that, in the end, humanity, including

themselves, is the loser from this endless patenting, and that the short term gains of the few should be sacrificed in favor of greater returns to the whole of society in the long term. Without the patents, biotechnology application research could then go back to the "people" and be funded publicly. Perhaps the current debate on exploitation of the human genome, on stem cell research, and on cloning of humans could produce the extra public pressure necessary to push more tax money into biotechnology application research aimed at future generations. If the private sector wishes to participate, it should be with the understanding that no exclusive rights will be granted and no monetary returns should accrue from discoveries – only from inventions.

This scenario may be too idealistic. It ignores the extent to which money controls politics, the media, and even public sentiments. It also ignores the fact that serious public involvement does not involve a significant fraction of voters – even in the most democratic countries. It is unfortunate that the current political environment in many countries reflects popular sentiments which prevailed in the 19th century and in the first third of the 20th,

sentiments bordering on "ultra-nationalism" and the worship of material enjoyment. Witness the extravagant, unsustainable life style prevailing in most of the countries of the North and being sought by the "elite" of the South.

Looking for alternative scenarios then, the following could be considered:

- Countries of the South could place - and strive to rigorously enforce - a moratorium on foreign access to biological diversity and to traditional knowledge until an equitable system is in place.
- On a popular level, people could resist the use of those genetically engineered products which are covered by intellectual property rights and which serve no useful purpose save profitability to the few.
- Negotiations for an international regime on access and benefit sharing should be made "a public issue" and should aim at a binding instrument that includes a massive fund in support of the Global Taxonomy Initiative. One

aim of the ABS regime should be development of a technology for assigning "unique identifiers" to biological diversity components in their habitats of origin (instead of "identifiers" that "fingerprint" the patented material).

- Serious studies could be undertaken to investigate:
 - systems for equitable calculation of benefits and the sharing of those benefits between provider and developer,
 - equitable channeling of benefits to legitimate owners within and between countries and in the public commons,
 - certification of countries and communities for ownership of parental biological diversity and of related knowledge (including the rights of ancestors),
 - related controversial technical issues, such as the prerequisites for granting of patents.
- The re-establishment of an international

network of *ex situ* gene banks and their databases, with the purpose of retrospectively re-establishing ownership of their accessions.

- Perhaps most important of all, the establishment of a sizable and mandatory international biodiversity trust:

- whose resources are derived from (and determined for) Parties according to equitable and sensible criteria, relating *inter alia* to per capita gross national product and the amount of monetary benefit gained from exploiting biodiversity,
- whose funding comes in part from proceeds gained through exploitation of patents, and
- whose goal is to maintain current biological diversity for future generations.

This may sound to some like a dream, but one should remember that many major achievements of human kind started with dreams

and that people are fundamentally sane, good-natured, and love their children and grandchildren.
(. . . *But, do they?*)

About the Contributors

Tewolde Berhan Gebre Egziabher has served Addis Ababa University as lecturer, Science Faculty Dean, and keeper of the National Herbarium. He was later Asmara University's president and General Manager of Ethiopia's Environmental Protection Authority. The winner of the 2000 Right Livelihood Award for his role in representing the Like-Minded Group at the biosafety negotiations, he has negotiated for Ethiopia in many international fora related to biosafety and biodiversity, including the Convention on Biological Diversity.

Ossama M. El-Tayeb is Professor Emeritus of Microbiology and Immunology and Director of the Microbial Biotechnology Center at the Faculty of Pharmacy, Cairo University. Chief Negotiator for Egypt for the Cartagena Protocol on Biosafety, 1996-2000, he is a member of the Executive Committee for the National Strategy for Biotechnology of the Academy of Scientific Research and Technology and head of the Ministerial Committee for Drafting National Biosafety Legislation of the Ministry of State for Environmental Affairs.

Michael Frein is Senior Policy Adviser on trade and WTO issues at the Church Development Service (Evangelischer Entwicklungsdienst, EED) in Bonn/Germany.

Debra Harry is Northern Paiute from Pyramid Lake in Nevada. She is the Executive Director of the Indigenous Peoples Council on Biocolonialism and a doctoral candidate at the University of

Auckland.

Le'a Malia Kanehe is Kanaka Maoli (Native Hawaiian) from Honolulu, Hawai'i. She is an Indigenous rights attorney working for the Indigenous Peoples Council on Biocolonialism as a legal analyst.

Hartmut Meyer is co-ordinator of the Working Group on Biodiversity of the NGO Forum Environment & Development (Forum Umwelt und Entwicklung, FUE) in Braunschweig/Germany.

Elpidio V. Peria describes himself as an NGO advocacy officer who has worked with local and indigenous communities, as well as with government officials, scientists, and policy-makers in the Philippines and in South East Asia. He has also served as a legal adviser of the Philippines delegation to the Conference of the Parties to the Convention on Biological Diversity.

Silvia Ribeiro is a researcher and program manager with ETC Group. Currently based in Mexico, she has been a publisher, journalist, and environmental campaigner in Uruguay, Brazil and Sweden. From 1994-1999, she was editor of the Latin American magazine *Biodiversidad, sustento y culturas*, published by Friends of the Earth Uruguay in collaboration with Genetic Resources Action International (GRAIN).

Devinder Sharma is a New Delhi-based food and trade policy analyst. An award-winning journalist, scholar, trained agricultural scientist, and former development editor of the *Indian Express*, he writes

a weekly column that appears in newspapers across Southeast Asia. He has been a visiting fellow at the International Rice Research Institute, the University of East Anglia, and Cambridge University. Currently, he chairs the Forum for Biotechnology and Food Security.

Vandana Shiva is the internationally-recognized author of numerous books and articles. She is also the scholar/scientist/activist who gave up an academic career in physics to direct the Research Foundation for Science, Technology and Natural Resource Policy in New Delhi. Awarded the Right Livelihood Award in 1993, she lectures widely on issues related to biological and cultural diversity. She is a member of the board of the International Forum on Globalization and also directs Navdanya, a seed conservation project in Dehra Dun, India.

Beth Burrows is President/Director of the Edmonds Institute, a small public interest, non-profit group in the US. A long-time writer, researcher, and activist, Beth has served on the boards of numerous environmental and public interest organizations and won many awards for her work, including her earlier work in public broadcasting.

