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**Protecting Indigenous Knowledge: The
Role of the Convention on Biodiversity
and Intellectual Property Rights**

Lori Frater



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PROTECTING INDIGENOUS KNOWLEDGE: The Role of the Convention on Biodiversity and Intellectual Property Rights

Lori Frater

ABSTRACT

The Convention on Biological Diversity (CBD) was introduced in 1992 to control the global deterioration of the planet's biodiversity. The CBD was significant because for the first time an international convention went beyond conservation and provided rules on the sustainable use of genetic resources. When the CBD was under negotiation, there was considerable contentious debate relating to the provisions on the access and use of genetic resources. Economic concerns were central to these debates with some parties not wishing to relinquish their economic position whilst many developing countries interpreted the provisions as a means of improving their national economic status. By introducing sovereign rights over natural resources, the CBD made biodiversity a valuable concern, which could deliver potentially substantial economic returns. As a consequence the negotiations were contentious with certain powerful States unwilling to accept the terms which related to Intellectual Property Rights. This paper assesses the impact of the negotiations on the success of the Convention and whether these power struggles hampered the Convention before it came into force.

Key words: Indigenous knowledge, access to genetic resources, intellectual property rights, biodiversity.

Introduction

“Biodiversity is declining at an unprecedented rate - as much as a thousand times what it would be without the impact of human activity. Half of the tropical rainforests and mangroves have already been lost. About 75 percent of marine fisheries have been fished to capacity. 70 percent of coral reefs are endangered.” [Kofi Anan, 2002]

In 1992, the Convention on Biological Diversity (“The CBD”) was introduced to control the global deterioration of the planet’s biological diversity (“biodiversity“). The CBD had three prime objectives:

- To promote the conservation of biodiversity;
- The sustainable use of its components; and
- The fair and equitable sharing of benefits arising out of the utilisation of genetic resources¹.

It was an attempt to internationalise the conservation and sustainable use of nature, not as independent entities but as “the total variety of genetic strains, species and ecosystems.” [IUCN, 1991] For the first time in an international treaty it introduced the principle that natural resources were the “common concern of humankind”, altering the commonly held belief that they were the “common heritage of humankind”². This was accompanied by the principle that nations had sovereign rights over their own resources³, and under Article 3 they had sovereign rights to exploit them.

The introduction of this principle caused considerable concern amongst many Member States, particularly those from developed countries, because it went beyond conservation and provided rules on the sustainable use of genetic resources. The International trade in these resources involves high economic investment and profits. The sale of drugs based on traditional medicinal

¹ Article 1 CBD

² That is non-exclusive use or open access to the resources and therefore the absence of property rights.

³ Article 15

plants has been estimated to amount to over US\$32 billion a year [Prakash, 2000]. For decades many nations and particularly trans-national corporations (“TNCs”) had been acquiring genetic resources from developing countries⁴ for free or more commonly referred to as bio-prospecting; the search for useful plant related substances that can be developed into marketable commodities such as pharmaceuticals, pesticides and cosmetics [Davis, 1997-1998]. Generally, these products and processes are protected by patent law, which provides exclusive rights of usage and therefore a right to sell on this right. However, in many instances, neither the source country nor the indigenous communities, who may have identified the medicinal benefits⁵, received any compensation, in stead they had to buy the resultant products with no discount in recognition of their involvement in the process.

When the CBD was under negotiation, there was considerable contentious debate on the provisions⁶ relating to access and use of genetic resources⁷. Economic concerns were central to these debates with some parties not wishing to relinquish its economic position, compared to others desiring an improved national economic status.

By introducing sovereign rights over natural resources, the CBD made biodiversity a valuable concern, which could deliver potentially substantial economic returns. One commentator has stated that there is concern that the continued loss of biodiversity is a loss of opportunity to discover the medicinal qualities contained in these resources [Chivian, 2001] and subsequently, a loss of potential revenue.

⁴ The majority of genetic resources are to be found in developing countries.

⁵ Bio-prospecting also often involves utilising the knowledge of indigenous communities. For example in Australia the plant *Conospermum* (smokebush) has been used by Aboriginal people for a variety of therapeutic purposes. The US National Cancer Institute has now identified a substance called Conocurvone, which may be a potential cure for AIDS. Davis, M., Biological Diversity and Indigenous Knowledge, Research Paper 17 1997-98, Parliament of Australia

⁶ CBD Article 16 - the transfer of technology; Article 19 - the role of biotechnology and intellectual property and indigenous knowledge, although the importance of indigenous knowledge is stated throughout the Convention, the main principles relating to the importance of indigenous knowledge are contained in Article 8(j).

⁷ Article 15 CBD

This paper will consider whether the conflicts present during the negotiation of the CBD have impacted on its implementation and its ability to achieve its objectives, or whether it was stifled by the compromised provisions of the final text.

The first part of the paper will consider the reasons behind the stance taken by the USA⁸ and the opposing view of developing countries. Part two will provide an analysis of the provisions of the final text, whilst part three looks at how effective the Convention has been during the last two decades. Part four provides some recommendations and general conclusions on how successful the CBD has been in achieving access to and benefit-sharing of genetic resources.

1 The North-South Divide

“And if the United States has to be the only nation to stand against the biodiversity treaty as now drawn, so be it.” [Bush, June 11 1992]

1.1. Background to the CBD

The CBD was not the first to deal with the conservation of nature, however, it was the first to deal with the conservation of all biological diversity and the first to introduce international rules on access to genetic resources and the transfer of technology and the distribution of its benefits.

Although drafted under the auspices of the United Nations Environment Programme (UNEP), the process for the preparation of a draft convention began in the eighties⁹. In 1991, the Intergovernmental Negotiating Committee for a Framework Convention on Biological Diversity (“INC“) was created and its two working groups were concerned with objectives and principles for a convention on biodiversity and on the role of technology transfer and funding [E

⁸ The USA is analysed because of all the developed states it raised the most objections to the provisions of the CBD.

⁹ In 1984 IUCN drafted principles for the conservation of wild genetic resources. In 1987 they submitted draft legal articles for a proposed convention to a UNEP Ad hoc Working Group of Experts on Biological Diversity. Two ad hoc groups were established, the other comprised of legal and technical experts, but due to objections from the USA, these two groups were eventually merged into the INC. Also in 1987, the USA proposed that nations pursue an international agreement on species and habitat protection. Sands, Phillippe, Principles of International Environmental Law: Frameworks, standards and implementation Manchester

& D File, 1992]. The United Nations (UN) General Assembly Resolution 44/228 ensured that the conservation of biodiversity was included within the remit of the United Nations' Conference on Environment and Development ("UNCED"). Subsequently, the negotiations relating to the CBD had until June 1992 to formulate a convention ready for signature¹⁰. In terms of international treaties this is a minute amount of time to negotiate and draft a convention, which is acceptable to the majority of participating parties.

By the last INC meeting, there was still little agreement on most of the major issues concerning the format for conserving biodiversity. The chairman of the INC stated that the draft convention represented a compromise [Bell, 1993] as a number of substantive provisions were deleted as a result of non-agreement between the parties¹¹.

The negotiations continued throughout UNCED. The CBD however, did open for signature by the end of the conference and became part of a package of conventions and principles¹² relating to environmental protection.

The USA was the only major member of the United Nations who refused to sign, despite this refusal 153 states and the European Community (EC) did sign and on the 29 December 1993¹³, after 30 ratifications, the CBD came into force.

1.2. The USA position

"I believe that American biotechnology can help others. But it can't be if the product is taken

University Press 2000, 381

¹⁰ The INC met seven times between 1991 and 1992. Supra 16

¹¹ For example, the fifth draft included a global list of protected areas and species. The model proposed was that already contained in the World Heritage Convention. The final text does not refer to any provisions for a global list or for the selection of areas by the Conference of the Parties. The selection and management of protected areas or species is left to each state party

¹² In addition to the Convention on Biological Diversity, the United Nations Framework Convention on Climate Change was also open for signature and the Rio Declaration and Agenda 21 also were introduced.

¹³ Finally, on June 4, 1993, the USA under the Clinton Administration signed the CBD. A year later the Senate Foreign Relations Committee approved the ratification of the CBD by a vote of 16 to 3. By September of the same year the CBD was withdrawn from the Senate calendar and has to date never been voted on.

away or if the incentive to innovate and the incentive to profit by your research is removed.”

[Bush, June 13, 1992]

The USA objections can be summarised into the following categories:

- Access to genetic resources;
- Technology transfer¹⁴ including biotechnology¹⁵ and bio-safety¹⁶ - in particular the proposed threat of developing countries demanding access to technology on preferential terms; and
- Intellectual property rights¹⁷ - stating that the provisions failed to recognise the positive role played by intellectual property rights (“IPRs”) in the conservation of biodiversity. The USA was also concerned that developing countries would restrict the application of IPRs in order to share in profits and technology. Supported by Japan they believed that the provisions would stifle innovation, which was presently encouraged by existing IPR regimes¹⁸.

The USA viewed Article 15(7)¹⁹ as allowing claims on financial profits arising from the exploitation and development of resources used by companies based in developed countries [Sands, 2000]. This would in turn reduce the profits of the multinational companies who developed these materials into commodities. President Bush asserted that the CBD

¹⁴ GEMET 2001 - GEneral Multilingual Environmental Thesaurus - The transfer of development and design work a) from a parent company to a subsidiary, b) from one country to another as a form of aid to help promote development and sustainable growth.

¹⁵ GEMET 2001 - A combination of biology and technology. It is used to describe developments in the application of biological organisms for commercial and scientific purposes.

¹⁶ GEMET 2001 - The combination of knowledge, techniques and equipment used to manage or contain potentially infectious materials or biohazards in the laboratory environment, to reduce or prevent harm to laboratory workers, other persons and the environment.

¹⁷ The acquisition of ownership over a particular resource that is intangible in nature. They allow the owners to exclude imitators from marketing the inventions or processes for a specified time. Their purpose is to stimulate innovation by awarding higher monetary returns than the market might otherwise provide.

Kothari, A., & Anuradha, R.V., Biodiversity and Intellectual Property Rights: Can the two co-exist? 2(2) Journal of Int'l Wildlife L & Pol'y (1999)

¹⁸ In addition they were also concerned about funding provisions, but this aspect is beyond the scope of this paper.

¹⁹ “...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 utilisation of genetic resources with the contracting party providing such resources. Such sharing to be on mutually agreed terms.”

“threatened to retard biotechnology and undermine the protection of ideas”.²⁰ In their Declaration to the CBD, the USA stated *“As a matter of substance, we find particularly unsatisfactory the text’s treatment of intellectual property rights; finances...technology transfer and biotechnology”*[UNEP Declaration, 1992]. The President of the Industrial Biotechnology Association echoed this view when he said that the CBD *“...constitutes a threat to continued U.S. leadership in biotechnology”* [Kirschner et al, 1992].

Two important factors influenced the USA position. The first is the value of genetic resources and the expanding growth of the biotechnology industry. For example, cross breeding²¹ annually contributed to US agriculture by about US\$1 billion [H. R. Rep, 1991]. In the early 1990s, about nearly fifty percent of the US drug market was developed from genetic resources and biodiversity. At which time approximately only one percent of plants species had been tested for their medicinal potential [National Science Bd, 1998]. In other words this was a growing market and one in which the natural resources had been free, based on the principle of “common heritage of humankind”.

The second was the influence of the GATT/TRIPS Agreement and the role the USA was playing in the Uruguay Round negotiations. Although finalised in 1993²², the stance taken by the USA at UNCED had to have been influenced by their desires to protect intellectual property rights at the international level.

1.2.1. Access to and Transfer of Technology

The USA were concerned that provisions which required *“...legislative, administrative or policy measures”* to ensure that technology transfer was made²³ would lead to excessive government regulation and would harm the economy and be a cost to U. S. businesses [Bush,

²⁰ Address to the UN Conference on Environment and Development, Rio de Janeiro, 12 June 1992

²¹ Historically, the USA had looked to other countries for cross breeding of crop plants. In 1970, when a fungal disease destroyed part of the US corn crop, the US turned to Mexico to develop a resistant strain derived from a disease resistant Mexican crop.

²² 15 December 1993

²³ Article 16(3), (4)

August 21 1992]. They were also not willing to be in a position where they would be required to transfer technology from the private sector.²⁴

They further considered the language of the CBD to be paternalistic. In particular, access and transfer of technology to developing countries on favourable terms²⁵. This was contrary to the USA's view of a free market, which encourages free competition [Bell, 1993]. The central problem the USA had with the CBD was that it was not willing to sign a convention, which would make it mandatory to transfer technology to which the US government did not own the rights. The biodiversity sector itself commented that the CBD would be a disincentive for companies to continue their development of technologies that would preserve biodiversity [Chem Reg. Rep, 1992]

1.2.1A Biotechnology²⁶

"The Convention does not treat biotechnology and bio-safety appropriately" [Wirth, 1994] Article 8(g), requires countries to be able to control any "living modified organism" so that they do not present a hazard to the environment or human health. Article 19(3) further stipulates the need for a protocol that would lay down procedures for "safe transfer, handling and use of" such organisms resulting from biotechnology²⁷. The USA objected to Article 19 because it was construed as infringing on the freedom to develop new technologies by the open access to research activities [ICC, 1992]. At the time of the negotiations, the future possibilities of biotechnology were in their infancy. The development of biotechnology relies upon the availability of a diverse pool of genetic traits inherent in biodiversity. The development of the biotechnology industry depends upon the availability of diverse biological resources [Goldman, 1994] and in turn this industry depends on IPRs for protection of its discoveries.

²⁴ U.S. patent law as well as the clause of the 5th Amendment to the Constitution prohibiting the taking of private property without just compensation, would block the forced transfer of technology from the private sector. Michael A. Gollin, *The Convention on Biological Diversity and Intellectual Property Rights*, in Walter V. Reid et al., *Biodiversity Prospecting* 289,296 (1993).

²⁵ Article 16(2)

²⁶ The development of genetic engineering techniques which permit the introduction of genetic material from one species into another.

²⁷ This was finally accomplished in the Cartagena Protocol

1.2.1B. Intellectual Property Rights

The USA was particularly concerned with the lack of recognition attributed to intellectual property rights in the conservation of biological diversity [Goldman, 1994]. They were concerned that there would be conflicts with the negotiations taking place for GATT and that biotechnology might be subject to additional scrutiny for its effects on the environment [Bell, 1993]. However, it has been argued that these problems were in part resolved by the inclusion of Article 17 into the Convention dealing with the “Handling of Biotechnology and Distribution of its Benefits” [Bell, 1993]. Whilst Article 16(5) specifically makes provision for the recognition of patents and other intellectual property rights²⁸:

The wording in Article 16(5) relating to the transfer of technology provides that patents should be “supportive of and ... not run counter to” the objectives of the CBD, this was read by the USA as subordinating intellectual property rights. If read in conjunction with Article 22(1)²⁹, then IPRs might be overridden if they resulted in “serious damage or threat to biological diversity”³⁰.

In summary their position was that an international agreement which uses IPR as a constraint on trade and information transfer instead of a prerequisite to negotiations was unacceptable.

1.2.2 The Influence of TRIPS

The USA³¹ did not want the CBD to restrict the strong protection for IPRs it wanted to secure

²⁸ “The Contracting Parties, recognising that patents and other intellectual property rights may have an influence on the implementation of this Convention, shall cooperate in this regard subject to national legislation and international law in order to ensure that such rights are supportive of and do not run counter to its objectives.”

²⁹ “The provisions of this Convention shall not affect the rights and obligations of any Contracting Party deriving from any existing international agreement, **except where the exercise of those rights and obligations would cause a serious damage or threat to biological diversity**” (emphasis added).

³⁰ *ibid*

³¹ These negotiations were also fiercely negotiated. The USA, Japan and the EC advocated the principle that all countries should provide and respect intellectual property protection in all technical fields - including biotechnology. Third World countries were strongly opposed to this principle. India argued

at the World Trade Organisation (“WTO”) Agreement on TRIPS³² during the Uruguay Round³³. TRIPS sought to strengthen intellectual property protection in order to promote world trade³⁴ by harmonising national IPR regimes³⁵. In essence it set minimum standards³⁶ concerning the availability, scope and use of IPRs³⁷. It creates international rules for IPRs and requires members of the WTO to provide patents for “any inventions, whether products or process”³⁸. It also asserts the technological basis of IPRs³⁹ and provides no recognition to a potential role for IPRs within an environmental context, except to the extent that such a role is seen as an issue of “economic welfare” [Walden, 1964]. The most controversial provision is Article 27.3(b)⁴⁰ providing exclusion to patentable subject matter.

The key issues contained within this provision are patenting of life forms and protection of plant varieties. The first links to bio-prospecting, or the often used term bio-piracy⁴¹, which with the

against patenting of animal and plant varieties as well as food and pharmaceutical product citing concern for basic human needs. As the negotiations drew to an end many of the Third World delegations had resigned. Rosendal, G. K., *The Convention on Biological Diversity: A Viable Instrument for Conservation and Sustainable Use* (1995), *Green Globe Yearbook of International Co-operation on Environment and Development* 69, 72

³² The USA had succeeded in having the issue of TRIPS included in . these negotiations.

³³ Only trade related aspects of intellectual property rights were considered as a compromise to those who objected the inclusion of this topic into these negotiations. *Ten Questions on TRIPS, Technology Transfer and Biodiversity*, Third World Network

³⁴ Charles McManis has stated “TRIPS” also seeks to stimulate rapid international economic development that will likely produce a virtual technological transformation of human society - and perhaps much of the natural world” *The Interface between International Intellectual Property and Environmental Protection: Biodiversity and Biotechnology*, 76 *Wash U L Q* 255

³⁵ Posey, D. argues that assuming all Nation States comply fully with TRIPS, national regimes will be virtually identical to the current United States system. Whereupon, this would allow the USA, Japan and Europe to dictate trading rules. See *National Laws and International Agreements affecting indigenous and Local Knowledge: Conflict or Conciliation?*

³⁶ The standards are derived from the legislation of developed countries. *Ten Questions on TRIPS, Technology Transfer and Biodiversity*, Third World Network

³⁷ The preamble states that the objective of the agreement is “to reduce distortions and impediments to international trade, and taking into account the need to promote effective and adequate protection of intellectual property rights, and to ensure that measures and procedures to enforce intellectual property rights do not themselves become barriers to legitimate trade”

³⁸ Article 27.1

³⁹ Article 7

⁴⁰ Members may exclude from patentability: (b) plants and animals other than micro-organisms, and essentially biological processes for the production of plants and animals other than non-biological and microbiological processes. However, members shall provide for the protection of plant varieties either by patents or an effective sui generis system or by any combination thereof.

⁴¹ Defined as the theft of biological resources and traditional knowledge from the developing countries. *Ten*

increased ability of biotechnology to expand the potential of genetic resources increases economic potential and therefore the desirability to obtain patents⁴². The second issue is that plant varieties must be protected either by IPRs or by a *sui generis* system.⁴³

TRIPS also enables persons or institutions to patent a country's biological resources (or knowledge relating to such resources) in countries outside the country of origin of the resources or knowledge. In this manner, TRIPS facilitates the conditions for misappropriation of ownership or rights over living organisms, knowledge and processes on the use of biodiversity takes place.

With the intention of arguing for a strong IPR regime, the USA obviously felt that it could not be seen to weaken its position by accepting the CBD provisions. It also ensured years of debates over how these two international agreements could co-exist.

When the objections are amalgamated, the USA⁴⁴ feared that developing countries would gain too much control, seek too high a cost for access to genetic resources and industry would not pay, therefore resulting in a reduction in a very profitable market.

1.3. An Alternative Viewpoint

This section will consider two viewpoints, the official stance from the governments of developing countries and the second from indigenous people, whose status was elevated due to the

Questions on TRIPS, Technology Transfer and Biodiversity, Third World Network

⁴² Ibid

⁴³ The Third World Network argue that this means that farmers are prohibited from selling the seeds they harvest from the crop, and indeed from saving and exchanging the seeds on a non-commercial basis, without first paying royalties to the breeder. Ten Questions on TRIPS, Technology Transfer and Biodiversity, Third World Network

⁴⁴ But the USA was not alone in these views, although the other major member states from developed countries signed the Convention and most subsequently ratified it, this was a common fear for the UK who were particularly concerned about the financial commitment placed on developed states in Articles 20 and 21. However, along with another 19 developed states they signed subject to an interpretative declaration. And Japan also had reservations and was concerned that the provisions would reduce intellectual property innovativeness.

recognition of their role in biodiversity conservation as a consequence of the inclusion of Article 8(j). Both viewpoints need to be considered because firstly, not all indigenous communities are located in developing countries, their stance on access and use of genetic resources and the fair and equitable redistribution of these resources also affects the USA, Canada and Australia. Secondly, their viewpoint is often contradictory to the official stance of developing countries.

1.3.1. Developing Countries

“Now that the developed countries have sacrificed their own forests in the race for higher standards of living, they want to preserve other countries’ rain forests - citing a global heritage - which would indirectly keep countries like Malaysia from achieving the same levels of development.” [Mohamad, 1991]

In dealing with the conservation of biodiversity the role of developing countries is vital, because by far the largest number of flora and fauna species are located in tropical lands and seas, which are nearly all found in the jurisdiction of developing countries. At the CBD, and at the negotiation of all other international environmental treaties, the concern of developing countries was that they must be able to continue economic expansion. R. Jayakumar Nayar and David Mohan Ong [Nayar et al, 1996], have categorised the views of conservation of biodiversity by developing countries as follows:

- Many of the countries were initially of the view that concerns over biodiversity constituted yet another form of disguised imperialism⁴⁵. This imperialism not only results from exploiting the biodiversity but also of attempting to replace this biodiversity with

⁴⁵ The argument is that for centuries European nations colonised vast areas of the world. When they arrived in a new country and they considered that the land had no organised and legal society (in European terms) it was classed as terra nullius, because it was not a recognised territory. As empty land, the resources were exploitable. It is argued that this assumption has been extended to “empty life”, that is seeds and medicinal plants. The logic being that the takeover of native resources during colonisation was justified on the grounds that indigenous people did not “improve” their land. The same logic, it is argued, is now used to appropriate biodiversity by defining medicinal plants and medical knowledge as non-science and treating the tools of genetic engineering as the yardstick of improvement. It is also argued that this new colonialism is protected by IPRs[#]. Shiva, V. Biopiracy: The Plunder of Nature and Knowledge, South End Press 1997

monocultures of crops;

- That the untapped resource potential of biodiversity provides excellent economic development opportunities.

It is perhaps a realisation by developing countries that they have a resource which many industrialised nations or rather TNCs desire to own. The CBD provided developing countries with a vital leverage in this conflict, by recognising for the first time that a state has the sovereign right to exploit its own resources⁴⁶.

Developing countries wanted to be able to obtain economic return from their resources and developed countries did not want to countenance any significant changes to the system of assigning market values to raw materials and other primary commodities which do not reflect their value-added nature in the end product. As a result the final language used in Article 15 and 16 was a compromise of these two positions.

Prior to UNCED, many of the developing states or G-77 countries convened to formulate a common strategy to be presented not just at the CBD but at the UNCED conference as a whole. In particular they did not wish biodiversity to be considered as the “common heritage of humankind”⁴⁷. Developing countries therefore stressed sovereign rights over natural resources⁴⁸. Naturally, they stressed the importance of socio-economic development and the following were considered as key issues:

- The establishment of intellectual property rights regimes and appropriate mechanisms for compensating the South for the biological resources provided by it;
- Mechanisms providing access to biotechnology developed through the use of genetic

⁴⁶ Article 3 CBD. This article is derived from Principle 21 of the Stockholm Declaration 1972

⁴⁷ Many of the countries had just received independence and would not want to lose any of their newly acquired sovereignty.

⁴⁸ Expressly provided in the 1989 Declaration of Brasilia, paragraph 2. The CBD subsequently recognised this principle.

resources that it provides; and

- Additional funding to facilitate implementation of the convention and access to technology [Boyle, 1996].

These concerns were developed from two meetings attended by many of the G-77 countries. The first was the Beijing Declaration⁴⁹, which also included recognition for the needs of local communities, including their habitats. The second was the Kuala Lumpur Declaration⁵⁰, however contrary to the Beijing Declaration this contained no provision for the recognition of indigenous people. Nayar and Ong argue that this policy position *“mainly revolves around the need for an equitable return for the utilisation of their resources in plant and animal species biodiversity, including the transfer of technology in order to be able fully to exploit their resources in this area.”* [Nayar et al, 1996]

Edward Rugumayo expressed the position of developing countries, when he said:

“In spite of the immeasurable contribution that Third World biodiversity has made to the wealth of industrialised nations, the North continues to create legal and political frameworks to make the Third World pay for what it originally gave. The North should both acknowledge and pay royalties dating back hundreds of years to the Third World peoples who have protected and continue to protect biodiversity despite the ecocidal policies of past colonial governments and (more recently) multinational corporations. The latter, who patent by-products of biotechnology for huge sums of money, should be aware that they would not be able to do so in the absence of this biodiversity.” [Rugumayo, 1991]

1.3.2. Indigenous People

⁴⁹ Beijing Ministerial Declaration on the Environment and Development, adopted unanimously at the Ministerial Conference of Developing Countries on Environment and Development 19 June 1991

⁵⁰ Kuala Lumpur Declaration on Environment and Development issued at the Second Ministerial Conference of Developing Countries on Environment and Development 29 April 1992

“For Indigenous peoples, the intellectual property system means legitimisation of the misappropriation of our people’s knowledge and resources for commercial purposes”

[COICA, 1994]

Over the millennia indigenous people have established distinct systems of knowledge, innovations and practices relating to the uses and management of biodiversity. The CBD Secretariat has described this knowledge as having a value not only to those who depend on it in their daily lives, but to modern industry and agriculture as well⁵¹. Many widely used products, such as plant-based medicines and cosmetics, are derived from traditional knowledge. Most indigenous and local communities are situated in areas where the vast majority of the world's plant genetic resources are located. In contrast the bulk of modern technology which manipulates genetic resources belongs to TNCs and research institutions located in developed countries. The result is that most profits from genetic resources obtained in developing countries goes to these TNCs.

Subsequently, indigenous people claim that their rights in relation to this knowledge are not being adequately recognised or protected. For decades, this knowledge has been utilised by developed countries and TNCs without fair and equitable benefit sharing of the rewards from the beneficial properties discovered from it. In most cases the rewards are incommensurate with the payment returned to the countries of origin [Hubbard, 1997].

Vandana Shiva argues that this is “bio-piracy”⁵² [Shiva, 1997], because, bio-prospecting is being conducted without due regard for the rights of the indigenous communities, without their prior informed consent and with little or no financial returns to these communities. Indigenous peoples claim that their knowledge constitutes part of their intellectual property rights, if different

⁵¹ Secretariat of the Convention on Biological Diversity, Traditional Knowledge and The Convention on Biological Diversity

⁵² One example is the patenting of crop varieties that are similar to those which have been grown for centuries in developing countries for example Basmati Rice by Rice-Tec Corporation in the US. Kothari, A., & Anuradha, R.V., Biodiversity and Intellectual Property Rights: Can the two co-exist? 2(2) Journal of Int'l

from existing intellectual property laws. The concern for indigenous communities was not only a right to share equitably in the benefits derived from the use of their knowledge, but also the recognition and protection of it. In essence their knowledge is not to be freely bought or sold.

The inclusion of Article 8(j)⁵³ offered for the first time the opportunity in an international treaty, the recognition of the role that indigenous people played in environmental issues. It subsequently ensured further conflicts and debates. In particular, conflicts over property rights and the role of IPRs not only in the protection of indigenous knowledge, but generally as a strategy for protecting biodiversity.

Sovereign rights and recognition of indigenous rights raised the question whose rights take priority? For example, conservation may be at odds with potential economical values and uses of biodiversity. It also raises the question as to how does one assign values to nature - and who in fact owns nature? Is it to be preserved as the collective heritage of the nation, or is it to be subject to the various demands, claims and interests of particular individuals, communities or groups [Walden, 1996]. Further, If the medicinal properties of a particular plant found in the Amazon can cure cancer, should society at large not have access to this cure?

Indigenous demands for protection and an equitable share in benefits derived from their knowledge need not only lead to clashes with TNCs or external governments, it could also lead to internal clashes.

For example, Brazil has approximately 220 indigenous tribes, who account for less than one percent of the country's 170 million population. Brazil accounts for about half of the planet's

Wildlife L & Pol'y (1999)

⁵³ "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"

vast array of biodiversity, which is mostly concentrated in the Amazon rain forest region; it is here where most of these indigenous tribes live [Khalip, 2001]. However, during the preparation of the CBD, the Brazilian government successfully opposed a draft, which referred to the “common concern of all peoples”, on the grounds that this could be used as a means of conferring rights on indigenous peoples. The assertion of property rights by one group can mean the disenfranchisement of alternative groups [Walden, 1996]. Affecting this is the tension between property and use rights over land, which may be privately or community-based versus the sovereign rights over the genetic resources that the land contains [Environmental Policy Studies Workshop, 1999].

2 Analysis of the Provisions

Although agreement was reached with 154 Member Parties signing the Convention, the remnants of the conflicts were evident in the final text of the CBD. The text, although, providing a broad framework for international obligations and commitments, many of the developed countries issued interpretative statements on the financial and intellectual property provisions⁵⁴, thereby indicating their discontent. To some the final text represented a compromise [Goldman, 1994]. It did, however, try to achieve a document, which would:

- Address the economic situations of developing countries,
- Facilitate sustainable development and the conservation of biodiversity,
- Address the issue of indigenous communities and try to work within the framework of other international treaty obligations, in particular those relating to intellectual property and trade.

However, many provisions of CBD did break with tradition. For example:

⁵⁴ The United Kingdom, France, Italy, and Switzerland signed the Convention with reservations that it was their understanding that the Conference of the Parties could not require contributions of a specified amount, nature, or frequency. Switzerland's declaration stated that it understood the Biodiversity Convention to respect the protection of intellectual property rights. However, it is unclear what is the legal effect of these Statements in light of Article 37 of the Convention, which clearly states that there may be no reservations made to the Convention.

- It accepted and recognised the importance of entire ecosystems⁵⁵;
- It rejected the tradition of viewing the earth’s biodiversity as the “common heritage of humankind” but instead emphasised sovereign rights over biodiversity as a “common concern of humankind”⁵⁶;
- It subsequently also introduced the concept that a state has the sovereign right to exploit its own resources⁵⁷;
- It acknowledged the value of indigenous knowledge and resources⁵⁸;
- It provided access to resources⁵⁹ and transfer of technology⁶⁰ in terms consistent with the “adequate and effective” protection of intellectual property rights, while previously there had been no international (nor in most countries national) legislation regulating access to genetic resources [Prakash, 2000]; and
- It required the benefits of research and development derived from biological resources taken from developing countries to be made available to that country⁶¹.

What is central to these provisions is the acknowledgement that developing countries need to be given incentives to preserve biodiversity and that biodiversity could resolve some of their economic problems⁶².

Although, the CBD concerned the conservation and sustainable use of biodiversity, the

⁵⁵ Article 1 defines Biological diversity as: “...variability among living organisms from all sources including, inter alia, terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are part, this included diversity within species, between species and of ecosystems.” It further defines Ecosystems as: “...a dynamic complex of plant, animal and micro-organism communities and their non-living environment interacting as a functional unit”

⁵⁶ As stated in the Preamble

⁵⁷ As stated in the Preamble, Article 3 CBD. This article is derived from Principle 21 of the Stockholm Declaration 1972. Article 15(1)

⁵⁸ Article 8(j)

⁵⁹ Article 15

⁶⁰ Article 16

⁶¹ Articles 15, 16 & 19

⁶² “If biodiversity can be put to good economic use, then value captured through the sustainable development of those resources in the natural state could exceed the return from the clearing and development of land.” Goldman, K. A., Compensation for use of biological resources under the Convention on Biological Diversity: compatibility of conservation measures and competitiveness of the biotechnology industry. Law and Policy in International Business, 1994 Vol 25, No2, 659

preparatory negotiations made it abundantly clear that the economic value of biodiversity was a major incentive.

Part two will provide an analysis of the provisions, which resulted in some of the most contentious debates (Articles 15, 16 & 19), those concerning access to genetic resources, technology transfer; biotechnology and the role played by intellectual property rights. These three articles, perhaps in a somewhat vague manner, try to establish environmentally sound and sustainable use of the biodiversity, by ensuring that those countries who provide the raw source materials receive some form of fair and equitable compensation from the benefits derived from those resources [Steltzer, 1993].

2.1 Common language

Throughout Articles 15, 16 and 19 the qualifying term “as appropriate” is used⁶³. For example article 16(4) and article 19(1)⁶⁴ include the same qualification. The use of terms like “as far as possible”⁶⁵ and “as appropriate” are recognition of the varying abilities of the parties to a convention that was signed by 178 independent states. The language used in the CBD is recognition of the different capacities and capabilities of the Contracting Parties⁶⁶. To expect all the States to be able to achieve the same standard would be demanding too high a commitment from some of the lesser developed States, as such making it impossible for them to commit to any international agreement.

These words were considered by the Australian High Court⁶⁷ in the context of the World

⁶³ Article 15(7) provides that Contracting Parties shall take legislative, administrative or policy measures to ensure the fair and equitable sharing of the benefits from the commercial use of genetic resources *as appropriate*.

⁶⁴ Both articles deal specifically with the requirement for Contracting Parties to take legislative, administrative or policy measures to ensure the implementation of the obligations contained within these articles.

⁶⁵ Articles 5(Cooperation); 7(Identification & Monitoring); 8(In-situ Conservation); 9(Ex-Situ Conservation); 10(Sustainable Use of Components of Biological Diversity); 11(Incentive Measures); 14(Impact Assessment and Minimising Adverse Impacts)

⁶⁶ States which are at different economic and social development.

⁶⁷ Commonwealth v State of Tasmania (1983) 57 Austl. L.J.R. 450

Heritage Convention. Commenting on the qualifications “in so far as possible” and “as appropriate”, the court held that the first qualification means “in so far as practicable” and the second takes account of the difference in legal systems⁶⁸.

Chris Wold supports this view; he believes that this case provides an appropriate interpretation of the qualifying language of the CBD. The problem of biodiversity clearly showed the inequitable use of resources. Some states had contributed more to and benefited more from the utilisation of genetic resources. The qualifying language therefore allows for recognition of a “differentiation between the capabilities of developed and developing country parties”, therefore making implementation of the CBD obligations proportional to the capabilities of each party [Wold, 1989].

2.2. Access to Genetic Resources

Article 15 requires Contracting Parties to open up access to genetic resources and to share the information derived from research conducted on these resources. As these resources are the raw materials for biotechnology they have the potential to have a high economic value.

The Article provides the following:

- The recognition of the sovereign rights of States over their natural resources⁶⁹;
- The creation of conditions by the State to facilitate access to genetic resources⁷⁰;
- Development of two mechanisms for the access of genetic resources to be:
 - on mutually agreed terms⁷¹; and
 - subject to the prior informed consent⁷² of the State providing the genetic resources;

⁶⁸ Ibid 489-490 (Mason J)

⁶⁹ Article 15(1)

⁷⁰ Article 15(2)

⁷¹ Article 15(4)

⁷² Article 15(5)

- Development of in-situ research by other Contracting Parties on genetic resources provided by another Contracting Party⁷³; and
- The establishment of legislative and management systems for the fair and equitable sharing of the results of research and the benefits from the commercial utilisation of these genetic resources⁷⁴.

The inclusion of access to genetic resources and these considerably vague provisions for an operating system for this access introduced a new environmental approach to the conservation of biodiversity. As stated above, many TNCs would use genetic resources from developing countries for free, patent their results and then be in a position to make considerable profits from the exclusive rights permitted under the patent system. These profits were made with little or no compensation being paid to the originating source of the genetic material. Article 15 identifies this problem, but has it provided an effective system for the cessation of this practice?

Like all international treaties, the provisions are vague, leaving interpretation of many of the provisions to the Contracting Parties in the implementation of their obligations at a national level. As such, this article provides no definition for “prior informed consent”, “fair and equitable” and “environmentally sound uses”. Parties will need to define these terms in order for them to adequately delimit a Party’s authority to deny access [Wold, 1981]. The term “prior informed consent” is problematic when one considers the CBD as a whole. Although, international conventions apply only to State parties, Article 8(j) of the CBD elevates the role of indigenous people in the role of biodiversity. This raises the question do States, with indigenous populations, need to introduce systems, which will allow indigenous groups to participate in the process of “prior informed consent”?

2.3. Access to and Transfer of Technology and Biotechnology

Article 16 provides the following:

⁷³ Article 15(6)

⁷⁴ Article 15(7)

- The provision and facilitation of access for and transfer to other Contracting Parties of technologies (including biotechnology) that are relevant to the conservation and sustainable use of biological diversity or make use of genetic resources, whilst not cause significant damage to the environment⁷⁵;
- The access and transfer of technologies are to be on fair and most favourable terms. Where these technologies are subject to patents or other IPRs, the transfer of the technology is not to be detrimental to the protection of IPRs⁷⁶;
- The establishment of legislative and management systems to ensure that the Contracting Party providing genetic resources are provided with access to and transfer of technologies that make use of these resources. This provisions includes those technologies protected by IPRs⁷⁷;
- Recognises the role played by IPRs and the influence they may play on the implementation of the CBD⁷⁸.

Article 19 provides for joint participation in biotechnology research between the country providing the genetic resources and the country utilising those resources⁷⁹. It further provides for:

- Priority access on fair and equitable basis to the results from biotechnologies based on genetic resources⁸⁰; and
- The possibility of a future protocol on bio-safety⁸¹, it therefore refers to the release of genetically modified organisms. Something, which at the time of the CBD was not as controversial as it, is today.

⁷⁵ Article 16(1)

⁷⁶ Article 16(2)

⁷⁷ Article 16(3)

⁷⁸ Article 16(5)

⁷⁹ Article 19(1)

⁸⁰ Article 19(2)

⁸¹ Article 19(3)

The most contentious was Article 16. The drafting of this article produced considerable conflict between the developed and developing parties. The USA won through with the inclusion of the phrase in paragraph 2 of “are consistent with the adequate and effective protection of intellectual property rights”, reflecting their concerns. Whilst the Indian delegation won with the inclusion of “the application of this paragraph shall be consistent with paragraphs 3, 4 and 5 below.” [Porter, 1992] India claimed that these provisions would allow developing countries to apply compulsory licensing, something which the USA were concerned would happen⁸².

Article 16 is somewhat an exercise in controls and balances. One part states one proposition whilst another countermeasures it. For example, paragraph 3 provides for the transfer of technology “protected by patents and other intellectual property rights...”. The general practice of IPRs is that they are held by private owners, in particular TNCs. One interpretation of paragraph 3 could therefore, require national government to negotiate with private organisations. For some this would mean interfering in the operation of the free market [Goldman, 1994]. However, the paragraph goes on to require the transfer of technology to be on “mutually agreed terms” and in “accordance with international law”, and this has been read as implying that intellectual property rights and free trade would be free from interference [Goldman, 1994].

The USA was concerned that Article 16 would result in developing countries demanding technology transfers free from the cost of IPRs. One commentator has said:

“any country that interprets Article 16 as requiring involuntary transfer of technology must be prepared for the counter-argument that the similar language in Article 15 requires involuntary transfer of genetic resources, a result no source country would happily accept” [Gollin, 1994].

Article 16 is tempered by the use of the phrase “on mutually agreed terms”. Therefore, transfers on any terms beyond those that are “fair and most favourable” are to be “mutually agreed”. Therefore, the parties negotiating the transfer of technologies agree the terms of the

⁸² Ibid 16

transfer⁸³.

The main concern with regards to this Article was whether or not it would erode IPRs. However, one interpretation of paragraph 5 is that it recognises that IPRs may affect the CBD, and that Contracting Parties should cooperate to establish regimes, which will insure the protection of these IPRs [Streltzer, 1993]. Paragraph 5 is undoubtedly the result of the negotiating history, and was adopted as a compromise between the two extreme views. As Wold comments paragraph 5 represents “*one, that intellectual property rights are essential for technology transfer, and two, that they should be ignored.*” [Wold, 1981]

The question which arises out of Article 16 particularly, in light of the TRIPS negotiations is whether these provisions answer the concerns of developing countries. That is that IPRs be made to support the objective of promoting the fair and equitable sharing of the benefits arising out of the utilisation of genetic resources, and whether the TRIPS agreement will undermine or strengthen these objectives of the CBD.

Whether Article 16 would have direct or indirect effects on intellectual property was not obvious from the language; it was something that would only be revealed through the national implementation of the CBD. With such vague language, it was likely that the CBD could be interpreted differently, depending on the interpreter.

2.4. Intellectual Property Rights

Only Article 16⁸⁴ directly refers to IPRs, but both Articles 15 and 19 must refer to the role of IPRs by mere implication. Both the successful end products of genetic resource manipulation and the results of biotechnology (including biotechnology itself) are protected by IPRs, in particular by patents. A patent confers exclusive rights on the creator of an invention, when that

⁸³ However, like the Coasian Theory this assumes that both parties are of equal bargaining power.

⁸⁴ “..adequate and effective protection of intellectual property rights”

invention is new⁸⁵, non-obvious⁸⁶ and industrially applicable⁸⁷. The key economic advantage that accrues to IP in terms of value, is the ability to license for “royalties” multiple and continued use of the same piece of information. In relation to natural resources, it is there potential as ‘useful’ information, which is their economic value. The importance of biotechnology in the utilisation of genetic resources is that it has successfully changed the IPR status of genetic material. Previously, genetic material like seeds was not patentable⁸⁸ because it did not fulfil the above criteria. New biotechnologies have made patenting in genetic material a reality⁸⁹. Due to the high cost in biotechnology research, patents are almost considered a necessity by countries like the USA and Japan [Rosendal, 1995].

The conferral of exclusivity (or control over the use and access of the invention) appears to run counter with the provision that property protected by IPRs should be subject to the CBD⁹⁰. It could however, just mean that IPRs should not be used to prevent the conservation of biodiversity, but where these rights exist they should be respected [Hubbard, 1997]. The Parties will need to determine the meaning of the provisions relating to IPRs, that is what it means to recognise IPRs, but only insofar as those rights are consistent with the purposes of the CBD. In addition, whatever definitions are allocated to the meaning of IPRs, they will have to be consistent those given in TRIPS.

Under the CBD, compulsory licensing is arguably possible. For example, the CBD allows a patented product to be used without the consent of the owner if such use is consistent with the

⁸⁵ That it has not been published anywhere before

⁸⁶ The invention must display and inventive step

⁸⁷ The invention must be of practical utility. Source- World Intellectual Property Organisation, Introduction to intellectual property theory and practice, Kluwer Law International 1997

⁸⁸ Biological material was considered natural product rather than industrial product.

⁸⁹ Although TRIPS does not define ‘invention’, other than the new, innovative and industrial application criteria, it leaves countries to decide this for themselves. The key issue is ofcourse whether countries can exclude the patenting of biological materials, which exist in nature. By conventional norms of intellectual property rights legislation, they do not qualify to be protected as an invention. However, the effects of biotechnology have altered this. The European Patent Convention and US law have adopted a very expansive approach that really blurs the distinction between patents and discoveries. European law allows for the patenting of a substance found in nature, if it can be characterized by its structure, its process of obtaining it or by other criteria, so long as it was not previously available to the public

objectives of the CBD. The TRIPS agreement, however, strictly limits the use of compulsory licensing⁹¹. The sovereignty of developing countries over their resources, and over their right to exploit or use their resources, as well as to determine access and benefit sharing arrangements, is compromised.

IPRs can be problematic for the CBD because existing regimes facilitate the appropriation of resources and knowledge. The privatisation of this knowledge is in many ways repugnant to many indigenous communities as for many, knowledge is part of the public domain. Under IPR regimes, it becomes private property, and as such the traditional owners of the knowledge have to pay for the use of this new property right.

As an international convention, the CBD does not provide the route to be taken by the Contracting Parties. It provides a framework and the precise terms and conditions are left to the Parties to define and implement within their own jurisdiction. As has been stated throughout this paper biodiversity is a valuable commodity, and as a commodity it has tradable value. Therefore, the remit of the CBD was not confined to establishing management systems for the conservation and preservation of biodiversity within one State or between States. Its remit extended into free market issues, global trade concerns and the systems which protected these interests. The various provisions concerned with these issues are however, inconclusive as to which rights prevail in the event of a conflict⁹². Although, the CBD probably more closely represents the concerns of developing countries⁹³, TRIPs represents those of developed countries.

2.5. Indigenous People

⁹⁰ Article 16(4), (5)

⁹¹ TRIPS allows the use of a patent without the authorisation of the right holder by a government or third party only if the proposed user “has made efforts to obtain authorisation from the right holder on reasonable commercial terms and conditions and that such efforts have not been successful within a reasonable period of time” Article 31(b)

⁹² The only indication is in Article 22m which suggests that IPRs might be overridden “*where the exercise of those rights and obligations would cause a serious damage or threat to biological diversity*”.

⁹³ Particularly via sovereignty of natural resource.

The issues concerning access to genetic resources and IPRs gain particular importance when considered in connection with the role of indigenous people.

The above provisions were silent on their inter-relationship with Article 8(j), which required Parties to 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 "subject to its national legislation. The IUCN Commentary on the CBD indicates that local communities are by implication among the anticipated beneficiaries of equitable sharing [Glowka et al, 1994] . Chapter 15 of Agenda 21⁹⁴, entitled "Conservation of Biological Diversity," clearly states that governments should ensure that local communities share in the economic benefits derived from their traditional methods and knowledge. As such Columbia attached the following Declaration:

“Our country welcomes the full recognition within the convention of the knowledge, innovations and practices of indigenous communities, but considers that such communities must be fully guaranteed participation in the benefits arising from the use of such knowledge, innovations and practices and not only that such participation should be encouraged, as the text of [the] Convention rather weakly states. We therefore believe a future instrument under the Convention should endeavour to improve upon this point.” [Report of the Intergovernmental Negotiating Committee for a Convention on Biological Diversity, UNEP, 1992]

The CBD does not set down any guiding principles on how Article 8(j) was to operate in terms of the other CBD provisions. It fails to mandate mechanisms for protecting the interests of local communities, or for providing these communities with incentives for continuing to conserve biological resources [Maggio, 1998].

Yet, indigenous knowledge is considered to be an intersecting issue that affects many aspects of biodiversity, and it has a vital role to play in access to genetic resources. The World Bank has

⁹⁴ Drafted after Article 15, 16 & 19.

stated that indigenous knowledge⁹⁵ increases the efficiency of bio-prospecting by more than 400 percent [Prakash, 2000].

Debates still continue today on whether IPRs promote or hinder equitable economic redistribution. Some argue that IPRs are a threat to biodiversity by limiting access to resources and the products derived from them. Shiva defines patents as “... *enclosing the free spaces of intellectual creativity by transforming publicly generated knowledge into private property.*” [Prakash, 2000]. The basis of this argument is that IPRs regimes are based on western notions of creativity and innovativeness. For example the preamble of TRIPS states that IPRs are recognised only as private rights⁹⁶, therefore ignoring the collective commons notion of knowledge held by indigenous people. Secondly, for an innovation to be considered an IPR it has to be capable of industrial application⁹⁷. Thereby, ignoring the relationship indigenous people have with their native surroundings. For over the millennia, indigenous people have developed a close and unique relationship with the land and environment in which they inhabit. In particular it is not one based on ownership or property rights, but one of interdependence. The argument is that only products and processes emanating from creativity in its Northern definition can be protected by IPRs.

At COP III, the Indigenous Peoples Forum requested the CBD to establish an alternative system of IPRs⁹⁸ and demanded a system that would protect their knowledge⁹⁹.

⁹⁵ Indigenous knowledge has been defined as having the following distinctive characteristics collective rights and interests held by Indigenous peoples in their knowledge; close interdependence between knowledge, land and other aspects of culture in indigenous societies; oral transmission of knowledge in accordance with well understood cultural principles; and rules regarding secrecy and sacredness that govern the management of knowledge. Importantly, this knowledge is not to be considered independently from its products and expressions. Davis, M Science, Technology, Environment and Resources Group - Biological Diversity and Indigenous Knowledge, Parliament of Australia (1998) Research Paper 17 1997-1998

⁹⁶ *Recognising* that intellectual property rights are private rights

⁹⁷ Article 27(1) TRIPS

⁹⁸ It claimed that 80% of the world's population cured itself from medicines based on native knowledge and medicinal plants and that 50% of all medicines sold by pharmaceutical companies are based on “usurped” native knowledge. Marzulla R. J. & Reifshneider, L. M., *The Biodiversity Treaty Challenges Intellectual Property Rights*

⁹⁹ As a result, the CBD decided that case studies should be prepared on the impact of the existing IPR

The introduction of IPRs it is argued change common resources into an enclosed private property. As a consequence people lose access to the knowledge and resources vital to their survival and creativity and the conservation of culture and biodiversity [Shiva, 1997]. The alternative argument is that TRIPS offers different forms of protection that may be more applicable, in particular a *sui generis* system, or the alteration of patent laws to ensure that all patents disclose a country of origin (something, one can imagine the USA would be unhappy with)¹⁰⁰.

The issue has problematic application in terms of implementation. If a country like Brazil is to establish an affective AGR system, it has to deal with these issues appropriately.

As a result, the CBD Secretariat established a working group specifically to address the implementation of Article 8(j) and related provisions of the CBD, including access to genetic resources and IPRs.

3 How effective has the Convention been?

3.1. Overview

Under international law, a State has no obligations under the CBD until it has been ratified. In most cases¹⁰¹, a Contracting Party will fulfil its obligations under the CBD, by implementing domestic legislation that reflects its international commitments. Its effectiveness is therefore contingent upon adequate national implementation.

regimes on the CBD's objectives, including benefit-sharing with indigenous communities. Supra 142

¹⁰⁰ PTO Biotech Group said- the language of the CBD regarding transfer of technology has been seen as potentially permitting countries to restrict IPRs of companies that develop their products based on resources obtained from their country. Walden, I., Intellectual Property Rights and Biodiversity in Bowman, M., & Redgwell, C., International Law and the Conservation of Biological Diversity, Kluwer Law International, 1996 178

¹⁰¹ One exception is the USA, where its international commitments become domestic law upon ratification. And when Brazil passed Legislative Decree No. 2 in 1994, it ratified the Convention and adopted its articles as national law

The aims of the CBD were to achieve conservation of biodiversity¹⁰² by a fair redistribution of the benefits¹⁰³ derived from the utilisation of biodiversity, either by payment or the transfer of technology. In to the mix however, was the recognition of the indispensable contribution of indigenous people in the protection of biodiversity and that access to benefits should encompass a just and equitable distribution of rewards to these communities [Arcanjo, 2000] and that any legislation must coincide with any existing intellectual property protection. Therefore, legislation to establish an appropriate regime for access to genetic resources (“AGR”) requires consideration of three separate policy areas: environment; human rights and intellectual property. Failure to address all three could result in AGR legislation not achieving its aims. To achieve the goals of the CBD with regard to AGR, policy makers must:

- Factor the special character of genetic resources into access policy¹⁰⁴;
- Clearly define ownership and tenure of genetic resources¹⁰⁵, taking into consideration the conflicts between customary and legal property rights;
- Application of TRIPS¹⁰⁶; and
- Reconciliation of the conflicting interests of a large number of stakeholders¹⁰⁷.

When legislatures have to decide how to protect indigenous knowledge, either the criteria for IPRs would have to be changed¹⁰⁸, or alternative protection mechanisms would need to be

¹⁰² That is the regulation of access to genetic material for the use in scientific or commercial use be limited to one that is environmentally sustainable.

¹⁰³ That access be properly administered in contractual terms and that the benefits - technical or financial be equitably distributed throughout the community.

¹⁰⁴ The fact that genetic resources can be tangible (physical) or intangible (information).

¹⁰⁵ A difficult task because groups as varied as humankind, states, regions and local have all claimed rights over genetic resources.

¹⁰⁶ Particularly with regards Article 27.1 “any inventions, whether products or processes, in all fields of technology, provided that they are new, involve an inventive step and are capable of industrial application” and how this affects indigenous knowledge, which does not comply with any of these criteria.

¹⁰⁷ Environmental Policy Studies Workshop, 1999 School of International Public Affairs, Columbia University, Access to Genetic Resources: An Evaluation of the Development and Implementation of Recent Regulations and Access Agreements

¹⁰⁸ This echoes much of Vandana Shiva’s arguments, that IPRs are based on the needs and concerns of the industrialised, northern nations and their principles of property ownership.

introduced. TRIPS in fact introduced new opportunities to develop alternative property right regimes; the most significant was under Article 27.3(b), which allows Member States to establish effective *sui generis* regimes¹⁰⁹.

An article in 'Veja' estimated that countries containing a high level of biodiversity lose a value of around \$5.4 billion per year in royalties [Bernardes, 1997]. Therefore, there is an economic incentive for developing countries to enact relevant legislation. To date few countries have enacted policy and legislation to simultaneously regulate and facilitate AGR¹¹⁰. Some are in the process of draft legislation¹¹¹. In practice, however, many NGOs¹¹² have brought stakeholders together in agreements to trade in genetic resources and some private companies have entered into private agreements. The most well known are INBio-Merck agreement¹¹³ and Shaman Pharmaceuticals, who seek to share benefits with local stakeholders and incorporate traditional knowledge into prospecting schemes [Environmental Policy Studies Workshop, 1999].

3.2. Guidance from the Convention, WIPO and the WTO

It is perhaps not surprising that the issues that caused so much contentious negotiation have

¹⁰⁹ Sui generis is a method of protection other than the use of a patent, One of the most common examples is "plant breeders rights". Considered to be ethically, socially and environmentally appropriate to the needs and conditions of indigenous people. Mugabe, J. Intellectual Property Protection and Traditional Knowledge: An Exploration in International Policy Discourse

¹¹⁰ Exception are: **Costa Rica**- approved a Biodiversity Law (Law 7788, 1998) that includes procedural guidelines, basic requirements and an institutional framework for access to genetic resources; **Andean Countries**- have developed shared legislation within the framework of the Andean Community of Nations (CAN), which approved *Decision 391* regarding the *Common Framework on Access to Genetic Resources* in 1996, which has converted into the keystone for a series of national policies and norms related to the access of genetic resources and benefit sharing Legislative experience on Access to genetic resources and options for megadiverse countries Prepared by Jorge Caillaux and Manuel Ruiz of the Peruvian Society for Environmental Law for the Ministerial-level Meeting of Likeminded Megadiverse Countries Cancun, Mexico, February 16-18 2002

¹¹¹ **Mexico** - 1997 the National Commission for the Knowledge and Use of Biodiversity (CONABIO) and the Senate prepared a bill for a proposed law on genetic resource access; **India** - drafted the Biodiversity Act that includes general declarations on the institutional framework and several specific resolutions regarding the conservation and sustainable use of biodiversity, as well as aspects related to access to genetic resources and benefit-sharing - source supra Note 155

¹¹² International Cooperative Biodiversity Groups and Biodiversity Conservation Network

¹¹³ With Costa-Rico which was established pre-CBD.

resulted in specialist analysis at the Convention Secretariat. In particular a Working Group on Article 8(j), Working Group on Access and Benefit-Sharing and a Working Group on Bio-safety including a panel of experts on access and benefit-sharing.

3.2.1 - Access and Benefit- Sharing

On 19 April 2002, the sixth Conference of the Parties (“COP 6”) announced that it was to adopt detailed guidelines on access to genetic resources and benefit-sharing. The Guidelines¹¹⁴ were to improve the way foreign companies, collectors, researchers and other users gain access to valuable genetic resources in return for sharing the benefits with the countries of origin and with local and indigenous communities. They advised governments on how to set fair and practicable conditions for users seeking genetic resources. In return these users must offer benefits such as profits, royalties, scientific collaboration, or training. The guidelines (which have a voluntary status¹¹⁵) recognise that Parties may be both users and providers and provides a balanced list¹¹⁶ of roles and responsibilities under Article 15, the participation of stakeholders and steps in the access and benefit-sharing process, including prior informed consent and mutually agreed terms.

Their aim¹¹⁷ was twofold:

- The fair and equitable sharing of the benefits arising from the use of genetic resources. The benefit sharing to be designated to contribute to conservation of biodiversity and to foster the sustainable use of genetic resources; and
- To promote appropriate access to genetic resources, such access to create only minimum adverse environmental impacts.

The Guidelines also provided some clarification of the requirements for mutually agreed terms¹¹⁸

¹¹⁴ The CBD press release states that the Guidelines were developed in response to growing concerns in many developing countries that the commercial and scientific gains realized from their genetic resources were being reaped only by bio-prospectors based in foreign countries.

¹¹⁵ Article 4 of Bonn Guidelines

¹¹⁶ Ibid Article 14

¹¹⁷ Ibid Article 9

and prior informed consent. With regards prior informed consent, Article 24 laid down some basic principles, including: legal certainty and clarity; restrictions on access to genetic resources should be transparent and should be based on legal grounds in order to conserve biodiversity and should include the consent of the relevant competent national authority¹¹⁹ in the provider country¹²⁰.

However, the work on the Guidelines is not complete; Article 6 on “Use of terms” is merely a vague statement on future terms that could be included in a definitional manner. Some of these terms include access to genetic resources; benefit-sharing; commercialisation; derivatives; provider; user; stakeholder. As these are major terms reiterated throughout the Guidelines, perhaps definitional terms should be available now. Instead a group of ten experts require to be appointed to develop draft elements [UNEP, 2002].

3.2.2. - Intellectual Property Rights

3.2.2.1 - Guidance from WIPO

The Panel of Experts on Access and Benefit-sharing reported to COP 5 that they were unable to come to any conclusion about the role of IPR in the implementation of access and benefit-sharing arrangements. The problem was passed onto the Ad Hoc Open-ended Working Group on Access and Benefit-sharing who consulted with the Secretariat of WIPO. The Working Group’s recommendation was collaboration with WIPO, WTO and the Food and Agriculture Organisation (“FAO”)¹²¹.

¹¹⁸ Bonn Guidelines Article 14(b) E.G.: (ii) Respect customs, traditions, values and customary practices of indigenous and local communities; (iii) Only use genetic resources for purposes consistent with the terms and conditions under which they were acquired; (v) Maintain all relevant data regarding the genetic resources. In addition Section D, Articles 39-42 detail provisions for mutually agreed terms.

¹¹⁹ Defined in Article 12

¹²⁰ Article 25 lays down the elements of prior informed consent and Article 34 sets down appropriate procedures.

¹²¹ Paragraph 15(e) Decision V/26, requested “relevant international organisations, for example, the World Intellectual Property Organisation and the International Union for the Protection of New Varieties of Plants, in their work on intellectual property rights issues, to take due account of relevant provisions of the Convention on Biological Diversity, including the impact of intellectual property rights on the conservation

In reply WIPO established the Intergovernmental Committee¹²² on Intellectual Property and Genetic Resources, Traditional Knowledge and Folklore¹²³. Its mandate is to provide a forum for the role of IPRs in the following:

- Access and benefit-sharing of genetic resources arising in four main contexts -
 - Contractual agreements for access to genetic resources;
 - Legislative , administrative and policy measures to regulate access;
 - Multilateral systems for facilitated access; and
 - The protection of biotechnological inventions;
- Protection of Traditional Knowledge, including enforcement of rights, an assessment of the availability and scope for traditional knowledge within IP procedures, the effective integration of traditional knowledge into searchable prior art¹²⁴.

It has also established a register of traditional practices to assist with the documentation of “prior art”. WIPO has also requested¹²⁵ the WIPO Secretariat to compile two inventories, which may form a useful resource for patent examiners in relation to indigenous knowledge. The first is an inventory of existing traditional knowledge-related periodicals which document and disclose traditional knowledge data and the second is an inventory of existing online traditional knowledge related databases¹²⁶.

3.2.2.2 - Guidance from WTO

and sustainable use of biological diversity, and in particular the value of knowledge, innovations and practices of indigenous and local communities embodying traditional lifestyles relevant for the conservation and sustainable use of biological diversity”. As cited in UNEP/CBD/COP/6/19 2002

¹²² The Convention Secretariat has observer status at these meetings.

¹²³ At the 26th Session of WIPO in Sept. 2000.

¹²⁴ International Bureau of WIPO, WIPO International Forum on “intellectual property and traditional knowledge: our identity, our future” Jan 21-22, 2002

¹²⁵ <http://www.biodiv.org/programmes/socio-eco/traditional/references.asp>

¹²⁶ <http://www.biodiv.org/programmes/socio-eco/traditional/references.asp>

Decision V/26¹²⁷ invited the WTO to acknowledge relevant provisions of the CBD and to take into account the fact that the provisions of TRIPS and the CBD are interrelated and to explore this interrelationship.

Under the Doha Ministerial Declaration¹²⁸ (“Doha”), the Council for TRIPS, in pursuing its work programme, acknowledged consideration of the relationship between the TRIPS Agreement and the CBD¹²⁹. In its Ministerial Briefing Notes¹³⁰, the WTO acknowledged that further work is required in this area, including clarifying the relationship between the TRIPS Agreement and the Convention on Biological Diversity. While many governments believe the two agreements to be mutually supportive, some also seek assurances that the agreements are implemented in a complementary manner. Others call on the need to develop an international framework to protect genetic resources and traditional knowledge.

The debates at Doha are almost a carbon copy of those at the CBD. A division between developed and developing countries, the role of IPRs, the role of indigenous knowledge and the relationship between trade and biodiversity.

For example, the Third World Network says that developing countries want the elimination of the artificial distinctions made between plants and animals and micro-organisms and between essentially biological processes and micro-biological processes. They want the review process of Article 27.3 to clarify that plants and animals, as well as micro-organisms and all other living organisms and parts cannot be patented [Oh, 2001]. The delay in the review of Article 27.3 means a delay in considering the relationship between the TRIPS Agreement and the UN

¹²⁷ From the CBD Secretariat

¹²⁸ Issued at the 4th Session of the WTO Ministerial Conference November 2001

¹²⁹ Despite repeated requests from the CBD Secretariat for observer status at the TRIPS Council, as to date this has not been granted. The Doha Declaration states “...the situation concerning the granting of observer status in the WTO to other international governmental organizations is currently blocked for political reasons. In the Trade and Environment Committee itself, seven requests are pending, including one by a multilateral environmental agreement [the CBD]. The negotiations will aim at developing criteria for observership in WTO.

¹³⁰ DOHA WTO MINISTERIAL 2001: BRIEFING NOTES The Trade and Environment Committee, and Doha

Convention on Biodiversity¹³¹ and the protection of traditional knowledge¹³² as they fall under this Article. As such this review could have a major impact on the shape of future regimes regulating AGR.

The World Bank identified geographical indications¹³³ as a potential TRIPS method for protecting indigenous knowledge under IPRs. However, paragraph 19 of Doha implies that this may not be feasible. A number of countries want to negotiate extending the present system. Others oppose the move, and the debate in the TRIPS Council has included the question of whether the relevant provisions of the TRIPS Agreement provide a mandate for extending coverage beyond wines and spirits.

Co-operation between all three organisations is vital, for the interests of all three interlink. However, the main concern for WIPO and the WTO is not the conservation of biodiversity, and therefore, in their deliberations in areas which cross with biodiversity, this will not be their first concern. For this reason, it is vital that the CBD set down clear guidelines, on access and benefit-sharing and the role of indigenous people.

4 Recommendations and Conclusion

If anything is clear from the negotiations and implementation of the CBD it is that the conservation of biodiversity can not be resolved from a purely environmental perspective. An ethical desire to conserve is insufficient incentive. Economic and property rights and the systems to protect these are vital components to the conservation of biodiversity. They are vital because of the development priorities of both developing and developed states. It was this recognition that resulted in the CBD being the first environmental treaty that introduced the issue of IPRs and as result it was plagued by conflict and derision. The recent WTO meeting at

preparations

¹³¹ Paragraph 19, Doha Ministerial Declaration

¹³² Indigenous knowledge is poorly represented in the TRIPS Agreement

¹³³ Place names (in some countries also words associated with a place) used to identify products with particular characteristics because they come from specific places.

Doha and the review of Article 27.3 of TRIPs illustrate that 10 years later conflict and derision exist over the exact same issues.

An additional problem for the CBD is that because it was so comprehensive its COP agendas are extensive covering issues from knowledge and innovations of indigenous communities to bio-safety to the conservation and sustainable use of specific ecosystems. The divisions between developing and developed countries at the negotiation of the CBD still continue and have stifled its work.¹³⁴

Ten years later there is still little development in the fair and equitable sharing of the benefits [Environmental Policy Studies Workshop, 1999] from access to genetic resources, technology transfer is not an established practice and there are still no guidelines on the relationship of the CBD and IPRs and on the role played by indigenous communities.

With only a few countries developing AGR regulations, the result is TNCs entering into contracts with some of the world's most local and traditional people¹³⁵. The challenge for regulators is how to ensure that these agreements are mutually satisfactory and non-prohibitory. The successful implementation of the CBD obligations relating to AGRs is therefore dependent on the policies and laws of Nation States. Below are some suggestions for basic AGR criteria:

4.1 Clearly Defined Legal Status of Genetic Resources

It is important to establish who holds titles to rights and what these include. For this reason three distinct sets of property rights require to be established, the first is the 'real property' right associated with ownership of the land and anything growing on including genetic resources. The second is a 'genetic property' right associated with the isolated genes from the resources. The third is IPRs associated with the discoveries, but also indigenous knowledge. These can only be

¹³⁴ Even to making simple decisions, it took a couple of years for the parties to decide in which city the Secretariat should be based.

¹³⁵ Ibid

clarified at the national level¹³⁶, because at the international level, no one established system of property law prevails. This is in fact one of the problems with TRIPS; it does not represent the principle that people and land can be interdependent with no concept of ownership¹³⁷. Because indigenous knowledge is not protected under the present intellectual property laws, it is important that national governments determine how this important aspect of AGR is protected and thereby assisting in equitable benefit-sharing.

One of the potential choices include *sui generis*¹³⁸ IPRs, which offers the possibility to move beyond traditional forms of IPR and examine other mechanisms for regulating access to resources and equitable benefit-sharing. Another is a 'compensation-style' right which operates through international recognition that the source country would have a right to a royalty-style payment from the organisation that utilised their resource into a marketable product.

Part of this process includes identifying who shall be the stakeholders. They can include individual (someone who owns the land); communities; organisations or institutions (research, university) and nation states. All have an interest in the access to genetic resources or to the benefits derived from their use in research, and therefore an analysis of their respective interests is required.

Once the stakeholders and property rights have been identified, this then allows nations to determine the appropriate benefit-sharing schemes. For developing countries, a clearer identification of stakeholders allows for a better understanding to whether technology transfer or training in bio-prospecting are the most appropriate benefit-sharing schemes.

¹³⁶ Even at National level, there will be different kinds of property rights from State, communal to private property.

¹³⁷ Parties to TRIPS are limited in their flexibility to develop an IPR system because of the minimum standard, which requires State parties to recognise patents on most products and processes. The context for still considerable debate under the review of Article 27.3.

¹³⁸ Whilst semiconductor chips can be protected, indigenous people have insufficient power to protect their most sacred plants and places.

4.2 Developing Country Collaboration

Stricter controls in one country may result in TNCs bio-prospecting in countries with less stringent controls¹³⁹. They should continue to demand a review of Article 27.3 of TRIPS and ensure that the exclusion clause is not lost. This allows them to then develop their own IPR regimes, which are flexible to their needs, in particular with relations to indigenous knowledge.

It should however, be the role of the CBD to provide these guidelines, but it has taken ten years to introduce guidelines on AGRs, guidelines, which were drafted by the Swiss. Perhaps it is time for the CBD to concentrate on the issues, which are unique to it, particularly access and benefit-sharing. It needs to lead in this area, and it needs to provide other institutions (WIPO/WTO) with guidelines on how IPRs and indigenous knowledge affect the successful application of AGR. The CBD should be active in trying to expand the criteria for obtaining IPRs. It has been suggested that apart from a novelty criteria, the following information should also be necessary:

- Recognition of the source of the material;
- Proof of PIC from the country or community of origin; and
- Details of the benefit-sharing arrangements [Kothari et al, 1999].

It is clear, however, that the CBD has not fulfilled its objectives and that the hurdles encountered at the negotiation stage are still prevalent today.

¹³⁹ Some companies collect less in Brazil, because it is perceived to have stricter controls. Drahos, P., *Indigenous Knowledge, Intellectual Property and Biopiracy: Is a Global Collecting Society the Answer*,

References

- Anan, K., UN Secretary General “Towards a Sustainable Future“ (The American Museum of Natural History’s Annual Lecture) New York, delivered on his behalf by Mrs. Nane Annan 14 May 2002
- Arcanjo, F. E. M., Intellectual Property Rights and Biodiversity in Brazil: Conservation, Sustainable Use and Protection of Indigenous Rights, George Washington University, Nov 2000
- Baldwin, K., Brazil Starts Mapping Medicinal Plant Potential, Environmental News Network, 25/2/2002
- Bell D. E., The 1992 Convention on Biological Diversity: The Continuing Significance of U. S. Objections at the Earth Summit, [1993]Geo. Wash. J. Int’l L & Econ., 479, 506
- Bernardes, E. "Piratas da selva," *Veja* (30,2), January 15, 1997, p. 46
- Bowman, M. & Redgwell, C., International Law and the Conservation of Biological

European Intellectual Property Review, 2000 245, 246#

Diversity, Kluwer Law International 1996

- Boyle, A. E., The Rio Convention on Biological Diversity, in Bowman, M. & Redgwell, C. International Law and the Conservation of Biological Diversity, Kluwer Law International 1996, 36
- Brazil, First National Report for the Convention on Biological Diversity
- George Bush, 28 Weekly Comp. Press Doc 1035, 1036 (June 11, 1992) as cited in Streltzer, A.L. U.S. Biotechnology, Intellectual Property Rights as an obstacle to the UNCED Convention on Biological Diversity: It Just Doesn't Matter, Transnational Lawyer, Spring 1993
- George Bush, The President's News Conference in Rio de Janeiro, Brazil, 28 Weekly Comp. Press Doc. 1043, 1049 (June 13, 1992) as cited in Streltzer, A.L. U.S. Biotechnology, Intellectual Property Rights as an obstacle to the UNCED Convention on Biological Diversity: It Just Doesn't Matter, Transnational Lawyer, Spring 1993
- George Bush, N.Y. Times, Aug. 21 1992
- Caillaux, J., & Ruiz, M., of the Peruvian Society for Environmental Law for the Ministerial-level Meeting of Likeminded Megadiverse Countries Cancun, Mexico, February 16-18 2002
- Chem. Reg. Rep. (BNA) No. 11, 571 'Industry Trade Groups Laud President Bush for Decision Not to Sign Biodiversity Treaty', 1992, 16
- Chivian, E., Species loss and ecosystem disruption - the implications for human health in Environment and Health, 2001, 66
- COICA Regional Meeting on Intellectual Property Rights and Biodiversity in Santa Cruz, Bolivia 1994 cited in Posey, D. National Laws and International Agreements affecting Indigenous and Local Knowledge: Conflict or Conciliation? 1997
- Commonwealth v State of Tasmania (1983) 57 Austl. L.J.R. 450
- Davis, M., Biological Diversity and Indigenous Knowledge, Research Paper 17 1997-98, Parliament of Australia
- Declaration made at the UNEP Conference for the Adoption of the Agreed Text of the Convention on Biological Diversity 22 May 1992 (1992) 31 ILM 848

- Drahos, P. Indigenous Knowledge, Intellectual Property and Biopiracy: Is a Global Collecting Society the Answer, *European Intellectual Property Review*, 2000, 245.
- DOHA WTO MINISTERIAL 2001: BRIEFING NOTES The Trade and Environment Committee, and Doha preparations
- E & D File 1992 Briefings for NGOs on UNCED No.26 May 1992
- Erdos, J. E., Current Legislative Efforts in Brazil to Regulate Access to Genetic Resources, 1999
- Environmental Policy Studies Workshop, 1999 School of International Public Affairs, Columbia University, Access to Genetic Resources: An Evaluation of the Development and Implementation of Recent Regulations and Access Agreements
- Glowka, L. et al., A Guide to the Convention on Biological Diversity (IUCN Environmental Law Centre, Environmental Policy and Law Paper No. 30, IUCN, Gland, Switzerland 1994).
- Goldman, K. A., Compensation for use of biological resources under the Convention on Biological Diversity: compatibility of conservation measures and competitiveness of the biotechnology industry. *Law and Policy in International Business*, 1994 Vol 25, No2, 659
- Gollin M., The Convention on Biological Diversity and Intellectual Property Rights, in Walter V. Reid et al., *Biodiversity Prospecting* 289 (1993).
- H.R. REP. No. 259, 102d Cong., pt. 1, 13 -14 (1991)
- Hubbard, A. The Convention on Biological Diversity's Fifth Anniversary: A General Overview of the Convention - Where has it been and where is it going? *Tulane ELJ* 1997 415, 419
- International Bureau of WIPO, WIPO International Forum on "intellectual property and traditional knowledge: our identity, our future" Jan 21-22, 2002
- International Chamber of Commerce, ICC Comments on the United Convention on the Protection of Biodiversity, Doc. 210/INT.105 Bis, at 2 (Oct. 8, 1992) as cited in Goldman, K. A., Compensation for use of biological resources under the Convention on Biological Diversity: compatibility of conservation measures and competitiveness of the biotechnology industry. *Law and Policy in International Business*, 1994 Vol 25, No2, 659

- IUCN/WWF/UNEP, Caring for the Earth (1991) 28
- Khalip, A. Brazil's Indians take path toward medicinal patents. Environmental News Network 12/12/2001
- Kirschner, E. & Begley, R., Beyond the Earth Summit, Chemical Week, [1992] Vol 150, Is 24, 18
- Kothari, A., & Anuradha, R.V., Biodiversity and Intellectual Property Rights: Can the two co-exist? 2(2) Journal of Int'l Wildlife L & Pol'y (1999)
- Madeira: R\$ 10 mi em multas," *Jornal da Tarde*, August 20, 1999, p. 18A.
- Maggio, G. F., Recognizing the vital role of local communities in international legal instruments for conserving biodiversity, UCLA Journal of Environmental Law & Policy 1998 Vol 16, No 1, 179
- Marzulla R. J. & Reifshneider, L. M., The Biodiversity Treaty Challenges Intellectual Property Rights 2001 The Federalist Society
- McManis, C., The Interface between International Intellectual Property and Environmental Protection: Biodiversity and Biotechnology, 76 Wash U L Q 255
- Dr. M Mohamad, Prime Minister of Malaysia, Far Eastern Economic Review, 1 Aug 1991, 20
- Mugabe, J. Intellectual Property Protection and Traditional Knowledge: An Exploration in International Policy Discourse Paper prepared for WIPO December 1998
- National Science Bd., Loss of Biological Diversity: A Global Crisis Requiring International Solutions (1989) 10
- Jayakumar Nayar, R. & Mohan Ong, D. Developing Countries, 'Development' and the Conservation of Biological Diversity in Bowman, M. & Redgwell, C., International Law and the Conservation of Biological Diversity, Kluwer Law International 1996 235, 241
- Oh, C., A Comment on the Treatment of The TRIPS Agreement in the Second Drafts of the WTO's Doha Ministerial Declaration, Third World Network 2001
- Osava, M., Crackdown on Eco-Pirates, World News August 14 1997
- Posey D., National Laws and International Agreements affecting indigenous and Local Knowledge: Conflict or Conciliation? 1997 Avenir Des Peuples Des Forets Tropicales

- Porter, G., the United States and the Biodiversity Convention: The Case for Participation 5 (1992) (Environmental and Energy Study Institute Papers on Environment and Development No. 1).
- Prakash, S., Indigenous Knowledge and Intellectual Property Rights in IK Notes, World Bank, No. 19, April 2000
- Ragahavan, C., Brazil Wants 'micro-organism' defined South-North Development Monitor (SUNS) 2000
- Rosendal, G. K., The Convention on Biological Diversity: A Viable Instrument for Conservation and Sustainable Use (1995), Green Globe Yearbook of International Cooperation on Environment and Development 69,
- Rugumayo, E., Biodiversity, Biotechnology and UNCED 1992, Network '92, Mar. 1991, 3
- Sands, Phillippe, Principles of International Environmental Law: Frameworks, standards and implementation Manchester University Press 2000
- Shiva, V. Biopiracy: The Plunder of Nature and Knowledge, South End Press 1997
- Streltzer, A.L. U.S. Biotechnology, Intellectual Property Rights as an obstacle to the UNCED Convention on Biological Diversity: It Just Doesn't Matter, Transnational Lawyer, Spring 1993
- Stevenson, Mark "China, Brazil, India and 9 other nations form alliance against biopiracy", Associated Press 19/2/2002
- Ten Questions on TRIPS, Technology Transfer and Biodiversity, Third World Network
- UNEP/CBD/COP/6/19/Add.1 2002
- UNEP Declaration at UNEP Conference for the Adoption of the Agreed Text of the Convention on Biological Diversity 22 May 1992 (1992) 31 ILM 848
- Report of the Intergovernmental Negotiating Committee for a Convention on Biological Diversity on the Work of its Seventh Negotiating Session, U.N. Doc. UNEP/bio.Div/N7-INC.5/4 (1992) at 35
- Walden, I., Intellectual Property Rights and Biodiversity in Bowman, M., & Redgwell, C., International Law and the Conservation of Biological Diversity, Kluwer Law International,

1996, 179

- Wirth, T, Under Secretary for Global Affairs, Statement before the Senate Foreign Relations Committee (18/4/1994)
- Wold, C. The Futility, Utility, and Future of the Biodiversity Conservation Colorado Journal of International Environmental Law, 1989, 1
- World Intellectual Property Organisation, Introduction to intellectual property theory and practice, Kluwer Law International 1997