

**SUSTAINABLE DEVELOPMENT(PATENT PENDING):
INTERNATIONAL ISSUES IN INTELLECTUAL PROPERTY RIGHTS
AND THEIR ENVIRONMENTAL IMPACT**

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Summer 1992

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One of the most contentious issues at the UN Conference on Environment and Development was the Convention on the Protection of Biological Diversity. The goal of the Convention is to foster protection of biological resources, particularly those found in tropical forests. Plants, animals, and derivatives of plants and animals are to be preserved, with particular attention to the sustainable development¹ of the uses of bioresources and adequate compensation to those countries that house most of the resources as well as to those who may assist in the development of new biotechnologies. In addition, the Convention provides for the "fair and equitable" sharing of the fruits of such innovations (and therein lay the rub).

While few were ecstatic about the convention, which had undergone several drafts (the final text bearing marginal resemblance to some of the earlier bracketed versions), all of the attending countries, but one (the US), signed the treaty. "[T]hat proposed agreement threatens to retard biotechnology and undermine the protection of ideas,"² said President Bush in a speech before other world leaders at the "Earth Summit." Put another way, the Bush administration viewed the treaty as an affront to US trade, US industry, and US jobs because the convention could impact on one of the remaining bastions of US enterprise, biotechnology -- an area where the US has maintained a competitive edge largely through enforcement of intellectual property rights. After all, it was in the US that the first oil-eating microorganisms were patented, as well as the first biotechnically engineered mouse. So when the Convention on Biological Diversity was read to impact on the exclusive right of economic control accorded to US corporations through IP rights, the US was not about to yield, regardless of the accuracy of US concerns.

This paper examines the collision of intellectual property rights and the environment through the kaleidoscope of international issues in which IP has recently been raised (to new heights). The goal of this paper is not to provide the right answers (a later series of papers may do that), but rather to review the IP issues that have been brought on to the international stage, and note where they may impact on environmental issues. Part I introduces IP protection as it has been throughout its past. Part II examines the primary international issues that have been raised with regard to IP rights, focusing on three areas: IP and trade; IP and development; and IP and the environment. Finally, Part III reviews those issues with an eye toward how they may impact on the environment and environmental protection. The final part is distinguishable from the environment section of part II in that it posits where IP issues may arise, while Part II focuses on where they have already been raised.

¹Among the numerous definitions offered of the term "sustainable development" (many of which are listed in D. PEARCE, A. MARKANDAYA, E.B. BARBIER, BLUEPRINT FOR A GREEN ECONOMY, at 174-85), the Brundtland report's formulation is perhaps the most cited: it describes sustainable development as "[ensuring that [humanity] meets the needs of the present without compromising the ability of future generations to meet their own needs." World Commission on Environment and Development, OUR COMMON FUTURE, at 8-9 (Oxford: 1987).

²Excerpts From Speech by Bush on 'Action Plan', N.Y. Times, June 13, 1992, at 5, col. 6.

I. INTELLECTUAL PROPERTY RIGHTS DEFINED

A. Overview

Intellectual property (IP) rights are a right of control over the commercial exploitation of a creative work. Rather than a right *to* exploit, IP rights are generally thought of as a right against exploitation by others, or a right of protection. Essentially this means granting a monopoly to the rightholder for a limited period of time. The "protection" of IP rights is not a new idea. It has been a part of Western culture ever since the ancient Greeks granted one-year monopolies to cooks to exploit new recipes.³ IP has come to be divided into two groups: industrial property (patents, trade marks, etc.), and copyrights.⁴ The first patent law was codified in 1474 in Venice, and by the end of the 18th century most European countries had some provision granting inventors these special rights.⁵ By the end of the 19th century, IP rights were protected by international agreement.⁶

There are basically four areas of IP right protection.

- Patents - a limited right of monopoly on the exploitation of an invention
- Copyrights - a limited right of monopoly on an artistic work
- Trademarks - a monopoly on the use of an identifying commercial mark for as long as the mark is used and maintains its identification with the holder.
- Trade Secrets - a monopoly on the use of information that gives the holder a competitive advantage.

B. Rationales: Natural Right and Innovation Incentive

Two theories dominate the reasoning behind granting a monopoly to the creator of an innovative work. Some countries espouse a belief in the "natural right" of the creator of a work to benefit from that creation.⁷ France was among the first to proffer this moral justification.⁸ Others, like the United States, favor an incentive-based rationale; that economic reward encourages innovation.⁹

³Chakravarthi Raghavan, RECOLONIZATION: GATT, THE URUGUAY ROUND AND THE THIRD WORLD, 115 (1990).

⁴INTERNATIONAL TREATIES ON INTELLECTUAL PROPERTY (Marshall A. Leaffer ed. BNA 1990), at 3.

⁵See Raghavan, at 115.

⁶The Paris Convention for the Protection of Industrial Property was adopted in 1883. The Berne Convention was adopted in 1886.

⁷INTERNATIONAL TREATIES ON INTELLECTUAL PROPERTY, at 4.

⁸Raghavan, at 115.

⁹INTERNATIONAL TREATIES ON INTELLECTUAL PROPERTY, at 4.

The natural right theory of protection is premised on a moral belief that the creator of a work should be the sole beneficiary of the commercial exploitation of that work. It is essentially a matter of fairness. For example, with regard to copyrights, it would seem unfair to reap economic gain from a work copied verbatim from another author, who struggled to create the original work. Fairness dictates that one who copies that work should not receive the commercial benefits before the creator of the work.

The incentive theory is more prospective. Rather than focusing on the present creator, the belief that protecting IP rights encourages innovation focuses on subsequent potential innovators. Patents offers the best example of the incentive rationale. The limited monopoly of patent protection has as its price the disclosure of the plans for the patented good. The availability of the information makes innovation easier. Thus, encouraging disclosure should provide an incentive to innovation.

C. Types of IP Rights (explained)

Within the four basic types of IP rights noted above there are many divisions and, indeed, the scope, duration, and enforcement of IP right protections can differ drastically among various national laws. But, while large differences remain between countries such as the United States and India, recent international activities regarding IP protection have prompted law reforms in several countries once noted for lax IP regimes.¹⁰ This section discusses IP rights under US law, and notes where other countries may have significant differences.

1. Patents

A patent is a limited-time monopoly granted to an inventor or discoverer of a new, useful, and non-obvious product or process. In the US patents are distinguished among utility patents, design patents, and plant patents. These types of patents have their own subcategories, but, generally can be broken down as follows: utility patents are granted for inventions or discoveries of new processes, machines, manufactures, or compositions of matter;¹¹ design patents are granted for the invention of new, original and ornamental designs;¹² plant patents are granted for the invention or discovery and asexual reproduction of new plant varieties.¹³

Most countries recognize the right of an inventor or discoverer of a new invention or manufacture to a limited-term monopoly for the exploitation of that invention or discovery. Most national laws also recognize patent rights for new processes. Laws diverge, however, on the treatment of compositions of matter, which in the US have been interpreted to include chemicals,

¹⁰See e.g. Mexico and Brazil; see also discussion at section II, *infra*.

¹¹35 U.S.C. §101 *et seq.* (1984).

¹²35 U.S.C. §171 *et seq.* (1984). Note design patents are for only 14 years in duration, as opposed to utility patents, which are for 17 years.

¹³35 U.S.C. §161 *et seq.* (1984).

pharmaceuticals, and metallic alloys, as well as human-engineered living organisms.¹⁴ Such inventions, especially that which would be categorized as "biotechnology", is often only accorded limited protection in industrialized countries and scant, if any, protection in non-industrialized countries. Even among the industrialized countries, the amount of protection can differ drastically. For instance, Japan is far more restrictive in granting patents on biotechnology than the US or Europe.¹⁵

Countries may differ on several procedural aspects of patent protection. For instance, most of the world awards the patent to the first inventor to file the patent application. Only the US and the Philippines have a "first to invent" system. This distinction will likely fall by the wayside in the near future, at least with regard to the US, where legislation has been introduced that would change the US to a "first-to-file" system.¹⁶ Another distinction, likely to be negated by changes in US law, regards the duration of the embargo on publication of the patent. Most countries publish patent applications 18 months after filing. The US currently publishes selected portion of the patent only after the patent has been issued. It has been argued that the 18-month rule gives competitors a head start on modifications to the patented product, providing them with essential information even before the patent has issued.¹⁷ However, this argument has been largely dismissed, and it is likely that the US will soon adopt a 24-month embargo period.¹⁸

Other differences are more substantive, such as what may be accorded patent protection (e.g. biotechnology) or what exemptions there may be to that protection (e.g. compulsory licensing). Opposition to "protecting" inventions such as pharmaceuticals, or bioengineered plants and microorganisms is based on two arguments. One argument is that patenting such matter is contrary to historical IP protection and also contrary to treatment of biomatter as part of "man's common

¹⁴See *Diamond v. Chakrabarty*, 447 U.S. 203 (1980). A divided court held that human-engineered microorganisms are entitled to patent protection.

¹⁵See *Intellectual Property rights and US-Japan Competition in Biotechnology: Report of a Workshop* (National Research Council 1991).

¹⁶Patent Harmonization Act S-2605, HR-4978 *n.b.* it could be argued that the US is already a first-to-file country because first-to-invent "interference" actions are only raised when an inventor asserts prior invention. Conversation with Keith Kupferschmid, U.S. Patent Office, Office of legislation and international affairs, June 9, 1992.

¹⁷*Id.*

¹⁸Conversation with Keith Kupferschmid, USPO, Office of legislative and international affairs. The draft patent reform bills (S-2605 and HR-4978) both proposed 18-month embargo periods, but Mr. Kupferschmid, who has advised the drafters on several provisions of the bill, expects a 24-month period to ultimately be adopted.

heritage."¹⁹ The other argument is that the cost imposed on the consumer is greater than the real cost, and that in areas such as pharmaceuticals, the added cost is unfair.²⁰ In fact, developing countries' opposition to paying higher prices for protected pharmaceuticals has given rise to multi-million dollar pirating industries in countries such as India, Korea, Mexico, and Brazil.²¹ Internationally, some biotechnology is protected under the International Convention for the Protection of New Plant Varieties.²² However, it is far more restrictive than US patent law (i.e. patents are less freely issued).²³ An interesting twist on the biotechnology issue is the argument put forward on behalf of indigenous peoples in favor of protecting the indigenous knowledge that is often the key to the use of the product.²⁴

Exemptions to IP protection is another area where differences in national priorities dictate distinctions among national laws. Exemptions can be in the form of an outright ban on patentability, or by the grant of compulsory licenses, which limit the rightholders' full monopoly rights. The rationale behind either action is often the same: to further a certain public policy objective. Kenya's patent law, for instance, exempts from patent protection "inventions contrary to public order, morality, public health and safety, principles of humanity, and environmental conservation."²⁵ While well-motivated, such restrictions might force an inventor to secure protection through trade secret law, rather than refrain from inventing. Somewhat less restrictive, compulsory licenses require the rightholder to yield a license at terms dictated by the government. Compulsory license are awarded to make products available in a country when a rightholder fails to make the product available or when access to the products is deemed a "national priority", such as when the product affects

¹⁹See generally Raghavan, at 115-125; see also Emmert, *Intellectual Property in the Uruguay Round -- Negotiating Strategies of the Western Industrialized Countries*, 11 MICH.J.INT'L.L. 1317, 1318-19 (1990).

²⁰*Id.*

²¹INTELLECTUAL PROPERTY RIGHTS: GLOBAL CONSENSUS, GLOBAL CONFLICT? (R. Michael Gadbow and Timothy J. Richards eds. 1988), at 12. This has become a major point of contention in the international discussions about revising intellectual property regimes. Notably, the U.S. pharmaceutical industry has been especially vocal in calling for GATT-based reforms (and a major critic of GATT proposals to date).

²²See Emmert, *Intellectual Property in the Uruguay Round -- Negotiating Strategies of the Western Industrialized Countries*, 11 MICH.J.INT'L.L. 1317, 1331-32 (1990), citing Dec. 2, 1961, 815 U.N.T.S. 89, as revised Oct. 23, 1978, T.I.A.S. No. 10199.

²³*Id.*

²⁴See Darrell Posey, *Intellectual Property rights and Just Compensation for Indigenous Knowledge*, ANTHROPOLOGY TODAY v.6 no.4, at 13 (August 1990). Note that patent protection in this sense would probably be best addressed through process patents rather than patents for compositions of matter.

²⁵Kenya Industrial Property Act of 1989, Part III § 11(b), reprinted in WIPO Intellectual Property Laws and Treaties.

healthcare, development, or, perhaps, the environment. India's patent law generously allows compulsory licenses (and excludes, or grants merely limited patent protection to pharmaceuticals and biotechnology).²⁶

2. Copyrights

A copyright is a limited term protection of original works of authorship fixed in any tangible medium of expression.²⁷ The term of protection is generally the lifetime of the author plus 50 years. Works where the author is not identified are protected for the shorter of 75 years from publication or 100 years from the original date of authorship. Generally thought of in terms of artistic or literary works, copyright protection has also been accorded to computer programs and semiconductor chips.²⁸

3. Trademarks

Trademarks are an exclusive right to use a distinguishing mark that identifies a marketed good or service as that being the product of a particular producer. The term of trademark protection is limited only by the holder's failure to use the mark. Governed in the US by the Lanham Act²⁹, a trademark must be registered with the Patent and Trademark office and must be used in commerce. The threat of trademark infringement with relation to technology transfer would seem slight.

4. Trade Secrets

The Uniform Trade Secrets Act, which has been adopted in several states, as well as the District of Columbia, provides for injunctive and monetary relief for the misappropriation by improper means of information that derives independent value from its non being generally known and is the subject of reasonable efforts to maintain its secrecy. The term of trade secret protection is as long as it remains a secret. Also though of as "know how", trade secrets probably would not pose a technology transfer issue.

D. International Protection of IP Rights

Intellectual property right protections have been a matter of international concern since the late 1800s, when international treaties were enacted addressing patents and copyrights. Despite the creation of a World Intellectual Property Organization (WIPO) in 1967, intellectual property law discussions have arisen in various fora.

²⁶1991 National Trade Estimate Report on Foreign Trade Barriers (Office of the U.S.T.R. 1991), at 104-05.

²⁷17 U.S.C. §102 (1984).

²⁸17 U.S.C. §901 *et seq.* (1984) The Semiconductor Chip Protection Act of 1984.

²⁹15 U.S.C. §§1051-1127 (1984).

Patent protection is addressed in a number of treaties now administered by WIPO. The Paris Union treaties establish a set of basic patent protection norms. One primary criticism of WIPO, however, is that it does not provide any enforcement or dispute resolution mechanism.³⁰

Traditional copyright law is governed internationally by the Berne convention, to which the US is a member. The Berne Convention protects copyrightable subject matter, as described above, in the sense of literary and artistic works³¹, but also protects "moral rights", which are distinguished from economic rights of the author to mean the author's right to object to distortion, modification, or mutilation of the work.³² Moral Rights have also been recognized in international human rights instruments.

Semiconductor chips are dealt with separately in international discussions. The Treaty on Intellectual Property in Respect of Integrated Circuits.³³ Most Industrialized countries, Japan and the EC included, recognize IP rights in semiconductor chips. Most non-industrialized countries do not.

At present, key discussions of intellectual property rights are going on in the Uruguay Round negotiations under GATT.³⁴ In addition, discussion of intellectual property in the context of transfer of environmentally sound technology are underway in preparations for the United Nations Conference on Environment and Development (UNCED), and in negotiations on a climate change convention and a convention to preserve biological diversity.³⁵ At the regional level, intellectual property is a significant issue in negotiations on a North American Free Trade Agreement (NAFTA) as well.³⁶ WIPO itself has also undertaken review of the current international intellectual property regime, sponsoring negotiations on patent law harmonization. Those negotiations appear to be on hold pending the outcome of GATT.³⁷ Finally, negotiations in the United Nations Conference on Trade and Development (UNCTAD) on a Code on the Transfer of Technology, which have been taking place intermittently for the past 20 years, appear to have been suspended indefinitely.³⁸

³⁰[Cite to toronto faculty l.j.]

³¹Berne Convention Art. 2 (1971).

³²*Id.* Art. 6bis

³³See Emmert, *Intellectual Property in the Uruguay Round -- Negotiating strategies of the Western Industrialized Countries*, 11 MICH.J.INT'L.L. 1317, 1330-31 (1990), citing 27 I.L.M. 1477 (1989).

³⁴See Part II, *infra*.

³⁵See Part II, *infra*.

³⁶See Part II, *infra*.

³⁷See Part II, *infra*.

³⁸See Part II, *infra*.

II. INTERNATIONAL ISSUES IN IP PROTECTION

The adequacy of intellectual property protection has recently been raised as a corollary to several international issues, each having its own particular theoretical slant. Most notably, IP's relationship with international trade has dominated newspaper headlines, as IP laws of various countries are used as a litmus test of fair trade practices. International and multilateral trade agreements, as well as unilateral trade sanctions, have been shaped to fit a growing appetite for increased IP protection, largely because of US efforts. In addition, and somewhat related to the trade issue, IP protection has been discussed as a development concern, usually as a hinderance. Finally, IP protection has become an issue with regard to environmental protection, largely because of the IP issues raised in trade and development areas. This section of the paper analyses the discussion of IP protection in these areas, laying the foundation for the environmental impacts proffered in Part III.

A. IP and Trade

Trade has been the bottom line in recent international IP discussions. One need look no further than the daily newspaper to find continuous reports of IP-related lawsuits, trade sanctions, and treaty discussions. In most instances the story boils down to US government and business efforts to ensure US profit on IP-protected goods, and deter, minimize, and punish counterfeiters, pirates and infringers. This concern for international IP protection as a trade issue has been at the core of discussions in the Uruguay Round of the General Agreement on Tariffs and Trade (GATT) and the North American Free Trade Agreement (NAFTA), as well as in the US's unilateral efforts to amend other countries laws through "Special 301" trade sanctions. The following analyses each of the three areas.

1. IP, Trade, and GATT

Phrased as a trade issue, discussions of IP rights may properly be situated in the GATT, which is the "interim" body established by the World War II Allies to address international trade issues (pending operation of the International Trade Organization (ITO), which never occurred).³⁹ In its 44 years of existence, the GATT has successfully reduced tariffs throughout the industrialized world from their Great Depression - World War II levels.⁴⁰ However, the fact that IP rights have traditionally been a national concern and that there already exists an international body devoted solely to the administration of IP-protecting treaties has made negotiations on a GATT Trade Related aspects of Intellectual Property rights (TRIPS) code seem at times pointless, if not impossible. Still, surprisingly, the GATT discussions have been accorded a great deal of weight, even to the extent that discussions in WIPO on a Patent Harmonization Treaty were postponed indefinitely, pending

³⁹See JOHN JACKSON, *THE WORLD TRADING SYSTEM: LAW AND POLICY OF INTERNATIONAL ECONOMIC RELATIONS*, 31-39 (1989) (the ITO died upon US Senate refusal to ratify the enacting treaty).

⁴⁰*Id.*, at 53.

resolution of the GATT TRIPS code.⁴¹

IP rights emerged as a GATT issue largely because of US lobbying for greater IP protection throughout the world. A rapidly declining balance of trade and domestic industry concern with counterfeit products invading domestic markets (or limiting foreign ones), as well as a perceived ineffectiveness of WIPO to address IP infringement problems, all led the US to take several actions in the 1980s to secure adequate IP protection worldwide, including introducing the IP issue in the GATT.⁴² The US has sought a TRIPS code which would include "norms, standards and principles on the availability, scope and use of intellectual property rights, mechanisms for internal and border enforcement; and dispute settlement procedures which minimize obstructions to legitimate trade."⁴³ The EC and Japan have echoed US calls for a GATT TRIPS accord.

However, this call for international IP protection has not been universal. While the industrialized countries have decried lax IP protection as a hinderance to free trade, the developing countries have countered that IP protection is itself a non-tariff trade barrier. Moreover, they have viewed any attempt to mandate changes in their national laws as an infringement on their sovereignty, especially with regard to public policy provisions providing exemptions or compulsory licensing for "national priorities."

The opposing views entering the Uruguay Round negotiations resulted in a negotiating mandate comprised of possible contradictions. The Punta del Este Ministerial Declaration states:

In order to reduce the 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, the negotiations shall aim to clarify GATT provisions and elaborate as appropriate new rules and disciplines.⁴⁴

Thus, negotiators were charged with walking the tightrope between IP protections as a hallmark of free trade, and IP protections as a trade barrier.

⁴¹Memorandum of Director General: Questions Concerning the Proposed Treaty supplementing the Paris Convention as far as Patents are concerned, W.I.P.O. Doc. P/A/XVIII/3, at 2 (Sept. 20, 1991).

⁴²See Wolfhard, *International Trade in Intellectual Property: The Emerging GATT Regime* 49 U. TORONTO FAC. L. REV. 106, 108 (1991).

⁴³Wolfhard, *International Trade in Intellectual Property: The Emerging GATT Regime* 49 U. TORONTO FAC. L. REV. 106, 109 (1991), citing U.S. TRADE OBJECTIVE IN THE URUGUAY ROUND, DEPARTMENT OF STATE BULLETIN, vol. 89, no. 2143, 35, 36 (Feb. 1989).

⁴⁴Wolfhard, *International Trade in Intellectual Property: The Emerging GATT Regime* 49 U. TORONTO FAC. L. REV. 106, 135 (1991), citing GATT, 33rd Supp. BISD, 25-26 (1987).

In the years of negotiation since the Punta del Este Declaration the parties have yet to come to an accord. The most recent draft TRIPS code, the "Dunkel Draft" (named for GATT Chairman Arthur Dunkel who authored the compromise text), has failed to gather support among either industrialized or developing countries. While it attempts to reconcile the several paragraphs of bracketed text from prior drafts, the Dunkel Draft offends developing countries by calling for broad IP protections, and offends industrialized countries by allowing developing countries as much as a 10-year grace period in which to enact their strengthened IP laws.⁴⁵

The text can be divided into six parts: general provisions (including the right of national treatment); standards on availability, scope and use for IP rights; enforcement measures; acquisition and maintenance; dispute prevention; and transitional arrangements. The general provisions not only set out a framework in which the TRIPS accord is to be viewed, but also enunciates the policy goals sought. For instance, articles seven and eight discuss objectives and principles, respectively.⁴⁶ These include promoting technology development and transfer, as well as the constant concern for ensuring free trade.

With particular concern to one of the more contentious issues in IP (the right of "national treatment"), Article Three of the General Provisions requires that the parties accord "no less favorable" treatment of foreign nationals' inventions than they would of their own, subject to whatever existing limitations that are provided in the Paris, Berne and Rome Conventions, (regarding patents, copyrights, and performers' copyrights) and the Treaty on Intellectual Property in Respect of Integrated Circuits. The right of national treatment has been opposed by developing countries because of a perceived bias in favor of industrialized countries; most IP products originate in industrialized countries and therefore industrialized countries have been the primary beneficiaries of national treatment.⁴⁷

The standards section is perhaps the most significant section because it sets out a list of basic protections, which in many instances (especially with regard to developing countries) requires amendment of national laws.⁴⁸ Standards are enumerated for copyrights, trademarks, geographical indications, industrial designs, patents, layout designs of integrated circuits, trade secrets, and unfair competition. Although much has been made of the section regarding geographical indications (such as "Bordeaux" or "Champagne"), the patents provisions may have the greatest effect on environmental issues. Biotechnology and pharmaceuticals, which may necessarily be related, are two of the more

⁴⁵See *GATT Activities: Mid-April Deadline Set for Talks: TRIPs Document Gets Poor Reviews*, WORLD INTELL. PROP. REP. (BNA) v. 6 No. 2, at 41 (1992).

⁴⁶*GATT Secretariat, Draft Final Act Embodying the Results of the Uruguay Round of Multilateral Trade Negotiations*, Dec. 20, 1991, at 61 MTN.TNC/W/FA.

⁴⁷MICHAEL BLAKENEY, LEGAL ASPECTS OF THE TRANSFER OF TECHNOLOGY TO DEVELOPING COUNTRIES, 15-16 (1989), *citing* G.S. YANKEY, INTERNATIONAL PATENTS AND TECHNOLOGY TRANSFER TO LESS DEVELOPED COUNTRIES, 63 (1987).

⁴⁸It should also be noted that the US must amend its patent laws to be consistent with the first-to-file and 20-year patent protection period provisions of the TRIPS code, and legislation has already been introduced that would affect such changes.

quarrelsome areas because it is an area where industrialized and developing countries' laws differ greatly (industrialized countries have inclusive rules while developing countries prefer exclusive provisions).

Article 27 of the TRIPS code attempts a compromise of the two views. It provides that "any inventions, whether products or processes, in all fields of technology" are eligible for patent protection (within the usual limitations requiring novelty, usefulness, and inventive step), subject to two categories of exclusions.⁴⁹ The first category would apparently recognize public policy goals, with a caveat that they not be solely domestic. The second category of exclusions includes various life forms and medical treatments. The life form exclusion is provisional, subject to review after four years.

While the recognition of exclusions would seem to be catered to developing countries' concerns, it is not absolute. The text provides that exclusions may be fashioned "to protect public order or morality, including to protect human, animal or plant life or health or to avoid serious prejudice to the environment, provided that such exclusion is not made merely because the exploitation is prohibited by domestic law." (emphasis added). While the first portion of the provision seems to recognize many of the concerns raised in national laws of developing countries (see e.g. Kenya), the qualifier regarding domestic law would seem to negate the provision altogether. Indeed, this is the essence of GATT trade policy: that, no matter how clear the public policy goal, domestic regulation will not be accepted under GATT if it is perceived to have an adverse affect on trade. [see tuna]

The inclusion of enforcement measures was essential to the US, and other industrialized countries, which perceived no means of enforcing its IP rights abroad under. An EC proposal, signed onto by the US, proposed increasing remedies available against infringers through civil damages, criminal penalties, and other equitable remedies.⁵⁰ Wary of requirements that might restrict their industries, developing countries favored "simple, adequate and effective measures,"⁵¹ to enforce property right protections, but not to the extent that such controls restrict legitimate trade. Focusing on national measures against individuals and firms, Article 41 states: "Parties shall ensure that enforcement procedures as specified in this Part are available under their national law so as to permit effective action against any act of infringement..."⁵² The enforcement measures specified include injunctions (Art. 44)⁵³, damages (Art. 45)⁵⁴, and "other remedies" (Art. 46) such as uncompensated

⁴⁹GATT Secretariat, Draft Final Act Embodying the Results of the Uruguay Round of Multilateral Trade Negotiations, Dec. 20, 1991, at 69 MTN.TNC/W/FA.

⁵⁰See GATT FOCUS NEWSL., *supra* note 115, at 4; *Uruguay Round: Trade Related Aspects of Intellectual Property Rights* (2, 4 and 5 April), GATT FOCUS NEWSL. v. 70, at 7-8 (April 1990).

⁵¹ GATT FOCUS NEWSL., *supra* note 115, at 5.

⁵²MTN.TNC/W/FA at 76.

⁵³"[T]o prevent entry into the channels of commerce" of infringing goods. MTN.TNC/W/FA at 78.

removal of infringing goods from channels of commerce "[i]n order to create an effective deterrent to infringement."⁵⁵ The text also provides for a "right of inspection" to substantiate claims (Art. 57)⁵⁶, and criminal penalties including imprisonment and fines "at least in cases of "wilful trademark counterfeiting or copyright piracy on a commercial scale" (Art. 61).⁵⁷

Acquisition and maintenance of IP rights, such as licensing arrangements, are discussed in Part IV of the Dunkel Draft. The text simply provides that parties "may require ... compliance with reasonable procedures and formalities." (Art. 62).⁵⁸ Although the issue of technology transfer has been contentious in other fora, the matter has not been a major concern of the TRIPS code.⁵⁹

The lack of adequate dispute resolution procedures in WIPO was a motivational factor in the US initiative to forge a GATT accord. GATT's existing dispute resolution procedures were viewed by industrialized countries as the most effective way of ensuring strict enforcement of IP protections internationally.⁶⁰ While WIPO and its conventions do not currently provide for dispute settlement, developing countries favored fashioning procedures within WIPO, largely because it is usually more responsive to developing countries' concerns.⁶¹ The Dunkel draft favors the industrialized countries' concerns, providing for dispute relief through GATT Articles XXII and XXIII, and the Understanding on rules and Procedures Governing the Settlements of Disputes under those articles.⁶²

While the Dunkel Draft's resolution of substantive provisions may cause problems for developing country interests, the transitional arrangements have posed the greatest stumbling block for industrialized country concerns, especially pharmaceutical producers. Article 65 generally provides for a one-year transition period⁶³, but Article 66 contains special provisions for least developed countries. "In view of their special needs and requirements, their economic, financial and

⁵⁴Damages include compensatory damages as well as attorney's fees, but no mention is made of punitive damages. MTN.TNC/W/FA at 78.

⁵⁵MTN.TNA/W/FA at 78-79.

⁵⁶MTN.TNC/W/FA at 83.

⁵⁷MTN.TNC/W/FA at 84.

⁵⁸MTN.TNC/W/FA at 84.

⁵⁹See Discussion of Technology Transfer, *infra*.

⁶⁰See *Uruguay Round: Trade-Related Aspects of Intellectual Property Rights*, GATT FOCUS NEWSL., v. 68, at 11 (Feb. 1990).

⁶¹See, *infra*, discussion of the role of other institutions, below.

⁶²MTN.TNC/W/FA at 86.

⁶³MTN.TNC/W/FA at 86.

administrative constraints...least developed country parties shall not be required to apply the provisions of this Agreement...for a period of 10 years.... [with an option for an extension]"⁶⁴ Some US industry leaders have complained that the grace period effectively nullifies whatever substantive benefits the TRIPS text might otherwise produce.⁶⁵

2. IP, Trade, and NAFTA

Seizing upon the GATT TRIPs discussions, and in furtherance of US policies, generally, the North American Free Trade Agreement (NAFTA) negotiations have also addressed the IP/trade issue. Negotiations on the creation of a North American free trade area⁶⁶ have been ongoing since mid-1991. The basic goal of NAFTA is to eliminate tariff and non-tariff trade barriers within the North American region in order to facilitate the flow of goods and services among the countries. Specifically, the parties seek gradual and comprehensive elimination of tariffs, import quotas, licenses, and technical barriers to trade, as well as ensure protection of IP rights.⁶⁷ Of course, as with discussions in GATT, IP has been a troublesome issue.⁶⁸

The goals sought for a NAFTA IP accord are essentially identical to the TRIPs goals, though the US would like to enact even more stringent provisions.⁶⁹ Among the more specific objectives for patent protection are: immediate product patent protection for all products, including protection for inventions patented abroad but not yet marketed; extension of the patent protection term to equivalency with the U.S.; rejection of international exhaustion of patent rights as a legal concept; prohibition of unauthorized parallel imports; acceptance that importing be considering as "working" for purposes of maintaining a patent, rather than requiring local manufacture; shifting the burden of proof to the alleged infringer in process patent cases; tight discipline on compulsory licensing of patents; an unconditional 12-month grace period for all inventions; recognition of computer program-

⁶⁴MTN.TNC/W/FA at 87.

⁶⁵See Green, *Global Patent Pact Faces Review, Debate May Reopen If Farm Issue Settled*, Journal of Commerce, March 9, 1992, 1A at 3A; see also *GATT Activities: Mid-April Deadline Set for Talks: TRIPs Document Gets Poor Reviews*, WORLD INTELL. PROP. REP. (BNA) vol. 6, no. 2 at 41 (1992).

⁶⁶A Free trade area (FTA) is an area formed by reciprocal multilateral or bilateral agreements to restrict or eliminate customs duties on trade among its members, not to be confused with free trade zones (FTZs), which are *intra*-state arrangements. Jayawardena, D.L.U. *Free Trade Zones*. 17 J. OF WORLD TRADE L.427-436 (1983).

⁶⁷Joint Statement, *supra* note 65, at 7.

⁶⁸See *Special Report: NAFTA Negotiators Far Apart on Intellectual Property, Financial Services*, Inside U.S. Trade at 1 (March 24, 1992).

⁶⁹See *Negotiators Close on NAFTA Intellectual Property, But Obstacles Remain*, Inside U.S. Trade at 10 (May 8, 1992).

related inventions as patentable subject matter.⁷⁰

For copyright protection, the goal is to provide comprehensive protection of all classes of literary works, including films, sound recording, and computer software, and to provide for efficient, reliable and effective enforcement.⁷¹ The United States aspires to include copyright protection for computer programs as literary works, including the required term of protection under the Berne Convention.⁷² In addition, the U.S. want to make it clear that the right to the use and exploitation of a copyrighted work includes the right to authorize or prohibit its rental and its importation, including the right to bar unauthorized parallel imports as well as piratical copies; rampant theft and retransmission of satellite signals should be addressed and prosecuted.

A draft text composed in February 1992 was significantly similar to the TRIPs Dunkel Draft, but littered with bracketed provisions, many of which were submitted by the US in an attempt to heighten the level of IP protection.⁷³ The patentability of biotechnology inventions, while not specifically addressed in GATT is one area where the US would like to see the NAFTA text set an international standard. Mexico, however, is adamantly opposed to plant and animal product patents. In addition, Canada, is apparently supporting adoption of the TRIPs text, rather than expanding coverage through NAFTA.

3. IP, Trade, and Special 301

In addition to the US efforts to increase international IP protection through international agreements, the US has unilaterally acted through trade-related measures, known as Special 301⁷⁴, and it is here that the US has had its greatest success.⁷⁵ The Special 301 provisions of the Omnibus Trade and Competitiveness Act of 1988 are the hallmark of increased US attention to IP rights throughout the world. Essentially, the rule provides for listing countries which the US Trade

⁷⁰ *Statement of the United States Council for International Business on American Business Objectives in the Negotiations on the North American Free Trade Area*, May 24 1991, at 2.

⁷¹ *Id.* at 3.

⁷² The New Mexican Copyright law does not protect explicitly computer programs as literary works which is stated in the Berne Convention and Mexico belongs to the Berne Convention. In addition, 25 year protection for computer programs (which is the term given in the 1991 mexican copyright law) is inconsistent with the minimum protection required under Berne. *Statement of the United States Council for International Business on American Business Objectives in the Negotiations on the North American Free Trade Area*, May 24, 1991, at 4.

⁷³ See e.g. Arts. 2217 and 2218 regarding criminal penalties and border enforcement provisions, respectively, *NAFTA Text on IPR*, Dallas Composite (21 February 1992), *appearing in Inside U.S. Trade* at 5 (March 24, 1992).

⁷⁴ As codified in 19 U.S.C. §§2241 *et seq.*

⁷⁵ See *USTR Names India, Taiwan, Thailand "Special 301" Priority Offenders*, WORLD INTEL. PROP. REP. v. 6 at 162 (BNA June 1992).

Representative determines have inadequate IP right protections, and, then, instituting trade sanctions against those countries. Special 301 actions are perceived as a major tool the US applies in its fight against piracy and counterfeiting.⁷⁶

The most recent 301 lists include the usual suspects, India and Thailand, as "priority offenders."⁷⁷ In addition, Taiwan has also been named a priority offender because of lax enforcement.⁷⁸ Australia, Brazil, and the EC are among nine countries named to a "priority watch list", while Canada, Germany, and Japan are among 22 "watch list" countries.⁷⁹ Noticeably missing from the lists are former offender Mexico and Singapore, which had been perennial offenders, but because of recent law revisions, have been removed from the list.⁸⁰

B. IP and Development

The greatest contest to IP rights has been with regard to the effect of IP protection on economic development. As the discussion, above, of Special 301 offenders shows, developing countries have traditionally opposed the enactment, let alone enforcement, of strict IP rights, especially with regard to perceived public goods, such as patented technologies in areas related to economic growth. Developing countries note the lack of strict IP protections in now-industrialized countries like Japan and the US when they were becoming industrialized, and argue that the now-developing countries should be afforded the same luxury.⁸¹ In addition, one way in which developing countries have sought favorable terms for transfer of technology is through relaxed IP protection.

The issue of how IP rights affect technology transfer has been discussed in many fora, but has been a particular concern to UNCTAD in fashioning a Code of Conduct on Technology Transfer. The United Nations Conference on Trade and Development (UNCTAD) was founded in 1964 at the insistence of the Group of 77 developing countries to promote international trade as an instrument of accelerated development.⁸² Although GATT had already been established by this time, developing countries did not believe their interests were adequately represented there; they considered GATT a "rich man's club where interests of the developed countries generally carry the

⁷⁶*Id.*

⁷⁷*Id.*

⁷⁸*Id.*

⁷⁹*Id.*

⁸⁰*Id.*

⁸¹See generally, Raghavan, *supra* note 3.

⁸²See *Promoting Trade Through Technical Cooperation*, UNCTAD BULLETIN v. 5, at 5 (October 1990).

day."⁸³ The developing countries favored establishing a new agency, more attentive to their concerns and UNCTAD's constitution mandates that it be controlled by the developing countries.⁸⁴

UNCTAD began work on a Code of Conduct on the Transfer of Technology in 1970, but has yet to progress past a first draft that was completed in the mid-1970s. The draft has, however, become a model for several developing countries' domestic laws.⁸⁵ In 1991, the U.S. picked up enough support from other industrialized countries for its opposition to the code to block negotiations⁸⁶ and it is unlikely the discussions will be reopened.⁸⁷ At the most recent meeting in Cartagena in February 1992, the parties resolved to suspend the talks indefinitely.

US opposition to a code is based primarily on what US negotiators characterize as the code's failure to consider commercial practices.⁸⁸ The US complains, for instance, that code provisions allowing for technology transfer solely on a need basis ignores any consideration of commercial practices, and disregards competition theory.⁸⁹ The US feels that the code seeks to subvert or work around standard international business practices, rather than within them, and therefore opposes such a regime.

Regardless of whether a code is adopted, UNCTAD's position on the relationship between encouraging development and protecting IP rights is changing. During a recent meeting of UNCTAD's Committee on Transfer of Technology, the committee approved a resolution calling on governments:

to adopt measures [taking into account the public interest and development objectives of the country], including intellectual property rights' protection and technical cooperation, to increase technology flows to developing countries and facilitate access of those countries to technology, in particular those new and advanced technologies of critical importance for their development.⁹⁰

⁸³Emmert, *supra* note 10, at 1377 (footnote omitted); *see also* Blakeney, *supra* note 67, at 22, 23 citing DELL, THE ORIGINS OF UNCTAD.

⁸⁴*See* Blakeney, *supra* note 53, at 22.

⁸⁵Emmert, *supra* note 10, at 1356.

⁸⁶Telephone conversation with Larry Nelson, U.S. State Dept., Oct. '9, 1991.

⁸⁷Telephone conversation with George Kell, UNCTAD Liaison Office in New York, Oct. 10, 1991.

⁸⁸Telephone conversation with Mike Gayle, US State Dept., Economics Division (IPR), April 20, 1992.

⁸⁹*Id.*

⁹⁰Press Release, U.N.Doc. TAD/1628 (May 6, 1991).

This language implicitly acknowledges that IP rights may encourage as well as impede technology transfer. Such an acknowledgement moves the UNCTAD position closer to the industrialized countries' view, and may portend UNCTAD coordination with such institutions as GATT.

C. IP and Environment

As the beginning of this paper points out, IP rights have become an environmental issue. In addition to preventing President Bush from signing the Biodiversity Convention, IP rights have also been raised with regard to transfer of environmentally sound technology. As discussed above, the transfer of technology from industrialized countries to developing countries often raises IP issues. When the technology at issue furthers an environmental purpose, such as scrubbers for reducing carbon emissions, or CFC substitutes to reduce ozone depletion, IP rights could have an effect on the transfer of the latest technologies. In practice, however, it seems that, while IP rights may effect the transfer of technologies such as drugs or computers, much "environmental technology" is already in the public domain.⁹¹ Moreover, one study has found that, even with regard to possible newer technologies, such as those that may be developed for dealing with reducing Greenhouse Gas Emissions, IP rights "are not a significant barrier to the transfer of environmentally sound technology to developing countries."⁹²

IP rights may have a more clearly defined role with regard to biological diversity, as IP protection is accorded to various aspects of the research and development of biological technologies. A number of developing countries and NGOs have argued that developing countries should be compensated for their biological resources which industries from industrialized countries take at little or no cost to develop into commercially valuable products. Because the IP protection that is accorded these products makes them prohibitively expensive when marketed back in the developing country some developing country governments have called for the reduction or elimination of IP rights, at least over products derived from their own genetic resources.⁹³ Because a feeling that developing countries are being gypped of their fair share of the creation of such patented goods some developing country governments have argued for a cut of the royalties. Moving one step further, some advocates for indigenous peoples (who seem to have particularly been subject to misappropriation of traditional methods) have sought a form of patent protection for the commercial use of their traditional knowledge. Other efforts in developing countries are directed at using IP rights to protect genetic resources for tropical ecosystems.

1. Technology Transfer

When the UN General Assembly resolved to convene UNCED to examine the interrelated problems of environmental conservation and economic development one of the "cross sectoral issues"

⁹¹See *Report on Transfer of Technology*, U.N. Doc. A/Conf.151/PC/52, at 3.

⁹²TOUCHE-ROSS, *GLOBAL CLIMATE CHANGE: THE ROLE OF TECHNOLOGY TRANSFER*, at 73 (1991).

⁹³See *LAND RESOURCES: DEFORESTATION* at ¶ 8(h) (draft of forest principles including bracketed text calling for "sharing of technology and profits of bio-technology products, for example pharmaceutical, derived from [biological resources of forests]").

identified was technology transfer.⁹⁴ Working through a series of meetings of the preparatory committee (the PrepComs), UNCED was supposed to produce, among other things, an Earth Charter declaring principles for sustainable development, conventions on global warming and the protection of biological diversity, and a plan for comprehensive sustainable development to be called Agenda 21. What happened at the Earth Summit was not exactly the heralding of a new age of environmentally-enlightened development. Ultimately, the negotiators settled for quantity of signatures over quality of text, adopting bland statements of environmental policies instead of positive environmental initiatives.⁹⁵ Discussions had been hampered by wide gaps between industrialized and developing countries, especially on the need for technology transfer of financial resources and technology from industrialized to developing countries.

The terms for transfer of environmentally sound technologies⁹⁶ from Industrialized Countries to Developing Countries had been the subject of intense debate in the UNCED process, with little success at reaching a meaningful accord. Developing countries insist that industrialized countries must help them obtain the technology needed to comply with obligations under any new international agreements for environmental protection, and in general are asking that industrialized countries make special efforts to transfer appropriate technology through provision of funds and

⁹⁴"Technology transfer" has been defined as "the process by which technology, knowledge, or information developed in one organization, in one area, or for one purpose is applied and utilized in another organization, in another area, or for another purpose." See National Energy Strategy: Powerful ideas for America, U.S. Dept. of Commerce (1991), at 196. For the purposes of this discussion, it is viewed as the application of technology developed in industrialized countries in developing countries. See also B. SMART, INTERNATIONAL TECHNOLOGY TRANSFER, at 4 (1990) (prepared for symposium "Toward 2000: Environment, Technology and the New Century," World Resources Institute, Washington, DC June 13-15, 1990), "Environmental Technology Transfer ... is the means by which technology is made available by its owners and employed by its recipients to reduce environmental impact and promote global sustainable development."

⁹⁵See e.g. Agenda 21, Chapter 34 ¶34.10 noting that "consideration must be given to the role of patent protection and intellectual property rights...", but never expanding on just what that role should be. Instead, ¶34.18(e) lists five awkwardly phrased measures that "could be adopted," such as "In compliance with and under the specific circumstances recognized by the relevant international conventions adhered to by the States, undertaking measures to prevent the abuse of intellectual property rights, including rules with respect to their acquisition through compulsory licensing, with the provision of adequate compensation."

⁹⁶"Environmentally sound technologies protect the environment, are less polluting, use all resources in a more sustainable manner, recycle more of their wastes and products, and handle residual wastes in a more acceptable manner than the technologies for which they were substitutes." Agenda 21, Chapter 34, *Transfer of Environmentally Sound Technology, Cooperation and Capacity-Building* (final advanced version of Agenda 21, as adopted by the Plenary in Rio de Janeiro, June 14, 1992).

transfer on preferential and non-commercial terms.⁹⁷ Industrialized countries, especially the US, are reluctant to bend the rules of free trade to freely transfer technology to developing countries, especially if such transfer of technology would mean forfeiting IP right protection.⁹⁸

In this context, developing countries have been concerned that protection of IP rights may increase the cost of the transfer of environmentally appropriate technology. These concerns are in implicit conflict with the United States' effort in GATT negotiations and in bilateral relations to strengthen IP rights protection worldwide,⁹⁹ an effort which is reflected in the United States' comments in the UNCED process.¹⁰⁰

2. Biological Diversity Convention

The discussions leading up to the signing of the Biological Diversity Convention were among the more intense of the PrepCom discussions. Although the purpose of the biodiversity convention is to maintain the diversity of the earth's biological resources, allowing for the *sustainable* development of those resources, the negotiations became a cause celebre for US IP rights advocates, stirring debate not on the merits of protecting biological diversity, but rather on the means of accomplishing that in the current world economy. At the heart of the debate was the issue of compensating developing countries for research and biological resources taken from developing

⁹⁷See, e.g., UNCED Prep. Comm., Draft Decision . . . [on] Transfer of Technol. at ¶¶ 2(a):(d), 2(a):(g), 8 (UN Doc. No. A/Conf.151/PC/L.53) (Sept. 3, 1991) (bracketed text calling for various measures to transfer patents on environmentally sound technology to developing countries on non-commercial terms); UNCED Prep. Comm., China and Ghana: draft decision: Financial resources at ¶ (b), (g) (UN Doc. No. A/Conf.151/PC/L.41) (Aug. 28, 1991) (G-77 proposal on provision of financial resources and transfer of technology).

⁹⁸See U.N.C.T.C. DRAFT PAPERS ON OPTIONS TO INCREASE THE TRANSFER OF ENVIRONMENTALLY SOUND TECHNOLOGIES TO DEVELOPING COUNTRIES ON FAVORABLE TERMS, Paper 1, Annex 6 (June 1991).

⁹⁹See Bradsher, *U.S. and China Reach Accord on Copying*, N.Y. Times, Jan. 17, 1992 at D1, D14 (reporting that China agreed to United States demands for strengthened intellectual property protection); Kunz-Hallstein, *The United States Proposal for a GATT Agreement on Intellectual Property and the Paris Convention for the Protection of Industrial Property*, 22 VAND. J. TRANSNAT'L L. 265, 267 (1989); Morford, *Intellectual Property Protection: A United States Priority*, 19 GA. J. INT'L & COMP. L. 336, 337-39 (1989) (describing United States' government's pursuit of improved protection of intellectual property in foreign countries through bilateral consultations and Section 301 actions under United States international trade law).

¹⁰⁰See Statement by the U.S. Delegation on Technology Cooperation, PrepCom 3 - Geneva - August 30, 1991 (stating that "[t]echnology has been adapted most successfully in those countries where the business environment . . . offer[s] adequate protection for intellectual property"); U.S. STATEMENT ON UNGA DOC. A/CONF.151/PC/67 "Environmentally Sound Management of Biotechnology: Background and Issues" (PrepCom III - Geneva - August 22, 1991) (stating that "intellectual property rights have been key to advances in biotechnology . . . [and] must be respected").

countries for use by pharmaceutical companies and researchers in industrialized countries.¹⁰¹ With particular regard to IP rights, developing country advocates focused on the propriety of patents granted in industrialized countries for drugs derived from plants in developing countries.¹⁰² Among the more offensive provisions to the US was a compensation scheme under which patent holders of such products in industrialized countries would be forced to grant a share of the revenues from such products to the affected developing country. This money would, in turn be used to help fund conservation in the developing countries, which would otherwise be viewed as too costly.¹⁰³

III. ENVIRONMENTAL IMPACTS OF INTERNATIONAL IP PROTECTION ISSUES

This final section analyzes the ways in which the above-discussed international IP issues might effect the environment and environmental protection. This can be studied through two competing theories: IP rights as an impediment to environmental protection; and IP rights as a means of environmental protection. The following attempts to link the environmental impacts of some of the IP issues discussed in the previous section.

A. EIA of IP Protection Under GATT & NAFTA

The GATT and NAFTA IP-related accords would have the greatest effect on environmental protection as they regard patentable subject matter and exemptions or availability of compulsory licensing. Biotechnology and application of biological resources could be substantially impacted by the GATT and NAFTA definitions of patentable subject matter, as could profit-sharing plans and schemes to protect indigenous peoples interests. Transfer of environmentally sound technology, if subject to IP protection, could arguably be entitled to an exemption from GATT sanction (under Article XX), or grounds for grant of compulsory license.

1. Patentable Subject Matter

Although the issue of whether human-made, genetically engineered bacterium are entitled to patent protection was supposedly settled over 10 years ago in the U.S.,¹⁰⁴ and the matter of protecting asexually reproduced plants has been settled by legislation over 60 years,¹⁰⁵ many countries still debate the propriety of granting patents for such "products of nature."¹⁰⁶ More importantly, perhaps, a growing number developing countries, accepting the patentability of these product would like to see a share of the profit. In addition, because many biotechnologies, especially

¹⁰¹See WORLD ENV'T REP. v. 18, at 95 (May 26, 1992).

¹⁰²*Id.*

¹⁰³*Id.* See discussion on the accuracy of such conservation cost analysis, *infra*.

¹⁰⁴See *Diamond v. Charabarty*, 447 U.S. 303, 310 (1980).

¹⁰⁵See The Plant Patent Act of 1930, 35 U.S.C. §161.

¹⁰⁶*E.g.* India. See BENT, SCHWAAB, CONLIN, & JEFFERY, INTELLECTUAL PROPERTY RIGHTS IN BIOTECHNOLOGY WORLDWIDE (1987).

pharmaceuticals, have recently been developed through acquiring traditional knowledge of indigenous peoples, many advocates for indigenous peoples have also been asking for their fair share of the proceeds, even to the point of patenting their knowledge.¹⁰⁷ Thus, in devising any scheme to recognize IP rights in "products of nature," the GATT and NAFTA accords may, either in their texts or in future dispute settlement procedures, have to contemplate how much deviation from the actual natural product is required for IP rights to apply, and who should be entitled to those rights. The greater the breadth of IP protection for such bioresource-based technology, the greater potential benefit there may be for protecting the environment because of the increased value of maintaining a sustainable resource.

2. Exclusions and Compulsory Licensing

One of the major stumbling blocks in negotiating the NAFTA IP provisions has been with regard to compulsory licensing.¹⁰⁸ The U.S. has taken a firm stand against compulsory licensing. However, the U.S. position has recognized the potential need for granting such licenses in "cases of declared national emergency" and "to remedy violation of competition laws."¹⁰⁹ It is conceivable that this could have an environmental impact with regard to distribution of environmentally sound technology. If industry in one country made access to environmentally sound technology prohibitively expensive because of the IP protection, and another country wanted such technology, then that second country could attempt to obtain such technology on its own, through compulsory licensing. Similarly under GATT, one could argue against according IP right protection to environmentally sound technology altogether as a public policy exemption under Article XX.¹¹⁰ Thus, while IP rights could pose a threat to environmental protection, measures could be taken to guard against such a threat.

B. EIA of IP Protection as Discussed at UNCED

1. The technology transfer provisions of Agenda 21

As discussed above, Agenda 21, Chapter 34, presents the issue of technology transfer, traditionally a development issue, as related to environmental protection.¹¹¹ The need for environmentally sound technology, and the attendant broad application of such technology is fairly

¹⁰⁷See Posey, *Intellectual Property Rights and Just Compensation for Indigenous Knowledge*, *Anthropology Today*, v. 6, at 13 (August 1990).

¹⁰⁸See *Negotiators Close on NAFTA Intellectual Property, But Obstacles Remain*, *INSIDE U.S. TRADE*, v. 19, at 11-12 (May 8, 1992).

¹⁰⁹*Negotiators Close on NAFTA Intellectual Property, But Obstacles Remain*, *INSIDE U.S. TRADE*, v.19, at 12 (May 8, 1992).

¹¹⁰See Housman and Zaelke, *Trade, Environment, and Sustainable Development: A Primer*, *HAST.J.INT'L.L.*

¹¹¹See generally Agenda 21, Chapter 34, Introduction noting the benefits of environmentally sound technologies and the need for favorable access to and transfer of environmentally sound technologies.

clear.¹¹² The potential role of IP rights is also easily conceived. However, the actual application of IP rules to transfer of environmentally sound technology, and the impact on environmental protection such a role would have, are much more speculative.

Agenda 21 recognizes that much to the technology at issue when discussing environmentally sound technology is already in the public domain.¹¹³ Therefore, no IP rights issues arise. However, there are also new technologies being developed which would be entitled to IP right protection.¹¹⁴ One question to be resolved, then, in assessing the environmental impact of IP rights on technology transfer is how to determine what technology needs to be transferred, and whether the existence of IP rights affects that determination. If IP rights make a certain environmentally sound alternative to, for instance, CFCs, prohibitively expensive, then IP rights serve as an impediment to environmental protection. But, if an alternative already exists in the public domain, which is just as reliable and efficient (or reasonably close), then IP rights should not be judged to have any effect on the transfer of that environmentally sound technology.

The environmental impact of Agenda 21's IP rights provisions regarding technology transfer are, therefore, not clear.¹¹⁵ Although the text certainly contemplates IP rights, it also states that "concepts and modalities for assured access to environmentally sound technologies, *including state of the art technologies*, in particular by developing countries, [should continue to be explored]."¹¹⁶ (emphasis added). Thus, one could fashion an argument from this statement that all countries should, in the example above, be entitled to access to the gas expansion refrigeration, rather than ammonia, regardless of the IP rights. However, the text continues, noting that "fair incentives [should be provided] to innovators that promote research and development of new environmentally sound technologies."¹¹⁷ At least in this context, IP rights appear poised to have little or no effect on environmental protection.

¹¹²See e.g. Agenda 21

¹¹³Agenda 21, ¶34.9. See e.g. *Climbing Out of the Ozone Hole: A Preliminary Survey of Alternatives of Ozone-Depleting Chemicals*, Greenpeace International (Prepared for the Seventh Meeting of the Open-Ended Working Group of the Parties to the Montreal Protocol, July 8-17, 1992, Genva), at 24-25, noting that, among other CFC alternatives for refrigeration and cooling, ammonia is still a viable refrigerant (as it has been for decades).

¹¹⁴See Greenpeace Report at 24, noting development of liquid carbon dioxide and nitrogen (gas expansion)-based refrigerant, a cutting-edge technological advance in alternatives to CFCs.

¹¹⁵Indeed, IP rights advocates would argue that the issue to be examined regarding Agenda 21, Chapter 34 is the impact on IP rights.

¹¹⁶Agenda 21, ¶34.11.

¹¹⁷*Id.*

2. The Biodiversity Convention

The IP rights provisions (or lack of them) in the Biodiversity Convention pose two possible impacts on environmental protection because they are framed in two different respects. The first, regarding technology transfer, may have no impact at all, or perhaps even a negative one. The second, regarding funding mechanisms, would likely have a positive environmental impact.

First, and most troublesome to the Bush administration, is the area designated "technology transfer."¹¹⁸ By discussing (stressing) the need to provide developing countries access to bioresource-based technology, without necessarily ensuring a profit for the industrialized-country inventors, the Convention offends IP rights advocates (especially pharmaceutical companies) the greatest problem.¹¹⁹ Greater access to biological technology should give developing countries a greater stake in biodiversity preservation.¹²⁰ Diluting IP right protection in order to facilitate this transfer, however, certainly raises international trade concerns (especially in lieu of the TRIPS talks), and could potentially jeopardize the conservation of biological resources by encouraging even greater exploitation of those resources. As one commentator notes, "[the] opponents of the Convention, which include biotechnology and pharmaceutical companies, are not opposed to, and, in fact, benefit from preserving biological diversity."¹²¹

The second area, which is somewhat related to the first, relates to the funding mechanisms which are supposed to facilitate developing country efforts to conserve biodiversity.¹²² This area has also offended IP rights advocates because of language encouraging developing country participation in biotechnology research and development (and, subsequently, profitsharing).¹²³ While the same concerns about IP rights' integrity could be voiced with regard to this area, the purpose is to provide an economic means, as well as an economic incentive to preserve biodiversity,

¹¹⁸See generally, Art. 16 (Access to and Transfer of Technology).

¹¹⁹Provisions generally calling for "fair and equitable" sharing of technology derived from biological resources, are those that are most offensive to the Bush administration et al. See e.g. Art. 16 ¶3. Other concerns have focused on the issue of liability and redress for damage to biological diversity (but this issue was left unresolved in the final text). See Art. 14 ¶2.

¹²⁰GLOBAL BIODIVERSITY STRATEGY: GUIDELINES FOR ACTION TO SAVE, STUDY, AND USE EARTH'S BIOTIC WEALTH SUSTAINABLY AND EQUITABLY (Report prepared by the World Resources Institute, World Conservation Union, and United Nations Environment Programme in consultation with Food and Agriculture Organization and the United Nations Education, Scientific and Cultural Organization: 1992), at 17.

¹²¹C. Michael Hathaway, *The Earth Summit - Was the United States right not to sign the Biodiversity Convention? Yes: A Threat to Property Rights*, ABA JOURNAL, v. 78, at 42 (Sept. 1992).

¹²²See Biodiversity Convention, UNEP/Bio.Div/Conf/L.2, Art. 19 (Handling of Biotechnology and Distribution of its Benefits), ¶2.

¹²³See Hathaway, *A Threat to Property Rights*, supra note __; see e.g. Art. 18 (Technical and Scientific Cooperation), ¶4.

and therefore, its impact on environmental protection can only be viewed as positive. Furthermore, discussions related to the provisions referencing the application and development of indigenous knowledge,¹²⁴ have included theories on *extending* IP rights to include traditional processes which can be innovated for modern use.¹²⁵

Both of these areas address Convention drafters' concerns with the "inequity in the ownership, management and flow of benefits from both the use and conservation of biological resources."¹²⁶ By fostering technology transfer on favorable term to developing countries, the people of those countries have the opportunity to benefit from the biological resources their country may have provided for the development of such technology.¹²⁷ Similarly, appropriate funding mechanisms, especially those which may be directly linked to cooperative biotechnology research and development efforts, give developing countries a stake in biodiversity preservation.¹²⁸ The gist of this environment/development issue is fairly straight forward: "If the developing countries continue to be shut out of markets, deprived of access to technology, and burdened with debt, they will have neither the means nor the incentive to conserve their resources for the future."¹²⁹ And IP rights have an effect on these areas.

IV. Conclusion

IP rights have taken on recent prominence in international discussions, for their own sake, as an international trade issue, and as a development issue. Concerns about IP rights have also been raised as an environmental issue. The environmental impact of IP right protection as it has been raised in recent international discussions is uncertain. While one can argue that IP rights theoretically could pose a barrier to effective environmental protection, informed analysis of the issues proves that IP rights are not necessarily inimical to environmental protection. In fact they can have a positive effect.

The greatest argument against IP right protection is that which addresses the inequities caused by the market effect of the IP monopoly. Goods entitled to IP protection cost more than goods in the public domain because of the royalty or licensing costs attendant to IP protection. Poorer

¹²⁴See e.g. Art. 8 ¶(j), Art. 18 ¶4.

¹²⁵See, Posey, *Intellectual Property Rights and Just Compensation for Indigenous Knowledge*, *Anthropology Today*, v. 6, at 13 (August 1990).

¹²⁶GLOBAL BIODIVERSITY STRATEGY: GUIDELINES FOR ACTION TO SAVE, STUDY, AND USE EARTH'S BIOTIC WEALTH SUSTAINABLY AND EQUITABLY (Report prepared by the World Resources Institute, World Conservation Union, and United Nations Environment Programme *in consultation with* Food and Agriculture Organization and the United Nations Education, Scientific and Cultural Organization: 1992), at 17.

¹²⁷*Id.*

¹²⁸*Id.*

¹²⁹*Id.*

countries are thus placed at a disadvantage for gaining access to such new technology. But this situation does not necessarily create an adverse environmental impact. First, most environmentally sound technology is in the public domain. Moreover, any technology, even new environmentally sound technologies that may be developed, can be made accessible, even within the IP right protection regime, through appropriate funding mechanisms. Thus, IP rights do not necessarily have to be viewed as an environmental problem.

Beyond the view of IP rights as having no environmental impact, one could even argue that, properly framed, IP rights can have a positive impact on environmental protection. One argument that seems to have enjoyed little attention in the international arena is that IP rights, as an incentive for innovation generally, also serve as an incentive for innovation of environmentally sound technologies.¹³⁰ Under this traditional rationale for IP right protection, environmentally sound technology, like any other, is helped by the incentive to create better, IP protected, technologies. In addition, expanding IP right protection to certain processes applying natural resources can help add value to maintaining such resources -- a key component of sustainable development. Indeed, the concept of Sustainable Development (Patent Pending) is as much about innovation as it is about compensation -- and IP rights can play a pivotal role in both.

¹³⁰It is worth noting that the incentive rationale is not absolute. Many have argued against the incentive argument. In fact, one of the more compelling argument against the incentive-based rationale was delivered by the US Supreme Court in upholding the right to patent microbes. Chief Justice Burger, distinguishing a public policy argument against granting patent protection to micro-organisms, wrote:

... The grant or denial of patents on micro-organisms is not likely to put an end to genetic research or to its attendant risks.... Whether respondent's claims are patentable may determine whether research efforts are accelerated by the hope of reward or slowed by want of incentives, but that is all.

Diamond v. Chakrabarty, et al., 447 U.S. 303, 317 (1980). The Chief Justice also said: "...legislative or judicial fiat as to patentability will not deter the scientific mind from probing into the unknown any more than Canute could command the tides."