NOTES

Biopiracy: The Appropriation of Indigenous Peoples' Cultural Knowledge

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> If the United States is to open its wallet, poor nations must open their markets. If they undertake political, legal and economic reforms, Washington will help them trade their way to prosperity. To be serious about fighting poverty, we must be serious about expanding trade. Greater access to the markets of wealthy countries has a direct and immediate impact on the economies of developing nations.[1]
>
> -George W. Bush

I. INTRODUCTION

Trade with developing nations is an increasing concern for Indigenous Peoples because corporations are searching the globe for rich natural resources that can be turned into a profit. These corporations, with the help of Indigenous Peoples, locate biological material that has a medicinal purpose, bring it back to the lab for research and patent it as their own invention. This appropriation of plants and cultural knowledge is called biopiracy. Biopiracy is defined as "the illegal appropriation of life - micro-organisms, plants, and animals (including humans) - and the traditional cultural knowledge that accompanies it."[2] The appropriation is illegal

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[1] Tim Weiner, *More Aid, More Need: Pledges Still Falling Short,* N.Y. TIMES, March 24, 2002, at 4.

[2] *Biopiracy: A New Threat to Indigenous Rights and Culture in Mexico, at* http://www.globalexchange.org/campaigns/mexico/biopiracyReport.html (last visited Feb. 23, 2002) [hereinafter *Biopiracy*].

because it is done in violation of international conventions and, where they exist, domestic laws.[3] Although Indigenous Peoples have been "cultivating" their crops for generations, these communities, their plants and their cultural knowledge have been considered the public domain of anthropological study. The anthropologists claimed the "study" of the Indigenous Peoples for themselves and their country of origin in the same way that the explorers "discovered" new lands for their sovereigns.

Biotechnology is presently a billion dollar industry that gains its commercial potential from scouring the globe for rich source material and active compounds that can be turned into a commercial product.[4] Compared to pharmaceutical companies, Indigenous Peoples have been cultivating and improving their local plant life for centuries. Plant life is not supposed to be patentable but pharmaceutical and agrochemical companies have found a way to patent the natural world. They extract the elements of the plant's genes and patent the active ingredients.

The biotechnological corporations have been able to extract, "improve", and patent genes from these plants and thus claim the plants for themselves. They also take the cultural knowledge that accompanies the plant. This new form of colonialism seeks to establish dominion within the interior realm of plants and in the minds of the Indigenous Peoples.[5] The history of taking from Indigenous Peoples continues with a new form of colonialism, biopiracy. Corporate patents do not require recognition or compensation to Indigenous Peoples. In this way the corporations continue

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[3] *See id.*

[4] Emily Marden, *The Neem Tree Patent: International Conflict over the Commodification of Life*, 22 B.C. INT'L & COMP. L. REV. 279, 280 (1999).

[5] VANDANA SHIVA, BIOPIRACY: THE PLUNDER OF NATURE AND KNOWLEDGE 5 (1997).

to get rich while the Indigenous Peoples continue to struggle for survival.

Historically, profits have not been the motivating force for communal cultures. The socio-economic structure of tribes is different than mainstream society, usually surviving on subsistence living as hunter-gatherers and working under a barter system.[6] The cultural knowledge of a tribe is seen within the context of traditional customs, practices and the environment.[7] The rapid influx of bioprospectors has left Indigenous communities open to appropriation by foreign companies because they do not know that they need protection.

The tribes do not have access to legal information that would protect their plants and cultural knowledge nor do they have the finances to obtain them. Neither is patent law the ideal legal framework to protect Indigenous knowledge because it is finite in nature thus leaving Indigenous knowledge, religious practices, and sacred beliefs open to the general public after a certain amount of time.

"Indigenous and traditional communities have had no practical opportunity to participate in the development of national or international intellectual property systems."[8] When discussing patents the terminology used is "patent protections." The idea is that the one who discovered it, invented it or improved upon it needs and has a right to be protected. In the biopiracy framework the protection idea is a misnomer because the corporations use patent law to their advantage by discrediting the Indigenous Peoples' historical proprietorship over the plants and cultural knowledge. The

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[6] DR. PRAKASH CHANDRA MEHTA, TRIBAL RIGHTS 15 (1996).

[7] Rekha Ramani, *Market Realities v. Indigenous Equities*, 26 BROOK. J. INT'L L. 1147, n. 4 (2001).

[8] Naomi Roht-Arriaza, *Of Seeds and Shamans: The Appropriation of the Scientific and Technical Knowledge of Indigenous and Local Communities*, 17 MICH. J. INT'L L. 919, 939 (1996).

Indigenous Peoples' plants and cultural traditions are in need of protection, not the pharmaceutical companies' claim on their plants and cultural methods. The definitions of discovery, invention, improvement, and protection need to encompass a broader understanding than are currently held under patent law in order to appropriately protect the Indigenous Peoples. Biotechnological companies and agrochemical companies are exploring in rich areas of source materials particularly the untouched lands where Indigenous Peoples live. Therefore, Indigenous Peoples face an uphill battle in protecting their plants and cultural knowledge.

Thus this paper highlights the problems Indigenous Peoples confront when dealing with intellectual property systems. The paper will show that patent law is inadequate to protect Indigenous Peoples' rights as it is written from a western perspective. Part II outlines the principles and rationales of patent law and how the Indigenous Peoples' participation in the cultivation of their plants and cultural knowledge is disregarded. Part III shows how international treaties favor a western view of patent law over those of Indigenous Peoples. Part IV and V provide examples of biopiracy in India and Mexico. Part VI offers possible solutions to protect Indigenous Peoples' plants and knowledge through the Convention on Biological Diversity, trade secrets, enforcing morality through public policy, and redefining intellectual property law. The paper concludes with some reflections on the need for the voices of Indigenous Peoples to be heard and respected.

II. PATENT LAW

Patent law is the antithesis of Indigenous communities, because it is based on monopolistic and exclusionary rights while tribal communities emphasize the needs of the group and the benefits of all over the individual. A patent is a legal

document granted by a government giving exclusive rights to the inventor.[9] The original theory behind patent law is that one who "invents" or "discovers" something should be rewarded for his/her work.[10] The idea is that the patent, which provides a time limited monopoly, presents an incentive for individuals to create and invent, which in turn benefits the society as a whole.[11] The exclusive privilege granted to the inventor gives the patent holder the right to manufacture use or sell the patented product.[12] Patent law requires that the invention meet three criteria before a patent protection can be applied, namely that the object be 1) new, 2) non-obvious, and 3) useful.[13]

A. Newness or Novelty Requirement

The requirement of newness, as defined by U.S. patent law is that one may not patent an invention if the invention is any of the following:

> a. …known or used by others in this country, or patented or described in a printed publication in this or a foreign country,…or
> b. …described in a printed publication in this or a foreign country or in public use or on sale in this country,…or
> c. he has abandoned the invention, or

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[9] DAVID A. BURGE, PATENT AND TRADEMARK TACTICS AND PRACTICE 27 (1999).

[10] F.H. ERBISH, INTELLECTUAL PROPERTY RIGHTS IN AGRICULTURAL BIOTECHNOLOGY 8 (K.M. Maredia ed., 1998).

[11] *Id.*

[12] *See* JOHN F. MURPHY & ALAN C. SWAN, CASES AND MATERIALS ON THE REGULATION OF INTERNATIONAL BUSINESS AND ECONOMIC RELATIONS 188 (1999).

[13] *Id.*

> d. the invention was first patented or caused to be patented…by the applicant…in a foreign country prior to the dtate of the application in this country….[14]

An invention will not be considered new if it contains all the elements of a previously claimed invention; if, however, one of the elements is new then the invention will be considered different from the previous invention.[15] A patent may not be retroactively applied to inventions and must be sought at the earliest possible moment.[16] The newness requirement is difficult to prove for Indigenous Peoples because cultural knowledge is passed down from generation to generation.

Indigenous Peoples' cultural knowledge may have been "invented" centuries ago and is thus not considered new. Many members of the tribe may be privy to a particular cultural method and because communal knowledge is excluded from patent law the Indigenous Peoples will not be able to meet this requirement. Patented newness operates under the premise that particularized advantages provides incentives to benefit the whole of society and without it inventions will not be made.[17] This way of thinking is derived from a market economy, establishing that without personal monetary rewards no one will create.

Alternatively, communal knowledge from an Indigenous perspective allows for mutual benefits for the sake of the group without the need for individualized rewards.[18] Many

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[14] 35 U.S.C. § 102 (1994).

[15] BURGE, *supra* note 9, at 42.

[16] Gelvina Rodriquez Stevenson, *Trade Secrets: The Secret to Protecting Indigenous Ethnobiological (Medicinal) Knowledge*, 32 N.Y.U. J. INT'L L. & POL. 1119, 1142 (2000).

[17] *See* A. Samuel Oddi, *Trips—Natural Rights and a "Polite Form of Economic Imperialism*, 29 VAND. J. TRANSNAT'L L. 415, 419 (1996).

[18] *See* Stevenson, *supra* note 16, at 1140. The author wishes to acknowledge that Indigenous Peoples' communities are each unique, but

Indigenous tribes see the benefit to the community as a reward in itself. The western view does not see community rewards, as an end result but rather the other way around, if one person is given the incentive to create, the community will be benefited.[19] The fact that cultural knowledge has been passed down for generations will not allow the present Indigenous communities to claim that they are the original inventor.[20] The western individualized approach of patent law is not malleable to the communal nature of tribal communities.

A further hindrance to the Indigenous communities patenting their cultural knowledge is the requirement that the invention not be "patented or described in a printed publication."[21] Cultural anthropologists, ethnobotanists, and other scholars that have previously documented and published the tribe's knowledge under the guise of academic study will eliminate the possibility of Indigenous communities patenting their own plants, even though the Indigenous Tribes have no knowledge of the publications.[22] However, this can also work to their advantage by disallowing a corporation from patenting the resource if it has previously been published.

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in an effort to compare western values to those of Indigenous Peoples' for the sake of the article, she is generalizing their perspective.

[19] *See id.*

[20] *See id.*

[21] 35 U.S.C. § 102 (1994).

[22] *See* Stevenson, *supra* note 16, at 1143.

B. Non-Obviousness or Inventive Requirement

The non-obvious requirement is designed to advance the state of useful arts[23] by limiting the issuance of patents. The statutory requirement for non-obviousness states that:

> A patent may not be obtained…if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains.[24]

The US Supreme Court held in *Graham v. John Deere,*[25] that four basic inquires should be made when addressing non-obviousness.[26] First, the scope and content of the prior art should be ascertained.[27] Second, the level of ordinary skill in the particular field should be assessed.[28] Third, the difference between the prior art and the claims at issue is examined.[29] Finally, a determination is made as to whether these differences would have been obvious to a layperson in the applicable field at the time the invention was made.[30] Basically, a patent is considered obvious if a person could have created the invention with information known to the public at large.

Patenting the genes now circumvents the non-obvious requirement, which had traditionally excluded biological

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[23] The term art comes from Article I, Section 8 of the U.S. Constitution, "Science and Useful Arts," and refers to a particular subject matter in a field of study.

[24] 35 U.S.C. § 103 (1994).

[25] 383 U.S. 1 (1966).

[26] *See id.* at 17.

[27] *See id.*

[28] *See id.*

[29] *See id.*

[30] *See id.* at 18.

matter.[31] Now, the genes themselves fall under the novelty requirement even though the genes themselves are not an invention, but rather separable because of advances in biotechnology.[32] Previously, this non-obvious requirement excluded products of nature; however, the US Supreme Court case *Diamond v. Chakrabarty,*[33] held that "a live, human-made microorganism is patentable subject matter under statute providing for issuance of patent to person who invents or discovers 'any' new or useful 'manufacture' or 'composition of matter.'"[34] This case has allowed pharmaceutical and agrochemical companies to appropriate Indigenous Peoples' plants by taking them back to the laboratory and extracting the "active" ingredient and claiming it as their own invention. The bacterium discussed in *Chakrabarty* was not a new invention but only the separation of the different genes.

Another way that the companies claim nature for themselves is by increasing the potency of the active ingredient, thus "scientifically" enhancing the plant by showing that the new compound displays "unexpectedly improved properties" that entitle it to patent protections.[35] Chief Justice Burger, writing for the Court in *Chakrabarty,* quotes the House and Senate Committees'[36] discussions surrounding the establishment of the Plant Patent Act,[37]

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[31] *See* Leanne M. Fecteau, *The Ayahuasca Patent Revocation: Raising Questions About Current U.S. Patent Policy*, 21 B.C. THIRD WORLD L.J. 69, 76 (2001). *See also* Roht-Arriaza, *supra* note 8.

[32] *See* Fecteau, *supra* note 31, at 76.

[33] 447 U.S. 303 (1980).

[34] *Id.* at 318.

[35] Fecteau, *supra* note 31, at 76. S*ee also* Roht-Arriaza, *supra* note 8.

[36] *See Chakrabarty*, 447 U.S. at 311-314 (discussing H.R. Rep. No. 1129, 71st Cong. 2d Sess., 7-9 (1930)).

[37] 35 U.S.C.A. § 101 (1930).

> There is a clear and logical distinction between the discovery of a new variety of plant and of certain inanimate things, such, for example, as a new and useful natural mineral. The mineral is created wholly by nature unassisted by man…. On the other hand, a plant discovery resulting from cultivation is unique, isolated, and is not repeated by nature, nor can it be reproduced by nature unaided by man ….[38]

Chief Justice Burger recognizes the Plant Patent Act's distinction to be one between products of nature, and human made inventions rather than between living and inanimate things.[39]

Alternatively, Justice Brennan evaluates the Congressional discussion in direct opposition to that of the majority by stating that:

> [T]he Court's decision does not follow the unavoidable implications of the statute. Rather, it extends the patent system to cover living material even though Congress plainly has legislated in the belief that § 101 does not encompass living organisms. It is the role of Congress, not this Court, to broaden or narrow the reach of the patent laws. This is especially true where, as here, the composition sought to be patented uniquely implicates matters of public concern.[40]

The dissent's argument focuses on the fact that it is the legislative branch not the Court who should be determining the patentability of plants. The dissent feels that the courts should not be quasi legislatures. The majority's interpretation of the Plant Patent Act allows for biotechnological companies to patent plants, which have been naturally cultivated by Indigenous Peoples. This "scientific" way of understanding human made invention does not include the cultivation methods used by Indigenous Peoples. While the

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[38] *Chakrabarty,* 447 U.S. at 313 (quoting S. Rep. No. 315 at 6 (1930) and H.R. Rep.No. 1129 at 7-9 (1930)).

[39] *See id.*

[40] *Chakrabarty*, 447 U.S. at 321-22. Justice Brennan's dissent was joined by Justice White, Justice Marshall and Justice Powell.

particular subject matter of *Chakrabarty* was bacteria, it has been extended to include "man-made life" such as seeds and plant and tissue cultures.[41] The patent protection values "scientific" technology aided by man while disregarding the original "cultivator," the Indigenous Peoples. The *Chakrabarty* ruling allows for the singling out of a plant's active ingredient and appropriating it for exclusive use as a patent.[42]

These new genetic plant patents do not fall into the traditional definitions of invention. The genes have been identified but the inventor has not created anything. The companies are not creating life anew. They are only isolating a particular gene or recombining the genes to form an enhanced plant, using technology instead of traditional plant cultivation. This new concept of creating as human ingenuity rather than inherently coming from nature allows companies to extract the resources without consulting the Indigenous Peoples or sharing the profits with them.

Indigenous communities, over the centuries, have identified and classified plants native to their lands and found healing and spiritual uses for them. While bioprospectors have no qualms about claiming the plant and the cultural knowledge as their "invention" they also have no qualms in seeking help from Indigenous communities to identify and locate source material. For example, by consulting Indigenous Peoples, "bioprospectors can increase the success ratio in trials for useful substances from one in ten thousand to one in two."[43] The injustice is particularly poignant here; scientists dismiss the Indigenous knowledge as inadequate when assessed under patent law, yet respect their knowledge

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[41] *See generally Ex parte* Hibberd, 227 U.S.P.Q. 443 (PTO Bd. Pat. App. & Int. 1985).

[42] PETER A. DRAHOS, A PHILOSOPHY OF INTELLECTUAL PROPERTY 210 (1996).

[43] Roht-Arriaza, *supra* note 8, at 928.

when they are used as a guide and educator of the source material.

Profiting from one's labor is the basis of Lockean theory and prevalent in property law.[44] It is this theory that allowed the "discoverers" of the Americas to distinguish themselves from the Indigenous Peoples whom they determined did not labor upon the land. Thus by living in harmony with nature, they were not able to acquire property rights.[45] However John Locke did not have intellectual property or the intellectual commons in mind when he designed his theory. Generally the theory of mixing one's labor with something (fruits of one's labor) is used to justify intellectual property laws.[46] However, the original laborer, the Indigenous Peoples are overlooked because the intellectual property laws favor "scientific" western values.

The Indigenous Peoples have already discovered the plants, assessed their healing and medicinal properties and cultivated them for their use. This knowledge, however, is not considered on par with western standards because the Indigenous Peoples are not looking to profit from the knowledge. It is a double standard for the pharmaceutical companies to discredit the Indigenous Peoples labor and knowledge so that they can then claim the natural resource for themselves.

C. Usefulness or Utility Requirement

The third element assessed under an application for a patent requires that an invention must be capable of achieving some minimal useful purpose.[47] This requirement is based on Article I, Section 8 of the U.S. Constitution, which grants Congress the power "to promote the Progress of

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[44] DRAHOS, *supra* note 42, at 143.
[45] *See* Johnson v. McIntosh, 21 U.S. (8 Wheat.) 543 (1823).
[46] *See id.* at 590-91.
[47] BURGE, *supra* note 9, at 43.

Science and the useful Arts, by securing for a limited Times to Authors and Inventors the exclusive Right to their respective Writings and Discoveries."[48] The usefulness requirement under U.S. patent law is generally easy to meet since an invention can be quite trivial or even inferior to another invention and still pass the test. The only excludable non-utility reasons, for a denial of a patent is on illegal or immoral grounds.[49] However, under international law the usefulness requirement is more stringent and must be able to generate profits.[50] Indigenous tribe's production of medicinal applications and religious ceremonies do not usually include profitability.

Indigenous Peoples have a difficult time meeting the requirements of patent law. First, they fail the novelty requirement because of the difficulty in identifying an original inventor because the whole tribe possesses the knowledge.[51] Second, the tribes fail the non-obviousness test because traditional cultivation practices are considered unscientific due to their process of exchanging information that has an oral tradition and is often undocumented while the scientific extraction of genes is patentable.[52] When a pharmaceutical company "scientifically" identifies components of a plant, the company becomes the inventor even though the Indigenous tribe may have shown the company where the plant grows, how they have cultivated it and their purpose for using it. The Western scientific research is valued over the Indigenous Peoples' knowledge. Third, the Indigenous Peoples fail the useful requirement as it is defined

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[48] U.S. CONST. art. I, § 8.

[49] Fecteau, *supra* note 31, at 76-77.

[50] Scott Holwick, *Developing Nations and the Agreement on Trade-Related Aspects of Intellectual Property Rights*, 1999 COLO. J. INT'L ENVTL. L. & POL'Y 49, 57 (2000).

[51] Stevenson, *supra* note 16, at 1142.

[52] Ramani, *supra* note 7, at 1160.

in international law because they do not make a profit from the use of the plants and knowledge.

Additionally, Indigenous Peoples often lack the legal and financial resources to protect themselves from biopiracy. "In the United States, filing fees cost $380.00 for a 'small entity,' as well as $605.00 for issuing a patent."[53] The application process involves a myriad of deadlines with a particular order to each step; any misstep comes with a financial penalty.[54]

III. WORLDWIDE CONVENTIONS ON PATENTS

A. TRIPS Agreement

Because of increased globalization many countries are finding ways to increase trade between nations. The most comprehensive multilateral agreement on intellectual property is TRIPS (Agreement on Trade-Related Aspects Intellectual Property Rights), which came into effect on January 1, 1995 and includes patents that protect new varieties of plants.[55] Specifically, the TRIPS agreement's main purpose is to encourage trade and protect property rights. "The goal of TRIPS is to 'reduce distortions and

[53] *See id.*at 1150.

[54] *See id.*

[55] MARK A. STEINER & SIEGRUN D. KANE, GLOBAL TRADEMARK AND COPYRIGHT PROTECTING INTELLECTUAL PROPERTY RIGHTS IN THE INTERNATIONAL MARKETPLACE 601 (1998). S*ee also generally* Oddi, *supra* note 17. "The TRIPS agreement was conceived and shaped by three organizations—the Intellectual Property Committee (IPC), Keidanren, and the Union of Industrial and Employees Confederation (UNICE). IPC is a coalition of 12 major U.S. corporations: Bristol Myers, DuPont, General Electric, General Motors, Hewlett Packard, IBM, Johnson & Johnson, Merck, Monsanto, Pfizer, Rockwell, and Warner. Keidanren is a federation of economic organizations in Japan, and UNICE is recognized as the official spokesperson for European business and industry." SHIVA, *supra* note 5, at 81.

impediments to international trade [by] 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 . . .'"[56] TRIPS requires that the member nations comply with the treaty's provisions.

The TRIPS agreement requires that each member comply with the substantive obligations of the main conventions of the WTO (World Trade Organization), namely the Paris Convention and the Berne Convention.[57] Like patent law in general, TRIPS reinforces private rights over the rights of the community and places restrictions on developing nations and Indigenous communities.[58] The TRIPS agreement states that, "intellectual property rights are recognized only as private rights,"[59] which excludes the kind of communal knowledge that is present in Indigenous tribes.

Article 27 of the TRIPS agreement requires that "signatory countries must protect property rights in genetic plant resources."[60] Many nations are critical of adopting rights in nature but feel pressure to comply with the world trade system.[61] These rights in plant resources disregard the knowledge and historical contributions of Indigenous Peoples in nurturing those natural resources.[62]

The TRIPS agreement mirrors the three requirements under patent law but increases the usefulness element by mandating that in order for a property right to be recognized

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[56] Fecteau, *supra* note 31, at 77 (citing Agreement on Trade Related Aspects of Intellectual Property Rights (April 15, 1994)).

[57] STEINER, *supra* note 55, at 601.

[58] *See* Holwick, *supra* note 50, at 52.

[59] *See id.* at 57.

[60] Fecteau, *supra* note 31, at 80.

[61] *See id.* at 81.

[62] *Id.*

the invention must generate profits.[63] Again, these requirements reflect a capitalist perspective. The usefulness requirement of U.S. patent law is heightened in the international realm to include only those property rights that will bring commercial profits.

Complete disregard of Indigenous Peoples' rights is found in Latin America with naturally colored cotton.[64] Centuries of breeding and cultivation of cotton have produced beautiful varieties of colored cotton that is spun and woven by over 50,000 Indigenous women.[65] In 1990, U.S. scientist Sally Fox obtained a patent for the colored cotton; the seed for the patent came from a United States Department of Agriculture collection taken when one of its scientists traveled in Latin America.[66] The Indigenous communities receive no compensation for the "environmentally friendly" fabrics of colored cotton now used by Levi Strauss and Esprit.[67]

Because patent law enables a patent holder to exclude others from using their patented product local communities may be forced to stop using a traditional product for free.[68] They could be forced to pay royalties for continued use of their traditional medicinal plants.[69] Drugs that were produced locally, before the patent, increase in price because they are extracted from the local area, produced elsewhere and shipped back to the native country.[70] This will further economically burden Southern countries. "[N]on governmental organizations (NGOs)…are concerned that

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[63] *See* Holwick, *supra* note 50, at 57.
[64] *See* Roht-Arriaza, *supra* note 8, at 924.
[65] *See id.*
[66] *See id.*
[67] *See id.*
[68] *See* Holwick, *supra* note 50, at 58-59.
[69] *See id.*
[70] *See id.*

farmers will have to relinquish their ownership and control over seed and food production to foreign corporations."[71]

B. Paris Convention

TRIPS members are required to sign onto the Paris Convention for the Protection of Industrial Property which was established in 1883.[72] The member states, of which there are 136, are required to follow certain principles in applying their own laws on intellectual property.[73] The Paris Convention "adopts a principle of national treatment."[74] The member countries must treat the foreign nationals in the same manner as they treat their own.[75] In this way it "prohibits discrimination against foreigners."[76] Each member state is allowed to create its own patent protections, including determining what will be protected, any specific conditions, and the duration of the patent.[77] Member states have the potential to enforce stringent protections on behalf of the Indigenous Peoples, however, the pressure to conform because stakes of the economic potential of trade usually leads to less restrictive guidelines.[78] Signing on to the TRIPS agreement heightens the lack of protection that the Indigenous Peoples currently experience because it opens the international trade markets even wider.

The Paris Convention's most important principle is the "right of priority."[79] A person who receives a patent in a member country will have priority over any other applicant

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[71] *Id.* at 59.
[72] *See* MURPHY & SWAN, *supra* note 12, at 190.
[73] *See id.*
[74] *Id.*
[75] *See id.*
[76] MURPHY & SWAN, *supra* note 12, at 192.
[77] *See id.* at 190.
[78] Fecteau, *supra* note 31, at 81.
[79] MURPHY & SWAN, *supra* note 12, at 190.

filing for the same invention in any other state, that is a party to the Paris Convention, if he files his patent within twelve months.[80] For example, if a US corporation patents the neem tree in India (a party to the convention) and an Indigenous group in Australia (a party to the convention) wants to patent its neem tree, the US corporation has twelve months to claim patent rights on the Australian tree and will receive the patent over the Indigenous tribe. The rationale is that once the tree is patented the "invention" is no longer original. This prevents even the country of origin from objecting to the patent in its own jurisdiction.

Furthermore, an Indigenous community may not want to patent a particular plant because another tribe in close proximity is using the same plant for similar purposes. Tribes may not want to interfere with or exclude the plant's use for another tribe. Additionally, a patent is finite and thus after a certain amount of years the knowledge will be considered public.[81] Many tribes may not want their private cultural and religious practices made public.

"The patent laws of countries vary considerably."[82] Some have certain items that they consider unpatentable, such as plants and medicines, and the duration of patents fluctuates.[83] Because of these discrepancies a product may be patentable in one country but not another.[84] The TRIPS agreement applies pressure to countries that do not have plant patent protections to conform to the international model.[85] Jurisdictional issues also come into play, as courts in one country will consider themselves incompetent to enforce

[80] *See id.*
[81] Stevenson, *supra* note 16, at 1130.
[82] *Id.* at 192.
[83] MURPHY & SWAN, *supra* note 12, at 190.
[84] Stevenson, *supra* note 16, at 1130.
[85] Fecteau, *supra* note 31 at 81.

infringements of foreign patents.[86] An example of a country that has bowed to the pressure of TRIPS is India.

IV. INDIA

India's national structure is unique in that there are more than 500 tribes, which comprise 19% of the population.[87] The tribal people tend to live in dense forests and remote areas that are cut off from mainstream society.[88] India is deeply rooted in its view of the natural world as common property.[89] Many of India's cultural and religious traditions see the manifestation of God in the rivers, trees, and animals.[90] These concepts challenge intellectual property protection, which "undermine[s] the cultural and ethical fabric based on agriculture, in which the fundamental life processes are treated as sacred, not as commodities to be bought and sold on the market."[91] Intellectual property right's regime denies that nature has an essential quality that should prevent it from being patented. This system sees all life as a potential money making proposition with commercial exploitation as its goal.

The neem tree grown in India is intricately woven into the Indian culture.[92] In some areas the people eat the tender shoots of the tree at the start of the New Year; in others it is considered sacred.[93] It is generally known for its medicinal properties.[94] It is used to clean teeth, as a treatment for skin disorders, as an antidote for malaria, meningitis, common

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[86] *See id*.
[87] MEHTA, *supra* note 6, at 8.
[88] *See id.* at 7.
[89] *See* Marden, *supra* note 4, at 293.
[90] *See id.* at 283.
[91] *Id.* at 293 (citing SHIVA, *supra* note 5).
[92] *See id.* at 283.
[93] SHIVA, *supra* note 5, at 69.
[94] *See id*.

colds, influenza, and as a spermicide and insecticide.[95] In the early 1990's American researchers found a way to stabilize the neem oil for use as an insecticide; previously it took many applications to achieve the same goals.[96] As a result of this research, W.R. Grace & Co. patented the reductive ingredient of the neem seed oil, azadirachtin, which the Environmental Protection Agency has registered as Neemix.[97]

The patent covers both the active ingredient of the neem seed oil, azadirachtin, and the method used to stabilize the ingredient.[98] While Indian farmers can still use the tree in their traditional ways they are receiving no compensation or acknowledgment for their part in the "invention."[99] "The corporation's vice president stated that Indigenous knowledge of the neem plant was merely 'folk medicine' and the corporation had no intention of compensating holders and developers of the neem plant's properties in India."[100]

The W.R. Grace neem processing plant has been called the world's first biopesticide facility, yet the Indian cottage industries Organization Khadi and the Village Industries Commission have been processing neem for forty years.[101] The blatant disregard for Indigenous knowledge is seen by the way that W.R. Grace ignored the local cottage industry and claimed its facility as the first.

The amount of money involved in these disputes is high; "one report estimates that the developing world would gain $5.4 billion per year if multinational food, seed, and

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[95] *See id*.

[96] *See* Marden, *supra* note 4, at 283.

[97] *See id.* at 284.

[98] *See id.*

[99] Chetan Gulati, *The Tragedy of the Commons in Plant Genetic Resources: the New International Regime Centered Around an International Biotechnology Patent Office*, 4 YALE HUM. RTS. & DEV. L. J. 63, 67 (2001).

[100] Ramani, *supra* note 7, at 1148, n. 4.

[101] SHIVA, *supra* note 5, at 70-71.

pharmaceutical firms paid royalties for local knowledge and plant varieties."[102] These statistics beg the question of whether the United States is opening their wallets to assist poor nations or to place money within them. One example is the Indian plant rauwolfina serpentina, which is processed into a hypertension drug producing $260 million in U.S. sales annually, yet none of the money is dispersed back into India's economy.[103] The U.S. corporations find traditional plant knowledge easy prey because there is no fear that the Indigenous Peoples will patent the plant as they fail to satisfy the established requirements of patent law, novelty, non-obviousness and usefulness.

India changed its policy on international intellectual property in 1994, by signing the TRIPS agreement. "The decision to embrace international intellectual property standards has allowed India 'to utilize demanded-for intellectual property rights as a sword and shield against deculturizing forces of globalization and foreign investment.'"[104] The sword and shield analogy is undermined by political pressure imposed on India to compete and agree with western values. India's recent international controversies surrounding the neem tree, basmati rice, and turmeric created a situation whereby both national corporations and public interests groups within India have strongly opposed the exploitation of natural resources and Indigenous knowledge.[105] TRIPS allows for nation states to impose more stringent patent laws, however, India will have to balance the protection of Indigenous knowledge with the rapidly expanding atmosphere within the international

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[102] Marden, *supra* note 4, at 287.

[103] *See id.*

[104] Ramani, *supra* note 7, at 1161-62 (citing Doris Estelle Long, *The Impact of Foreign Investment on Indigenous Culture: An Intellectual Property Perspective,* 23 N.C. J. INT'L L. & COM. REG. 229, 240 (1998)).

[105] *Id.* at 1148.

community whose sole focus is on commercialization and profits. Another country attempting to balance the competing interests of Indigenous Peoples and economic growth is Mexico.

IV. MEXICO

Corporate bioprospectors have found Mexico to be a particularly appealing nation. Mexico is a country rich in natural resources. It contains thirty-four out of the thirty-six identifiable ecoclimates while the continental US has four.[106] Mexico has twenty-five out of the twenty-eight recognized soil categories and is home to 14.4% of all living species.[107] The lucrative biotechnological industry depends on Southern nations like Mexico that are resource rich and economically poor. This combination creates an atmosphere whereby the Mexican government feels the need to open its borders to corporate investments.[108]

Genetic resources are fast disappearing as "[s]pecies and varieties are becoming extinct at unprecedented rates, due to the use of ever fewer high-yield commercial varieties in agricultural production, the loss of habitat and other factors."[109] This "gene-rich" territory is home to many Indigenous communities.[110] The loss of forests and genetic material combined with the moneymaking incentives for corporations increase the need for protection of Indigenous communities' land, plants and cultural knowledge.

The Mayan peoples of Mexico have a traditional fermented drink called *pozol*.[111] This traditional drink is a

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[106] *See Biopiracy*, *supra* note 2.
[107] *See id.*
[108] Weiner, *supra* note 1, at 4.
[109] *See* Roht-Arriaza, *supra* note 8, at 926-27.
[110] *See id.* at 927.
[111] *See Biopiracy*, *supra* note 2.

source of nutrition and a natural preventative for giardia, amoebas and other intestinal ailments for the Mayan people.[112] In 1999, the Dutch corporation Quest International in conjunction with the University of Minnesota obtained a patent for an isolated microorganism (or active component) of the drink rather than the drink itself.[113] Both the University of Minnesota and Quest International refuse to recognize the Indigenous knowledge used to develop *pozol*.[114] Presently, the Indigenous Peoples' are demanding that the Mexican government pass appropriate anti-bioprospectors legislation to protect the rights of the environment and the people.[115]

Mexico is a signatory to some international treaties that could help protect Indigenous Peoples. In 1945 Mexico became a member of the United Nations Educational, Scientific and Cultural Organization (UNESCO).

> The main objective of UNESCO is to contribute to peace and security in the world by promoting collaboration among nations through education, science, culture and communication in order to further universal respect for justice, for the rule of law and for human rights and fundamental freedoms which are affirmed for the peoples of the world, without distinction of race, sex, language or religion, by the Charter of the United Nations.[116]

Under UNESCO, the Convention on the Means of Prohibiting and Preventing the Illicit Import, Export and Transfer of Ownership of Cultural Property defines cultural property as, "property which, on religious or secular grounds, is specifically designated by each State as being of importance for archaeology, prehistory, history, literature, art or science and which belongs to the following category:

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[112] *See id.*
[113] *See id.*
[114] *See id.*
[115] *See id.*
[116] *UNESCO at* http://www.unesco.org/general/eng/about/what.shtml.

a. Rare collections and specimens of fauna, *flora*, *minerals* and anatomy, and object of paleaontological interest."[117]

UNESCO addresses the needs of a new global economy and its effects on social justice through its world forum on Globalizing for Social Justice.[118] Its stated objective is "to provide new opportunities for sectors and groups of societies that are marginalized by globalization."[119]

Currently, the Indigenous Rights and Culture Bill is before the Mexican Congress and potentially has the ability to protect Indigenous rights.[120] However, the economic benefits flowing to the Mexican government from allowing free reign to bioprospectors may be persuasive to the economically depressed country. Strong vocal support will be necessary to make the government factor in the needs of the Indigenous Peoples. It will be a difficult task to persuade the Mexican government to find a proper balance between these two competing interests.

VI. POSSIBLE SOLUTIONS

Patent law is not an effective protection for Indigenous Peoples because they fail to meet the requirements of patentability. Also, international bodies offer little protection, as many nations do not sign onto the treaties. They have little enforcement power because of the lack of willingness to adhere to the mandates, and competing interests get in the way of continuity. Four possibilities are outlined below that could aid in protecting Indigenous Peoples' rights in their

[117] Convention on the Means of Prohibiting and Preventing the Illicit Import, Export and Transfer of Ownership of Cultural Property (entry into force April 24, 1972) (emphasis added), *available at* http://www.unesco.org/culture/laws/1970html_eng/page2.shtml.

[118] *See UNESCO at the World Social Forum 2002* (on file with the New England Journal of International and Comparative Law).

[119] *See id.*

[120] *Biopiracy*, *supra* note 2.

plants and cultural knowledge. However, each comes with their own drawbacks. Ultimately it will take a combination of laws, resources, and a global willingness to support Indigenous Peoples to remove the impediments to protections.

A. Convention On Biological Diversity

The Convention on Biological Diversity (CBD) has the potential for holding countries accountable for their Indigenous Peoples rights. The TRIPS agreement is in direct opposition to the CBD, which aspires to conserve the world's biological resources and to advance sustainable development.[121] Both India and Mexico have ratified the treaty but although the United States through the Clinton administration signed the CBD in 1993, Congress has yet to ratify it.[122] There are three aspects of the CBD that pertain to the preservation of cultural and biological diversity contained in article 8(j). Article 8(j) states:

> Subject to its national legislation [1] *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 [2] *promote their wider application* with the approval and involvement of the holders of such knowledge, innovations and practices and [3] *encourage the equitable sharing of the benefits* arising from the utilization of such knowledge, innovations and practices[.][123]

In order for these goals to be effective, countries that have ratified the treaty need to put pressure on the United States to ratify and abide by the objectives of this convention,

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[121] Fecteau, *supra* note 31, at 82.

[122] *Id.* at 83.

[123] W. LESSER, SUSTAINABLE USE OF GENETIC RESOURCES UNDER THE CONVENTION ON BIOLOGICAL DIVERSITY 114-15 (1998).

the TRIPS agreement needs to be altered to include these goals and each nation needs to individually incorporate these goals into their intellectual property regimes. The CBD considers Indigenous knowledge to be "traditional technologies" that are equal to the western capitalist system. The Convention states in Article 18(4):

> The Contracting Parties shall, in accordance with national legislation and policies, encourage and develop methods of *cooperation for the development and use of technologies, including indigenous and traditional technologies,* in pursuance of the objectives of this Convention.[124]

The CBD is the first international treaty to recognize the importance of the Indigenous Peoples' role in "gathering and preservation of cultural knowledge regarding regional biodiversity."[125] The CBD also recognizes that Indigenous Peoples should benefit in the monetary gains of their cultivation, preservation and innovations.[126] The TRIPS agreement could be altered to agree with the United Nations Convention on Biological Diversity. The failure of the United States to ratify the treaty is an affront to the value of the Indigenous Peoples' knowledge.

B. Trade Secrets

Trade secrets may provide more protection for Indigenous Peoples than patent law. Trade secrets are assigned or licensed and do not require the same amount of complexities that a patent application requires.[127] Trade secret protection does not require "any government filing or approvals to be effective."[128] Trade secrets are protected as

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[124] *Id.* at 115.
[125] *See* Fecteau, *supra* note 31, at 82.
[126] *See id.*
[127] *See* Stevenson, *supra* note 16, at 1154.
[128] *See id.* at 1154-55.

long as they do not become widely known.[129] They allow the inventor to retain control over the trade secret as long as it is kept secret rather than the finite period for patents.[130] There are three requirements for trade secret protection:

1. The information must be kept secret;
2. The trade secrets must have commercial value because it is secret; and
3. The person claiming the trade secret must have made reasonable efforts to keep the information secret.[131]

Compared to patent law these requirements have a low bar. First, while the secrecy requirement establishes that the owner know the information is secret and must take precautions to keep it secret, this requirement is not absolute and only expects the holder to make reasonable efforts.[132] Second, courts have tended to construe the commercial value requirement in a lenient fashion by "finding that a secret with 'potential' or yet unrealized value can constitute commercial value."[133] Third, the burden of proof for misappropriation of trade secrets is on the one who owns the trade secret but if the claimant proves misappropriation, the burden shifts to the accused to prove that the information was acquired from another source other than the claimant.[134] Another positive factor in trade secret protection is that when misappropriation is proven the remedies "include injunctions, compensatory damages, and punitive damages for 'willful and malicious misappropriation.'"[135] While trade secrets offer better

[129] *See id.* at 1154.
[130] *See id.*
[131] *See id.* at 1155.
[132] *See* Stevenson, *supra* note 16, at 1156.
[133] *See id*. at 1158.
[134] *See id.* at 1159.
[135] *See id.* at 1154.

protections for Indigenous Peoples than patent law, they still face some of the same challenges as with patent law; they still need to know that they need protection and need access to adequate funds and legal advice.

C. Enforce Public Policy and Morality Aspects of Patent Law

Under the test for patent applicability are the grounds to negate corporate patents of Indigenous Peoples' plants. Under the usefulness prong of patent law, a patent will not be issued if it is illegal or immoral.[136] The Patent Trade Office has recently used the Moral Utility doctrine to exclude inventions that combined human and animal cells.[137] "The courts have interpreted the utility requirement to exclude inventions deemed to be 'injurious to the well-being, good policy, or good morals of society.'"[138] Placing pressure on our governments and the international community through public awareness could persuade the courts and the TRIPS agreement to consider the validity of the Indigenous Peoples' claims to their plants and cultural knowledge. Public awareness could expose bioprospecting for what it is, illegal and immoral appropriation.

D. Redefining Intellectual Property Law

Another possible solution for protection is to redefine and broaden the intellectual property regime to include Indigenous Peoples. The newness requirement could be altered to apply retroactively. Clearer statutes could be written so that Congress' original intentions, to exclude plants from being patented, could be factored into the non-

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[136] *See* Fecteau, *supra* note 31, at 76-77.
[137] *See id*. at 90.
[138] *Id.* at 90-91.

obviousness requirement. The heightened usefulness requirement under TRIPS could acknowledge that profitability is not the only way a plant can be useful. Nation states could encourage and educate the Indigenous Peoples within their borders to assign trade secrets to their plants and cultural knowledge. Important to this potential solution is that the Indigenous Peoples are a participant in the process of redefining intellectual property laws. They need to decide how to best protect their plants and cultural knowledge. Indigenous Peoples need access to international forums so that they can help shape intellectual property laws. Indigenous Peoples have a right to self-determination but without active participation their survival is threatened. One way for Indigenous Peoples to gain the education and protections they need is through the assistance of lawyers' pro bono work and the advocacy law schools' legal clinics.

VII. CONCLUSION

The open market on Indigenous Peoples' plants and cultural knowledge is exasperated by the imbalances of money and power held by governments and corporations over the Indigenous Peoples. Additionally, the dispartity of access to decision-making forums increases the Indigenous Peoples' inability to make any, let alone informed, decisions about their plants and cultural knowledge. In order for Indigenous Peoples to self-determine their future, patent laws need to reflect their rights as inventors and not give patent rights based on a western definition of "invention" by manipulating genes. Indigenous Peoples need access to information about how to protect themselves using, for example, trade secrets and also the TRIPS agreement needs to encompass the Convention on Biological Diversity's mandate to preserve cultural and biological diversity.

Justice dictates that western countries treat Indigenous Peoples with respect; they need the support of national and international laws and equal footing at the negotiation tables. Western countries need to take the time to see and support the Indigenous Peoples' perspective in order to preserve their existence, the world's natural resources, and promote human rights.