

THE MANDATORY DISCLOSURE REQUIREMENT AS A THIRD WORLD TRIPS RIPOSTE: RECOGNIZING TRADITIONAL KNOWLEDGE, PRIOR ART, AND THE LOCKEAN IDEAL

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Oscar Franklin B. Tan**

"As much land as a man tills, plants, improves, cultivates, and can use the product of, so much is his property. He by his labour does, as it were, enclose it from the common. ... God, when He Gave the world in common to all mankind, commanded man also to labour...."

- John Locke¹

"[I]f, in the terms of the social compact, property has equality for its condition, at the moment when equality ceases to exist, the compact is broken and all property becomes usurpation. We gain nothing, then, by this pretended consent of mankind."

- Pierre-Joseph Proudhon²

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¹ CONCERNING CIVIL GOVERNMENT, SECOND ESSAY, Chap. V ("Of Property"), ¶ 31 (1690) in 35 GREAT BOOKS OF THE WESTERN WORLD 31 (hereinafter "GREAT BOOKS") (Encyclopedia Britannica, Inc., Maynard Hutchins ed. 1982).

INTRODUCTION

2004 should be a memorable year for superstitious or sentimental intellectual property lawyers. First, the maximum grace period for the Philippines to select and adopt its *sui generis* system for protecting plant species would have lapsed this year.³ Second, it marks the end of the International Decade for the World's Indigenous Peoples, and it is hoped that the United Nations General Assembly will mark this by adopting the Draft Declaration on the Rights of Indigenous Peoples.⁴ Third, it marks the tenth anniversary of the World Trade Organization's creation.⁵

It seemed but an eyeblink before the world's present international intellectual property regime was established. Ironically, the events of the past ten years have affected man's oldest repositories of knowledge far more than the past centuries. The Third World's biodiversity resources evolved for millennia in natural laboratories, and indigenous communities' traditional knowledge regarding these was slowly built up over centuries. Their fate now hangs in the seeming eyeblink, and perhaps the next.

This paper seeks to discuss the pressing issue of biopiracy in a threefold treatment. First, it shall paint a detailed background canvass of the issue, present the most prominent examples, describe the North-South development economics framework, and lay a deeper intellectual foundation for the issue using John Locke's concept of property and labor, Garrett Hardin's Tragedy of the Commons, and a theological yearning to use property for human development.

Second, it shall critically examine traditional knowledge under the TRIPS framework for patentability, and clarify inconsistencies in some existing literature. Some discussions, for example, freely interchange a goal of excluding traditional knowledge from patents and another goal of empowering traditional communities to seek patent protections over the same knowledge, without explaining why the two are not mutually exclusive.

² WHAT IS PROPERTY? OR, AN INQUIRY INTO THE PRINCIPLE OF RIGHT AND OF GOVERNMENT 94 (Chap. II, § 2 "Universal Consent no Justification of Property") (Benj. Tucker trans., 1890) (1840).

³ 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, 59 (2000).

⁴ International Decade of the World's Indigenous People, U.N. Doc. A/RES/49/214 (1994).

⁵ Marrakesh Agreement Establishing the World Trade Organization, Apr. 15, 1994, at http://www.wto.org/english/docs_e/legal_e/04-wto.doc.

Others, to cite another example, argue that traditional knowledge must be recognized as patentable because there is an inventive step despite taking decades to come into being, yet do not address why the supposed patent would not lapse. This section shall conclude that TRIPS as it exists at present is readily capable of protecting traditional knowledge in the sense of excluding it from foreign patents, but that one must look to other instruments to provide more positive protections such as benefits sharing for holder communities.

Finally, the third section will examine several strategies for safeguarding traditional knowledge and various doctrinal or practical difficulties that plague them. It will then conclude that regardless of these unresolved doctrinal issues, the Brazilian mandatory disclosure model presents the simplest and most practical strategy for protecting traditional knowledge under TRIPS, and, if adopted, would lay a solid foundation for ultimate goals such as equitable benefits sharing.

PART I: AN OVERVIEW OF BIOPIRACY

Biopiracy, or "bioprospecting" if one prefers to be euphemistic,⁶ refers to the unauthorized export of genetic, chemical and even cultural knowledge from one country for use in another, without the former benefiting. The term "piracy" is appended because the resources are almost always removed from a Third World country by First World corporations, and centuries' worth of borrowed knowledge is all but appropriated by the First World under strengthening international patent regimes.⁷ As opposed to the Western connotation,⁸ the piracy referred to here involves not infringement, but misappropriation.⁹ In biopiracy, not only is the original Third World population robbed of any share of this expanded use's profits –

⁶ Valentina Tejera, Note, *Tripping Over Property Rights: Is it Possible to Reconcile the Convention on Biological Diversity with Article 27 of the TRIPS Agreement?*, 33 NEW ENG. L. REV. 967, 971-72 (1999); Michael Woods, *Food for Thought: The Biopiracy of Jasmine and Basmati Rice*, 13 ALB. L.J. SCI. & TECH. 123, 135 (2002); Emily Marden, *The Neem Tree Patent: International Conflict Over the Commodification of Life*, 22 B.C. INT'L & COMP. L. REV. 279, 279-80 (1999); J.M. Spectar, *Patent Necessity: Intellectual Property Dilemmas in the Biotech Domain & Treatment Equity for Developing Countries*, 24 Hous. J. INT'L L. 227, 236 (2002).

⁷ Spectar, *supra* note 6, at 231.

⁸ Amy Carroll, Comment, *Not Always the Best Medicine: Biotechnology and the Global Impact of U.S. Patent Law*, 44 AM. U. L. REV. 2433, 2469-70 (1995).

⁹ Sumathi Subbiah, Note, *Reaping What They Sow: The Basmati Rice Controversy and Strategies for Protecting Traditional Knowledge*, 27 B.C. INT'L & COMP. L. REV. 529, 537 (2004).

in some cases, the original knowledge holders may not even know about it – it may even be forced to buy back its own resource at First World prices.¹⁰

Tanzanian President Ali Hassan Mwinyi articulated:

[M]ost of us in developing countries find it difficult to accept the notion that biodiversity should flow freely to industrial countries while the flow of biological products from the industrial countries is patented, expensive and considered the private property of the firms that produce them. This asymmetry reflects the inequality of opportunity and is unjust.¹¹

The transplant of this kind of knowledge is not new.¹² Following the Age of Discovery, for example, European colonial powers brought seeds for maize, potatoes, beans, squash, cassava, and peanuts back to the cores of their empires. Because plants reproduce, however, they had value far beyond

¹⁰ Shubha Ghosh, *Traditional Knowledge, TRIPS, and the New Mercantilism (Part II)*, 85 J. PAT. & TRADEMARK OFF. SOC'Y 885, 895 (2003); Erin Kathleen Bender, Comment, *North and South: The WTO, TRIPS, and the Scourges of Biopiracy*, 11 TULSA J. COMP. & INT'L L. 281, 315 (2003); Spectar, *supra* note 6, at 237-38; Erin Donovan, Comment, *Beans, Beans, The Patented Fruit: The Growing International Conflict Over the Ownership of Life*, 25 LOY. L.A. INT'L & COMP. L. REV. 117, 140 (2002); Lakshmi Sarma, Note, *Biopiracy: Twentieth Century Imperialism in the Form of International Agreements*, 13 TEMP. INT'L & COMP. L.J. 107, 127 (1999).

¹¹ Marden, *supra* note 6, at 280, 288.

¹² *Id.*, at 280, 287; Assisi Foundation et al, *Biopiracy, TRIPS, and the Patenting of Asia's Rice Bowl*, GRAIN (Philippines), at ¶ 4, May 1998, available at <http://www.grain.org/briefings/?id=29>.

"April 22, 1500. The Portuguese navigator Pedro Alvares Cabral, leading an expedition of 13 vessels, arrives in a so-far unexploited land, where today is the Brazilian city of Porto Seguro. The expedition's first contact with the Tupiniquins Indians occurred on the following day. Historians tell us that the Portuguese, as an expression of their peaceful intents, offered the natives a few items of clothing. In exchange the Indians offered them some of their garments, made of tropical birds' feathers. Later the expedition followed the original course towards India, while one of the vessels sailed back to Portugal, taking samples of animals, plants and minerals collected in the new land to the King D. Manuel I.

"May 26, 2002. Chiefs (caciques) and shamans (pajés) representing fifteen tribes of the Krahô people, an indigenous group that inhabits the central part of Brazil, sign a document complaining about the unauthorized collection of plants associated with their traditional knowledge by a Brazilian university, which was intending to make a research contract with a pharmaceutical laboratory. The Indians petitioned for an immediate end to the research in their area, and approximately eight million dollars as recovery for moral damages and bioprospection fees." Eliana Torelly de Carvalho, *Protection of Traditional Biodiversity-Related Knowledge: Analysis of Proposals for the Adoption of a Sui Generis System*, 11 MO. ENVTL. L. & POL'Y REV. 38, 38-39 (2003).

that of the actual, physical amount taken.¹³ Today, a small sample of genetic or chemical material can bear fruit millions of times its value, something facilitated by modern manufacturing and formalized by the modern patent system. There are potentially countless examples of this phenomenon today buried in thick patent applications. The most famous and well-documented cases alone suffice to alarm any Third World leader, and some scholars go so far as to label biopiracy as neocolonialism.¹⁴ Finally, the issue's economic scope is immense: "In 1995, 118 of the top 150 prescription drugs in the US were derived from plants or animals."¹⁵ Today, roughly a quarter of drugs prescribed in the United States have active ingredients derived from plants.¹⁶

The issue of biopiracy is part of the larger issue regarding the care of traditional knowledge. The preservation of biodiversity resources themselves is intertwined with the cultural resources handed down through generations in indigenous and local communities.¹⁷ The regions richest in biodiversity, for example, are similarly the regions with the highest cultural and linguistic diversities.¹⁸ The term "traditional knowledge" is not easily defined. This follows from its breadth and the diversity of traditional communities around the world, and it is in developing countries' favor to adopt a liberal intellectual definition.

¹³ Keith Aoki, *Weeds, Seeds, & Deeds: Recent Skirmishes in the Seed Wars*, 11 CARDOZO J. INT'L & COMP. L. 247, 262 (2003).

¹⁴ Bender, *supra* note 10, at 285.

¹⁵ Woods, *supra* note 6, at 135. "[O]f the top 150 prescribed drugs in 1993, 57 percent "contained at least one major active compound now or once derived or patterned after compounds derived from biological diversity." Eliana de Carvalho, *supra* note 12, at 40.

¹⁶ Chidi Oguamanam, *Localizing Intellectual Property in the Globalization Epoch: The Integration of Indigenous Knowledge*, 11 IND. J. GLOBAL LEGAL STUD. 135, 140 (2004); Spectar, *supra* note 6, at 231-32; Charles McManis, *The Interface Between International Intellectual Property and Environmental Protection: Biodiversity and Biotechnology*, 76 WASH. U. L.Q. 255, 273 (1998).

¹⁷ David Downes, *How Intellectual Property Could Be a Tool to Protect Traditional Knowledge*, 25 COLUM. J. ENVTL. L. 253, 254 (2000); Lawrence Watters, *Indigenous Peoples and the Environment: Convergence from a Nordic Perspective*, 20 UCLA J. ENVTL. L. & POL'Y 237, 271 (2001/2002); Young-Gyoo Shim, *Intellectual Property Protection of Biotechnology and Sustainable Development in International Law*, 29 N.C. J. INT'L L. & COM. REG. 157, 234-35 (2003).

¹⁸ Jennifer Amriott, *Investigating the Convention on Biodiversity's Protections for Traditional Knowledge*, 11 MO. ENVTL. L. & POL'Y REV. 3, 10 (2003).

Traditional knowledge is often broken down into subfields such as genetic resources, traditional medicine, and folklore,¹⁹ but these are themselves broad categories; for example, the term folklore might cover topics from plant cultivation to performing arts. The United Nations Draft Declaration on Indigenous Peoples enumerates "human and other genetic resources, seeds, medicines, knowledge of the properties of fauna and flora, oral traditions, literatures, designs and visual and performing arts."²⁰

Aside from the age of such knowledge, the essence of "tradition" has pertained to its manner of transmission and preservation within communities. The World Intellectual Property Organization (WIPO) has articulated this as referring to knowledge systems that:

- (1) have generally been transmitted from generation to generation
- (2) are generally regarded as pertaining to a particular people or its territory
- (3) are constantly evolving in response to a changing environment²¹

In contrast with formal Western scientific systems, traditional knowledge exhibits the following characteristics:

- recorded and transmitted through oral tradition;
- learned through observation and hands-on experience;
- based on the understanding that the elements of matter have a life force. (All parts of the natural world are therefore infused with spirit);
- does not view human life as superior to other animate and inanimate elements: all life-forms have kinship and are interdependent;
- holistic (whereas western science is reductionist)

¹⁹ Subbiah, *supra* note 9, at 532.

²⁰ Draft United Nations Declaration on the Rights of Indigenous Peoples, art. 29, U.N. Doc. E/CN.4/Sub.2/1994/2/Add.1 (1994).

²¹ WORLD INTELLECTUAL PROPERTY ORGANIZATION (hereinafter "WIPO"), INTELLECTUAL PROPERTY NEEDS AND EXPECTATIONS OF TRADITIONAL KNOWLEDGE HOLDERS: WIPO REPORT ON FACT-FINDING MISSIONS ON INTELLECTUAL PROPERTY AND TRADITIONAL KNOWLEDGE (1998-1999) 25 (2001), available at <http://www.wipo.int/tk/en/tk/ffm/report/final/pdf/part1.pdf>, quoted in Subbiah, *supra* note 9, at 532.

- intuitive in its mode of thinking (whereas western science is analytical);
- mainly qualitative (whereas western science is mainly quantitative);
- based on data generated by resource users. (As such it is more inclusive than western science, which is collected by a specialized group of researchers who tend to be more selective and deliberate in the accumulation of facts);
- based on diachronic data (whereas western science is largely based on synchronic data);
- rooted in a social context that sees the world in terms of social and spiritual relations between all life-forms. (In contrast, western science is hierarchically organized and vertically compartmentalized); and
- derives its explanations of environmental phenomena from cumulative, collective and often spiritual experiences. Such explanations are checked, validated, and revised daily and seasonally through the annual cycle of activities.²²

It must be emphasized that traditional knowledge systems qualify as scientific systems by any definition. They are both systematic and empirical, and are easily divided into parallels of modern science, such as traditional medicine, traditional biology and nutrition, and traditional zoology.²³

A. EXAMPLES OF BIOPIRACY UNDER MODERN PATENT SYSTEMS

1. Turmeric (India, 1995 United States Patent)

Turmeric is a plant that grows in India and Pakistan, and a yellow powder extracted from its roots through boiling is traditionally used by these peoples as a dye, a bitter spice and food colorant, a cosmetic, and an ant repellent. In addition, turmeric is used in traditional Indian medicine to alleviate sprains and inflammations.

²² Graham Dutfield, *TRIPS-Related Aspects of Traditional Knowledge*, 33 CASE W. RES. J. INT'L L. 233, 241 (2001), quoting Martha Johnson, *Research on Traditional Environmental Knowledge: Its Development and Its Role*, in LORE: CAPTURING TRADITIONAL ENVIRONMENTAL KNOWLEDGE 7-8 (Martha Johnson ed., 1992).

²³ WIPO, TRADITIONAL KNOWLEDGE – OPERATIONAL TERMS AND DEFINITIONS 13, WIPO/GRTKF/IC/3/9 (Jun. 13-21, 2002), available at http://www.wipo.int/documents/en/meetings/2002/igc/pdf/grtkfic3_9.pdf; Dutfield, *supra* note 22, at 240-41; Bender, *supra* note 10, at 290.

In 1995, two Indian-American doctors from the University of Mississippi, Suman Colhy and Hari Har P., obtained an American patent for six methods of topically and orally administering turmeric to wounds for healing purposes, including surgical wounds and body ulcers. The patent application failed to disclose this turmeric's prior traditional use, and discussed only the applicants' attempts to isolate turmeric's active healing agent. Aside from the traditional use, Indian researchers had already documented turmeric's properties as early as the 1950s.²⁴ Three years later, the United States Patent Office (USPO) cancelled all six claims after a challenge by the Indian Council of Scientific and Industrial Research.

This marked the first successful challenge to a patent on the ground that it was not novel, being part of another people's traditional knowledge. It also demonstrated the difficulty of checking prior art when the patent application is made in another country, on the other end of the world.²⁵ Nevertheless, in April 2000, a Vietnamese doctor received patents in Maryland for administering turmeric in health ailments and skin disorders.²⁶ Further, over two hundred American patents have been issued with names such as "Turmeric for treating health ailments," "Turmeric for treating skin disorders," and "Turmeric as an Anti-irritant in Compositions Containing Hydroxy Acids or Retinoids." Professor Shubha Ghosh opines that these, unlike the six cancelled in 1995, have the crucial element of novelty beyond traditional Indian use.²⁷

2. Basmati rice (India, 1997 United States Patent)

Basmati rice is traditionally grown in India and Pakistan, and commands premium prices as the "crown jewel" of South Asian rice.²⁸ There are over four hundred varieties, and the rice accounted for 4% of India's export earnings in 1997,²⁹ and USD500 million in export earnings in 2001-02.³⁰ The rice is known for its distinctive nut-like scent and flavor, and "basmati" is derived from the Hindi word for "fragrant."³¹ These characteristics result from the plant's inherent genetic qualities, unique

²⁴ Gerard Bodeker, *Traditional Medicinal Knowledge, Intellectual Property Rights, & Benefit Sharing*, 11 CARDOZO J. INT'L & COMP. L. 785, 788 (2003).

²⁵ Ghosh, *supra* note 10, at 899.

²⁶ *Id.* at 899 n.56, citing U.S. Patent No. 6,048,533 and No. 5,897,865.

²⁷ Ghosh, *supra* note 10, at 899.

²⁸ Woods, *supra* note 6, at 138.

²⁹ Ghosh, *supra* note 10, at 902.

³⁰ Subbiah, *supra* note 9, at 537.

³¹ Ghosh, *supra* note 10, at 902.

environmental conditions at the foot of the Himalayas, and traditional cultivation practices.³²

In 1997, the Texan company RiceTec patented a method of breeding, preparing, and cooking an aromatic long grain identical to basmati rice, and it extended over the plant itself.³³ Curiously, the summary in the patent application itself hinted that Basmati originated from India and Pakistan:

[T]he new varieties more properly should be described as Basmati substitute or quasi Basmati rice. The limited success in improving the versatility and productivity of Basmati rice lines supports the belief in consumer, trade and scientific circles that authentic Basmati rice can only be obtained from the northern regions of India and Pakistan due to the unique and complex combination of environment, soil, climate, sowing practices and the genetics of the Basmati varieties.³⁴

RiceTec had also applied to use the trademark "BasmatiUSA" in 1992, though it abandoned this in 1994. The Indian CSIR challenged the patent, and the USPO cancelled most of RiceTec's claims.³⁵ It must be noted that RiceTec's original patent claim covered 90% of traditional rice lines, and the USPO limited it to three varieties the company developed and have no relation to Indian varieties.³⁶ Reactions to the result are mixed. On one hand, RiceTec can no longer claim the term "Basmati" or the Basmati rice lines as unique.³⁷ On the other hand, the remaining patents, however, nevertheless allow RiceTec to exclude the basmati varieties still covered from the United States market until September 2017,³⁸ and still allow RiceTec to sell these varieties under the name "Basmati."³⁹ Thus, in 2000, activists petitioned the United States Department of Agriculture (USDA) to

³² Subbiah, *supra* note 9, at 536.

³³ U.S. Patent No. 5,663,484; Ghosh, *supra* note 10, at 902; Woods, *supra* note 6, at 138.

³⁴ Witoon Liamchamroon, *Protecting Asia's Most Valuable Resource*, ¶ 5, GRAIN (Philippines), December 2001, available at <http://www.grain.org/seedling/?id=59>.

³⁵ Ghosh, *supra* note 10, at 905-06. Indian NGOs criticized the initial Indian move as weak for not demanding the withdrawal of all RiceTec patents, and that the government was concerned with the loss of markets but not farmers' rights. Liamchamroon, *supra* note 34, ¶ 6.

³⁶ Subbiah, *supra* note 9, at 552-53; Donovan, *supra* note 10, at 139.

³⁷ Liamchamroon, *supra* note 34, ¶ 7.

³⁸ Woods, *supra* note 6, at 138.

³⁹ Liamchamroon, *supra* note 34, ¶ 8; Subbiah, *supra* note 9, at 551.

limit the use of the word "Basmati" only to the varieties grown in India and Pakistan, and made a similar petition regarding Thailand's jasmine rice.⁴⁰

It must be noted that patents on rice varieties have impact far beyond the economic and even the political. For example, the Philippine non-governmental organization (NGO) Magsasaka at Sayantipiko Para sa Ikauunlad ng Agham Pang-agrikultura (MASIPAG)⁴¹ states:

Rice is more than just a food we find [on] our dining table. It is a cereal that has become the cornerstone of our food system, our language, our culture.⁴²

Not only is rice central to many Asian peoples' diets, this central role has precisely intertwined with their societies' cultures and religions, with many treating it as a divine gift. Hindus credit the god Vishnu with causing it to sprout from the soil, and the god Indra with teaching men to cultivate it. In Myanmar, the legend goes that the Kaichin people brought rice seeds from the center of the earth and were directed to a place where they would grow well. In Japan, Shinto belief considers the Emperor as the living embodiment of Ninigo-no-mikoto, the god of the ripened rice plant.⁴³

The cultural backlash aside, however, the economic effects alone are staggering. Taken together, for example, Thailand and India account for half of the world's rice output.⁴⁴ On the other hand, almost half the rice gene patents in the world are held by American corporations, and DuPont alone held ninety-five as of late 2000.⁴⁵

3. Jasmine rice (Thailand, no patent claimed)

Thailand's Jasmine rice presents a less publicized parallel to India's basmati controversy. This premium rice variety is grown using traditional methods in the arid Thung Kula Ronghai region, and is one of the country's most important exports. Since 1995, however, Professor Chris Deren of the University of Florida has been working with the USDA to produce a mutated jasmine variety that will grow in Florida's Everglades. Deren's

⁴⁰ Liamchamroon, *supra* note 34, ¶ 9.

⁴¹ Farmers and Scientists for the Development of Agricultural Science. "Masipag" is a Filipino word that means "hardworking."

⁴² Liamchamroon, *supra* note 34, ¶ 17.

⁴³ Subbiah, *supra* note 9, at 535.

⁴⁴ *Id.* at 535-36.

⁴⁵ Woods, *supra* note 6, at 137.

variety, however, resembles Thailand's Khao Pathum Thani 1,⁴⁶ and should an American patent be obtained, Thai exporters would face the expensive and difficult prospect of proving that the traditional variety is different from Deren's. Despite the geneticist's claims that he legally obtained a copy from the Philippine-based International Rice Research Institute (IRRI), the latter refutes that Deren was passed a sample that IRRI had provided the USDA in 1995.⁴⁷

In December 2001, Thai Prime Minister Thaksin Shinawatra discussed the controversy with American President George W. Bush during a state visit, and threatened a boycott of American exports should American corporations seek to exploit jasmine rice. The controversy was seemingly diffused when the USDA announced that it would not seek to patent any strains of jasmine rice produced. However, far from taking a moral high ground, it simply could not seek patents because Deren obtained his rice strain from the International Rice Research Institute and is prohibited from seeking a patent on any variety developed.⁴⁸ However, American researchers are not precluded from patenting a jasmine variety developed from another source,⁴⁹ something criticized as a loophole in IRRI's intellectual property safeguards.⁵⁰

As with basmati, the Thai reaction to the possible patenting of jasmine rice went beyond protesting the economic ramifications. One traditional farmer was quoted:

Since our ancestors began to grow Jasmine rice, it has belonged to Thai farmers, and Thai village communities. Nobody, not anyone, can claim ownership or assume exclusive rights. The patenting of Jasmine rice or the misuse of its name is a shameless theft towards us....⁵¹

The Thai Ministry of Commerce voiced plans to sue the USDA for funding Deren's research, and the Prime Minister's office even released a Wanted poster with Deren's photograph. More broadly, campaigns by Thai

⁴⁶ Another author, however, names the original variety as "Khao Dok Mali 105" or KDM 105. Liamchamroon, *supra* note 34, ¶ 12.

⁴⁷ *Id.*

⁴⁸ *Id.*, ¶ 13.

⁴⁹ Woods, *supra* note 6, at 139-41.

⁵⁰ Assisi Foundation, *supra* note 12, ¶ 36.

⁵¹ Liamchamroon, *supra* note 34, ¶ 14.

and other Asian activists are also directed against IRRI for undermining traditional intellectual property rights.⁵²

4. Neem (India, 1990 United States and European Patent)

Azadirachta indica, neem, or the Indian lilac is a tree native to India but now found in the Americas, Australia, and Africa. For Hindus, its Sanskrit name is *sarva-roga nivarini*, or "curer of all ailments,"⁵³ while Muslims know it as "the blessed tree."⁵⁴ Its bark has a natural fungicide, and has traditional medical and ceremonial uses.⁵⁵ The Neem tree is so important to Indian culture that it is worshipped in some areas as sacred. Indians use the bark in countless ways in daily life, from cleaning their teeth with the bark to using its leaf juice to prevent psoriasis, and even use the tree's seeds as a spermicide.⁵⁶

Neem extracts are used commercially as pesticides, fertilizers, and medicines, and the USPO has issued about 130 patents related to these extracts. The chemical properties of neem are not new; Western science took notice of these as early as 1959, when a German entomologist reported that neem trees were left untouched by a locust swarm that devoured other plants in the area. Researchers then identified azadirachtin as an active substance in the seeds, and a powerful insecticide that does not harm humans. Indians break the seeds and soak the pieces in water or alcohol to create a natural though fast-degrading pesticide.⁵⁷

The most controversial American patents were issued in 1990 and 1994 to the W.R. Grace company, and related to extending the storage life of the extract's active agent.⁵⁸ In March 1994, Grace's Neemix solution became the first neem-derived product approved for use on crops in the United States.⁵⁹ The neem patents evoked such a strong reaction that over half a million farmers in Bangalore, India marched in protest of plant patents in 1993, shortly after the Uruguay Round of the Global Agreement

⁵² *Id.*, ¶ 15-16.

⁵³ Marden, *supra* note 6, at 283.

⁵⁴ McManis, *supra* note 16, at 258.

⁵⁵ Subbiah, *supra* note 9, at 539-40.

⁵⁶ Marden, *supra* note 6, at 283; McManis, *supra* note 16, at 258.

⁵⁷ Marden, *supra* note 6, at 283; McManis, *supra* note 16, at 258.

⁵⁸ Ghosh, *supra* note 10, at 910; Bender, *supra* note 10, at 314.

⁵⁹ Marden, *supra* note 6, at 284.

on Tariffs and Trade and despite a strong earthquake that had struck the area.⁶⁰

The Indian government challenged these patents, but later withdrew its objections when it became apparent that W.R. Grace had not based its method on Indian traditional knowledge. However, in 2000, the European Patent Office withdrew Grace's patent,⁶¹ and its Opposition Board found a lack of novelty in Grace's method. The later, successful challenge in Europe encouraged Indian activists to reconsider their strategies for the United States.⁶²

5. Enola Bean (Mexico, 1999 United States Patent)

The maycoba, peruano, and azufrado are yellow bean varieties grown in and exported by Mexico.⁶³ In 1994, Larry Proctor took yellow beans from a package of field beans purchased in Mexico and planted them in Colorado. He selected plants with smaller leaves and stronger seed pods, planted their seeds, and allowed the plants to self-pollinate.⁶⁴ After two years, he claimed to have come up with a superior cultivated bean variety called Enola, one with a distinctive shade of yellow, and obtained both a patent and a plant variety protection certificate for it.⁶⁵

Proctor then used these to block imports of beans with similar shades of yellow from Mexico, and to sue two American importers for patent infringement.⁶⁶ His company Pod-Ners made six cents per pound in royalties to the prejudice of exporters,⁶⁷ and Mexican yellow bean production fell from 250,000 to 96,000 tons in 2001. Nevertheless, Enola was proven to be genetically identical to a traditional variety registered in Sinaloa, Mexico in 1978.⁶⁸ The International Center for Tropical Agriculture became the first developing world agricultural research center to challenge an American patent over a crop. The USPO admitted the challenge was

⁶⁰ McManis, *supra* note 16, at 257.

⁶¹ Decision Revoking the European Patent No. EP-B-0436257, European Patent Office, Ref. No. 30159 (2001).

⁶² Ghosh, *supra* note 10, at 910.

⁶³ Gillian Rattray, *The Enola Bean Patent Controversy: Biopiracy, Novelty, and Fish-and-Chips*, 2002 DUKE L. & TECH. REV. 1, 11.

⁶⁴ Margo Bagley, *Patently Unconstitutional: The Geographical Limitation on Prior Art in a Small World*, 87 MINN. L. REV. 679, 701-02 (2003).

⁶⁵ U.S. Patent No. 5,894,079; Donovan, *supra* note 10, at 121-22.

⁶⁶ Bagley, *Patently Unconstitutional*, *supra* note 64, at 702.

⁶⁷ Rattray, *supra* note 63, at 2.

⁶⁸ Donovan, *supra* note 10, at 123 n.43.

meritorious, but conceded that the reexamination process could take months.⁶⁹

To argue the absurdity of the Enola bean patent and food patenting in general, ActionAid, a charity group that works with poor farmers, filed a patent for any salted, French-fried potato, claiming a novel method of salting.⁷⁰

6. Ayahuasca vine (Ecuador, 1986 United States Patent)

The Amazon rain forest's *Banisteriopsis caapi* or ayahuasca vine is sacred to that region's indigenous tribes, and has been used by their healers and religious leaders for generations. In the past centuries, their shamans have used the vine to treat sicknesses, contact spirits, and even foresee the future.⁷¹ "Ayahuasca" means "vine of the soul" in Quechua and has symbolic value comparable to the Christian Eucharist, and is administered only by tribal shamans.⁷² In 1986, however, American scientist Loren Miller obtained a patent over the vine, which he called "Da Vine."⁷³ He claimed he built a school for a tribe in Ecuador, and received samples of the plant from them, which he cultivated in Hawaii.

Ecuador's indigenous peoples' organizations found out about the patent only in 1994, and coordinated with NGOs to formally contest it in the USPO. The Center for International Environmental Law filed a Request for Reexamination in 1999. This was granted, but on the narrow ground that the same plant had been described in Chicago's Field Museum herbarium sheets more than a year before Miller's application. The controversy prompted the country to reject a bilateral intellectual property agreement with the United States.⁷⁴

The Ayahuasca controversy is different in that the patent turned out to have no economic value. Miller himself was quoted, "If this patent was causing any harm to the indigenous people I would have canceled it myself... I don't care about the patent. It's worthless. It's useless, it's just

⁶⁹ *Id.* at 123.

⁷⁰ Rattray, *supra* note 63, at 1.

⁷¹ Leanne Fecteau, Note, *The Ayahuasca Patent Revocation: Raising Questions About Current U.S. Patent Policy*, 21 B.C. THIRD WORLD L.J. 69, 69 (2001).

⁷² Glenn Wiser, *PTO Rejection of the "Ayahuasca" Patent Claim: Background and Analysis*, at ¶ 1, Center for International Environment Law, November 1999, at <http://www.ciel.org/Biodiversity/ptorejection.html>.

⁷³ U.S. Plant Patent No. 5751 (June 17, 1986).

⁷⁴ Fecteau, *supra* note 71, at 70, 87.

sitting in a drawer."⁷⁵ However, the reexamination failed to address the weightier issues not only of prior art and prior informed consent in Ecuador, but the fact that the vine was a sacred religious symbol to tribes there.⁷⁶ The Coordinating Secretariat of Organizations of Indigenous Peoples from the Amazon emphasized "the magnitude of the offense to indigenous peoples for a single person to purport to appropriate, assert proprietary rights in, and derive monetary benefit from such a sacred symbol."⁷⁷

Parenthetically, Miller pursued reconsideration of the USPO decision, and received several extensions, until the USPO reversed its decision in 2001 and allowed the patent to stand.⁷⁸ Nevertheless, the case is now moot because the patent's 17-year term expired on June 17, 2003, and cannot be renewed.⁷⁹

7. Other patent issues

Many other plant and chemical products derived from traditional knowledge have been or may be patented soon. Abbot Laboratories, for example, is developing a new painkiller that duplicates the effects of morphine, but without the harmful side effects. However, it is based on a toxin taken by Amazon tribes for generations from a frog's skin, and Abbot legitimately claims that under TRIPS, the former are not entitled to any share in the profits.⁸⁰ Similarly, another multinational corporation isolated lycopene from the small cylindrical tomato, tamate, cultivated by these tribes. This active ingredient is used as an anti-cancer drug, but the Indians have not benefited.⁸¹ These are only two examples of bioprospecting in the biological treasure trove that is the Amazon. Pharmaceutical companies

⁷⁵ Fecteau, *supra* note 71, at 102.

⁷⁶ *Id.*, at 86.

⁷⁷ Elizabeth Longacre, Note, *Advancing Science While Protecting Developing Countries from Exploitation of Their Resources and Knowledge*, 13 FORDHAM INTELL. PROP. MEDIA & ENT. L.J. 963, 970 (2003).

⁷⁸ GLENN WISER, CENTER FOR INTERNATIONAL ENVIRONMENTAL LAW, U.S. PATENT AND TRADEMARK OFFICE REINSTATES AYAHUASCA PATENT 2-3 (2001), available at <http://www.ciel.org/Publications/PTODecisionAnalysis.pdf> (June 25, 2001). The pamphlet discusses at length why the reversal was wrong both procedurally and substantively.

⁷⁹ Center for International Environmental Law, *The Ayahuasca Patent Case*, at ¶ 4, at <http://www.ciel.org/Biodiversity/ayahuascapatentcase.html> (last updated December 8, 2003).

⁸⁰ Bender, *supra* note 10, at 314, citing Andrew Pollack, *Patenting Life: A Special Report; Biological Products Raise Genetic Ownership Issues*, N.Y. TIMES, Nov. 26, 1999, at A1.

⁸¹ Longacre, *supra* note 77, 970.

continue to scour the rain forest in search of the next billion-dollar "wonder drug,"⁸² and over 7,000 traditional medicines have been released in the Western market.⁸³ More than an estimated half of all species are found in tropical rain forests, including over half of the Earth's higher plant species, theoretically because these areas were spared during the Ice Age while temperate zones froze.⁸⁴

The Philippines has borne its share of biopiracy as well. For over twenty years, the French fashion house Yves St. Laurent imported the *Cananga odorata* or ilang-ilang flower and using its extract in its perfumes. It now sources its extract from its plantations in Africa – after obtaining a patent for a perfume formula based on the flower.⁸⁵ The Japanese company Itoen KK has patented the banaba plant as an anti-diabetic medicine, despite its well-documented traditional use in the Philippines for this purpose, and for treating fever, diarrhea, and other ailments. Another Japanese company patented jute or saluyot as an anti-stress medication. Patents have likewise been filed for other backyard remedies such as sambong, lagundi, and takip kuhl.⁸⁶

To cite examples from other Southeast Asian countries, Sankyo, Japan's second largest pharmaceutical company, obtained a patent over Thailand's *Croton subhyratus* or plao-noi plant. It extracted the active ingredient and named it Planotol, and its sales for the tablet form named Kelnac were estimated at USD40 million in 1987.⁸⁷ Japanese patents were likewise issued over tempe, an Indonesian protein substitute popularly eaten as a health food and processed by fermenting soybeans. Tempe is a "unique feature of Indonesia's culinary heritage," and its manufacture was documented as early as the 16th century.⁸⁸ Finally, Thai scientists claim that the Map-30 protein patented in the United States as an anti-AIDS drug was

⁸² Woods, *supra* note 6, at 135, citing Nicole Veash, *Biopirates Loot the Amazon – Multinational Pharmaceutical Companies are Hunting for Medicinal Plants Used as Traditional Cures by the Amazon Indians*, IRISH TIMES, Feb. 24, 2001, available at 2001 WL 12598668. Tejera, *supra* note 6, at 971; Fecteau, *supra* note 71, at 71-72.

⁸³ Oguamanam, *supra* note 16, at 140.

⁸⁴ Spectar, *supra* note 6, at 230-31.

⁸⁵ Assisi Foundation, *supra* note 12, ¶ 26.

⁸⁶ *Id.*, ¶ 29.

⁸⁷ *Id.*, ¶ 27.

⁸⁸ *Id.*, ¶ 28.

copied from Thai research based on the small "bird droppings" bitter gourd native to that country.⁸⁹

In South Asia, foreign drug companies have attempted to patent aspects of India's traditional Ayurvedic medicines, which are documented in ancient verse.⁹⁰ Another company attempted to patent the karela plant and its natural purifying qualities.⁹¹ Still another processes the *rauwolfia serpentina* plant as a hypertension drugs, but none of the millions in profits benefit India.⁹² In China, the World Health Organization noted the anti-malaria properties of qing hao or *artemisia annua*, a traditional medicine for fever. Refusing the government's commercial settlement in the 1980s, American scientists reverse-engineered the drug and extracted the active ingredient.⁹³

Biopiracy has been observed in many other regions. In Madagascar, for example, the wild rosy periwinkle was used by the Eli Lilly Corporation to develop vinblastine and vincristine, used to treat Hodgkin's disease and pediatric lymphatic leukemia. None of the millions in profits, again, have benefited the country where the flowers grow.⁹⁴ The corporation extracted the active ingredients in 1954 and the American pharmaceutical industry claim that such windfalls are now a thing of the past, but this remains to be seen.⁹⁵ In Cameroon, a French company holds the permit to commercially exploit and export *prunus africana* bark for use in a European herbal medicine, with citizens benefiting only in the form of wages paid to those hired to collect the bark.⁹⁶

To show how broad the traditional knowledge issue has become, it has gone beyond biological and chemical knowledge and has reached into folklore and culture. For example, there is a danger that even cultural meditative techniques might be patented or copyrighted. In 1971, for example, a Bolivian named Oscar Ichazo led a small group in spiritual exercises, including a meditative technique he called protoanalysis. His

⁸⁹ *Id.*, ¶ 30.

⁹⁰ Subbiah, *supra* note 9, at 538.

⁹¹ *Id.*, at 539.

⁹² Marden, *supra* note 6, at 287.

⁹³ Bodeker, *supra* note 24, at 788-98.

⁹⁴ Spectar, *supra* note 6, at 237; David Vogt, *Protecting Indigenous Knowledge in Latin America*, 3 OR. REV. INT'L L. 12, 14-15 (2001).

⁹⁵ McManis, *supra* note 16, at 273-74.

⁹⁶ Bodeker, *supra* note 24, at 787-88.

students were subject to an agreement to keep the techniques confidential.⁹⁷ Former students made independent disclosures until an action for copyright infringement was finally brought in 1988 against the authors of one book. Ironically, the suit encouraged other authors to assert intellectual property rights over their articulations of Ichazo's oral tradition, and increased the danger of making the techniques available outside spiritual communities.⁹⁸ Specifically with respect to patents, Washington College of Law professor Walter Effross argues that traditional meditative techniques may have the utility needed for patentability, but their nature may preclude patentability or the same grounds patents over medical and surgical techniques are prohibited.⁹⁹ However, patents are only one aspect of intellectual property monopoly protections.

B. THE NORTH-SOUTH POLARIZATION

Inequity is the underlying sentiment against biopiracy, but the most visible stakes are cast in monetary terms. This and broader issues regarding traditional knowledge are set against a backdrop of competing economic interests, a divide between industrialized and industrializing, between First and Third World, between North and South.¹⁰⁰

Strong patent regimes are largely a product of Western mercantile tradition. The practice of granting a ten to fifty-year monopoly on a new product was first formalized in Venice in 1474, when its Senate passed a law for the benefit of those who "would then apply their genius, would discover, and would build devices of great utility to [the] commonwealth."¹⁰¹ European countries developed their own systems over the next two centuries. In 1624, the English Statute of Monopolies adopted the system that began in Venice, but likewise set limits against the first abuses of patent monopolies, particularly crown grants to favored nobles over everyday items from vinegar to iron.¹⁰² Thus, at the very dawn of patent law, one already

⁹⁷ Walter Effross, *Owning Enlightenment: Proprietary Spirituality in the "New Age" Marketplace*, 51 BUFF. L. REV. 483, 489-91 (2003).

⁹⁸ *Id.*, at 528-30.

⁹⁹ Effross, *supra* note 97, at 584-85.

¹⁰⁰ Carroll, *supra* note 8, at 2464.

¹⁰¹ *Id.* at 2444.

¹⁰² Bagley, *Patently Unconstitutional*, *supra* note 64, at 705-06; Bender, *supra* note 10, at 286-87.

saw its delicate balance, one between providing financial incentives to inventors and preventing the abuse of the monopoly rights granted.¹⁰³

Beginning from the broader perspective, thinkers from economist Walden Bello to Pope Paul VI trace the North-South conflict to the 1950s and the postwar decolonization,¹⁰⁴ and many point to the continuing power imbalance as an extension of imperialism.¹⁰⁵ Disparities in technology and industrial infrastructure, Bello theorized, "resulted in the South needing to use more and more of its raw materials and agricultural products to purchase fewer and fewer of the North's manufactured products."¹⁰⁶ Argentine economist Raul Prebisch developed the theory of structuralism that focused on these trade imbalances, and his ideas influenced the United Nations General Assembly and pushed Third World initiatives such as the Group of 77, the Organization of Petroleum Exporting Countries, and the UN Conference on Trade and Development (UNCTAD).¹⁰⁷

The North, however, influenced the South's development and trade policies through their control of capital, through international bodies such as the World Bank and the International Monetary Fund (IMF),¹⁰⁸ and by placing conditions on technology transfer to developing countries such as the strengthening of domestic patent protections.¹⁰⁹ Eventually, Bello posits that the World Trade Organization (WTO) was created to manage trade rivalries between industrialized countries and to protect their interests against the South by maintaining the global economic structure.¹¹⁰ Where UNCTAD, for example, sought to harness trade as a means of developing weaker economies and fostering industrialization, the WTO emphasized free trade and formalized an economic playing field shaped to favor the strengths

¹⁰³ VICENTE AMADOR, PATENTS UNDER THE INTELLECTUAL PROPERTY CODE 27 (2001).

¹⁰⁴ POPE PAUL VI, POPULORUM PROGRESSIO: ENCYCLICAL OF POPE PAUL VI ON THE DEVELOPMENT OF PEOPLES, §§ 6-8 (March 26, 1967); Bender, *supra* note 10, at 298, quoting Walden Bello, *Building an Iron Cage: The Bretton Woods Institutions, the WTO, and the South*, in VIEWS FROM THE SOUTH: THE EFFECTS OF GLOBALIZATION AND THE WTO ON THIRD WORLD COUNTRIES 56-57 (Sarah Anderson ed., 2000).

¹⁰⁵ Doris Estelle Long, "Democratizing" Globalization: Practicing the Policies of Cultural Inclusion, 10 CARDOZO J. INT'L & COMP. L. 217, 224 (2002); Sarma, *supra* note 10, at 118-19.

¹⁰⁶ Bender, *supra* note 10, at 298, quoting Bello, *supra* note 104, at 56-57.

¹⁰⁷ Bender, *supra* note 10, at 298-99. Prebisch served as the first UNCTAD chair. *Id.*, at 299 n.156.

¹⁰⁸ *Id.*, at 299-302.

¹⁰⁹ Carroll, *supra* note 8, at 2466.

¹¹⁰ Bender, *supra* note 10, at 302-03. See Woods, *supra* note 6, at 143.

of the already industrialized North. The main concession given to the South was a longer time with which to comply with WTO requirements.¹¹¹

Although each WTO member has one vote regardless of economic status, in practice, the organization is dominated by developed countries such as the United States, Canada, Japan, and the European Union countries. Although the majority of members belong to the South, the North countries are able to negotiate among themselves then pressure select developing countries until most members have been brought into a consensus that is easily channeled through the WTO structure. It is difficult to oppose the stance of industrialized countries such as the United States, and likewise difficult to uphold a position without the support of the North.¹¹²

Developing countries cannot afford to, not with the United States and European Union representing the largest consumer markets in the world.¹¹³ This was concretely seen when countries from the South drafted a response to TRIPS, but were rebuked by the North:

[W]ith varying nuances, [developed countries] made clear that they would not even consider the draft agreement as a basis for negotiations and indirectly warned [lesser developed countries] that unless [they] agreed to accept enhanced GATT standards and rules, unilateral retaliation against their trade would follow.¹¹⁴

The disparity in bargaining positions is seen even in the inability of many developing countries to even attend WTO meetings because they cannot fund delegations or permanent offices in Geneva, or staff the latter adequately. These governments' bureaucracies likewise do not have the resources to respond effectively to every issue raised in the organization, especially when compared to the negotiating machineries of the First

¹¹¹ James Thuo Gathii, *Balancing Patent Rights and Affordability of Prescription Drugs in Addressing Bio-Terrorism: An Analysis of In Re Ciprofloxacin Hydrochloride Antitrust Litigation*, 13 ALB. L.J. SCI. & TECH. 651, 659 (2003); Bender, *supra* note 10, at 303-04. See Doris Estelle Long, "Globalization": A Future Trend or a Satisfying Mirage?, 49 J. COPYRIGHT SOC'Y U.S.A. 313, 342 (2001).

¹¹² Bender, *supra* note 10, at 305-06, citing Martin Khor, *How the South is Getting a Raw Deal at the WTO*, in VIEWS FROM THE SOUTH: THE EFFECTS OF GLOBALIZATION AND THE WTO ON THIRD WORLD COUNTRIES 13-14 (Sarah Anderson ed., 2000).

¹¹³ Bender, *supra* note 10, at 312.

¹¹⁴ Martin Khor Kok Peng, *The Uruguay Round and the Third World*, 20 THE ECOLOGIST 208, 213 (1990), quoted in Sarma, *supra* note 10, at 126.

World.¹¹⁵ Many of the same countries have difficulty marshalling the resources and personnel needed to support an intellectual property infrastructure in the first place.¹¹⁶

The disparities have become increasingly evident, and arguably, self-reinforcing. For example, the North has adamantly sought to narrow exceptions to the patent regime. Most prominently, these countries have refused to relax patent restrictions over pharmaceuticals, even in the face of crippling medicine prices that result in public health disasters.¹¹⁷ For example, the increased cost of medicine hamstrings efforts to treat thousands of AIDS patients from South Africa to Brazil to Thailand.¹¹⁸ Nevertheless, the United States and Canada themselves restricted the company Bayer's patents in order to mass produce anthrax medicine in the wake of the September 11 terrorist attacks.¹¹⁹ Arguments included the need to avoid more expensive medical care by treating patients early,¹²⁰ and that increased sales would offset the lower profit margin.¹²¹ These were precisely the arguments developing countries presented regarding their own public health crises. Indeed, some scholars imply that there are theoretical stages of growth and that countries in the early stages such as the colonial United States and postwar Japan did not impose rigid patent regulations to develop their economic base. They argue that it is unfair for the same countries, now

¹¹⁵ Bender, *supra* note 10, at 306-07.

¹¹⁶ Spectar, *supra* note 6, at 238; Donovan, *supra* note 10, at 132; Sarma, *supra* note 10, at 127; Ruth Gana, *Prospects for Developing Countries under the TRIPS Agreement*, 29 VAND. J. TRANSNAT'L L. 735, 759 (1996).

¹¹⁷ Susan Sell, *Post-TRIPS Developments: The Tension Between Commercial and Social Agendas in the Context of Intellectual Property*, 14 FLA. J. INT'L L. 193, 208-09 (2002).

¹¹⁸ Bender, *supra* note 10, at 311-12. "The United States encouraged many impoverished countries to follow IP policies by requiring such countries to pay the cost of branded drugs. Examples of these developing nations include: Eritrea with a GDP of USD750; Ethiopia with a per capita gross domestic product ("GDP") of USD560; Somalia with a GDP of USD600; Tanzania with a GDP of USD550; and Zambia with a GDP of USD880. Included among these African nations are other developing nations like India, with 320 million people living below the poverty index, and Brazil with 597,000 HIV patients." Srividya Ragavan, *The Jekyll and Hyde Story of International Trade: The Supreme Court in *Pharma v. Walsh* and the TRIPS Agreement*, 38 U. RICH. L. REV. 777, 813-14 (2004).

¹¹⁹ Ragavan, *supra* note 118, at 809-12; Benjamin Damstedt, Note, *Limiting Locke: A Natural Law Justification for the Fair Use Doctrine*, 112 YALE L.J. 1179, 1219 (2003). See Gathii, *supra* note 111, at 657-59.

¹²⁰ *Pharm. Research & Mfrs. of Am. v. Concanon*, 536 U.S. 956 (2002); Ragavan, *supra* note 118, at 814-15.

¹²¹ Ragavan, *supra* note 118, at 810-11.

developed, to force such regulations on countries still struggling up those first rungs of development today.¹²²

Together, the compulsory licensing of patented medicines and biopiracy represent the most contentious North-South intellectual property issues at this point in time.¹²³ These are manifestations of an even larger underlying issue: Whether or not TRIPS and the current international patent regime has integrated the social and economic development concerns of the South.¹²⁴ For example, the United States and other developed countries want India to accede to TRIPS to facilitate their nationals' penetration of its vast consumer market. TRIPS would force the country to reverse welfare provisions in its Patent Act, which prohibits patents over products "intended for or capable of use as a food, medicine, or drug, or if the substance is produced by a chemical process ... however a process for making foods, drugs, and other chemicals is patentable."¹²⁵

C. GAUGING THE PATENT REGIME AGAINST LOCKEAN PHILOSOPHY

While biopiracy is seen primarily as an economic issue, one will never fully grasp it until one recognizes its social and cultural dimensions. While the Italian city states and the rest of Europe implemented patent regimes centuries ago, one might note that older Asian civilizations did not. China, for example, invented paper and the printing press, yet never imposed a copyright system that gave monopoly incentives to authors. Rather, its regulation of printing had social and not economic aims. Unauthorized reproduction or alteration of works was prohibited, but not for the sake of the author. Rather, it was to preserve the purity of knowledge, and the Confucian tradition held that knowledge could not be owned, but must be duplicated verbatim. The social goal, thus, was to provide the population with faithful copies of texts.¹²⁶ Similarly, Indian tradition considered ideas the property of authors or thinkers, but compared

¹²² Bagley, *Patently Unconstitutional*, *supra* note 64, at 732 n.204; Adebambo Adewopo, Essay, *The Global Intellectual Property System and Sub-Saharan Africa: A Prognostic Reflection*, 33 U. TOL. L. REV. 749, 755-56 (2002).

¹²³ McManis, *supra* note 16, at 275.

¹²⁴ Gana, *supra* note 116, at 774; Adewopo, *supra* note 122, at 755.

¹²⁵ Sarma, *supra* note 10, at 133.

¹²⁶ Gana, *supra* note 116, at 766; Ruth Gana, *Has Creativity Died in the Third World? Some Implications of the Internationalization of Intellectual Property*, 24 DENV. J. INT'L L. & POL'Y 109, 133 (1995).

their appropriation to fishing in the ocean: "although robbed of its many jewels by gods, remains even to date a mine of jewels."¹²⁷

Thus, from a cultural perspective, a rigid patent system is a Western imposition, placing unprepared societies at a disadvantage against patent-conscious corporations.¹²⁸ This is especially true of indigenous societies that have held knowledge collectively for generations and treated it as part of their heritage, and for whom an individualistic concept of property is completely alien.¹²⁹ Indian grassroots activist Vandana Shiva protests:

Development is a beautiful word, suggesting evolution from within.... But the ideology of development has implied the globalization of the priorities, patterns, and prejudices of the West. Instead of being self-generated, development is imposed. Instead of coming from within, it is externally guided. Instead of contributing to the maintenance of diversity, development has created homogeneity....¹³⁰

It must be emphasized that intellectual property remains a species of property, and doctrine governing it must be able to claim a place along the centuries-old jurisprudential trajectory of civil law in general. The philosophical basis for property finds its roots in the fifth chapter of English philosopher John Locke's *Concerning Civil Government*.¹³¹ Locke begins from

¹²⁷ Gana, *supra* note 116, at 766-67.

¹²⁸ Yvonne Cripps, *Patenting Resources: Biotechnology and the Concept of Sustainable Development*, 9 IND. J. GLOBAL LEGAL STUD. 119, 129 (2001); Margo Bagley, *Still Patently Unconstitutional: A Reply to Professor Nard*, 88 MINN. L. REV. 239, 239 n.4 (2003); Sarma, *supra* note 10, at 118-19, 125.

¹²⁹ Daniel Gervais, *The Internationalization of Intellectual Property: New Challenges From the Very Old and the Very New*, 12 FORDHAM INTELL. PROP. MEDIA & ENT. L.J. 929, 961 (2002); Rupa Gupta, *Indigenous Peoples and the International Community: Accommodating Claims Through a Cooperative Legal Process*, 74 N.Y.U. L. REV. 1741, 1760-63 (1999); Sarma, *supra* note 10, at 117.

¹³⁰ VANDANA SHIVA, *BIOPIRACY: THE PLUNDER OF NATURE AND KNOWLEDGE* 107 (1997), *quoted in* Marden, *supra* note 6, at 287.

¹³¹ "Nearly all the modern writers on jurisprudence, taking their cue from the economists, have abandoned the theory of first occupancy as a too dangerous one, and have adopted that which regards property as born of labor." Damstedt, *supra* note 119, at 1179-80. "The Lockean perspective has been particularly appealing to theorists because of its ability to justify widely varying property systems, ranging from expansive communitarianism to subsistence-worker-based capitalism." Burton Ong, *Patenting the Biological Bounty of Nature: Re-Examining the Status of Organic Inventions as Patentable Subject Matter*, MARQ. INTELL. PROP. L. REV. 1, 47 (2004). "Most labour-desert theories can be traced back to the work of John Locke, who propounded a natural right to property arising from the expenditure of individual labour on resources held in common by the wider community."

natural law and the biblical premise that God bequeathed the world and its bounty to Adam and Eve for their descendants to hold in common.¹³² Such a foundation finds resonance in modern application. In Philippine Civil Law, land pertains to the State unless turned over to private ownership, and the State holds these in trust for the citizenry.¹³³ In international law, the concept common heritage of mankind is applied to the Earth's ocean seabeds and floors,¹³⁴ to Antarctica,¹³⁵ and to outer space.¹³⁶

The key question, thus, is how an individual comes to have property when the divine trust is to his race in common. Locke's answer is human labor. Even the poorest of men, he begins, has a minimum of individual property in his own body. Through his body, through the "work" of his hands,¹³⁷ he is able to expand his property:

Whatsoever, then, he removes out of the state that Nature hath provided and left it in, he hath mixed his labour with it, and joined to it something that is his own, and thereby makes it his property.¹³⁸

Thus, while fruit may grow wild in a forest and belong to the idealized commons, it cannot be denied that when a man passes by, picks it from a branch and eats it, the fruit has become his.¹³⁹ "Though the water running in the fountain be every one's, yet who can doubt but that in the pitcher is his only who drew it out?"¹⁴⁰ Thus, the essence of property is its appropriation by an individual, its enclosure from the commons and from

¹³² LOCKE, *supra* note 1, at 30, ¶ 24.

¹³³ II ARTURO TOLENTINO, CIVIL CODE OF THE PHILIPPINES 30 (1992); CONST. art. XII, § 2, 6.

¹³⁴ United Nations Convention on the Law of the Sea, Dec. 10, 1982, preamble, U.N. Doc. A/CONF.62/122 and Corr.1 to 11. See *The Creation of International Environmental Agreements*, 104 HARV. L. REV. 1521, 1534-36 (1991). See also Kathryn Surace-Smith, Note, *United States Activity Outside of the Law of the Sea Convention: Deep Seabed Mining and Transit Passage*, 84 COLUM. L. REV. 1032, 1043-44 (1984).

¹³⁵ "[I]t is in the interest of all mankind that Antarctica shall continue forever to be used exclusively for peaceful purposes and shall not become the scene or object of international discord." The Antarctic Treaty, Dec. 1, 1959, preamble, 402 U.N.T.S. 71. Anupam Chander, *The New, New Property*, 81 TEX. L. REV. 715, 754-56 (2003).

¹³⁶ "The exploration and use of outer space... shall be the province of all mankind." Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, including the Moon and Other Celestial Bodies, Dec. 19, 1966, Annex, art. I, U.N. Doc. A/RES/2222 (XXI). Chander, *supra* note 135, at 753-54.

¹³⁷ LOCKE, *supra* note 1, at 30, ¶ 26.

¹³⁸ *Id.* at 30, ¶ 26.

¹³⁹ *Id.* at 30-31, ¶ 27.

¹⁴⁰ *Id.* at 31, ¶ 28.

the rest of mankind, because "it cannot be supposed He meant it should always remain common and uncultivated."¹⁴¹ Locke used the American Indians as an example, describing them as "rich in land and poor in all the comforts of life"¹⁴² because their land is unproductive and left unlabored upon.¹⁴³ Thus, an Indian chief, in his opinion, ate and slept worse than an English laborer.¹⁴⁴ Such appropriation through human effort, Oliver Wendell Holmes, Jr. quotes Immanuel Kant and George Hegel, is fundamental because it represents a man's bringing an object within the sphere of his will, and "possession is the objective realization of free will."¹⁴⁵ The *animus* that must be established is precisely one of excluding all others from the property.¹⁴⁶

Locke wrote further that man needed no consent from his billions of fellow co-owners before making an appropriation from the commons through his labor; the natural law of reason substituted for a seeming universal consent.¹⁴⁷ His premise was that by the law of Nature, a Man could only appropriate so much as he could use for himself, and such would be just because nothing would be spoiled nor would he encroach on the just share of another.¹⁴⁸ This was Locke's key qualifier to the Biblical exhortation to fill the Earth and subdue it, since it was both useless and dishonest for a man to appropriate himself an excessive share from the commons and transgress upon the social compact.¹⁴⁹

Moving to the Industrial Age, this qualifier was precisely what later philosophers bewailed regarding property regimes. Locke's natural law foundation implicitly assumed that all men had equal access to the divine commons and an equal capacity to make appropriations from it. Karl Marx and Friedrich Engels, for example, precisely pointed out that some in society were able to take far more than an idealized share:

In ancient Rome, we have patricians, knights, plebeians, slaves; in the Middle Ages, feudal lords, vassals, guild-masters, journeymen,

¹⁴¹ *Id.* at 32, ¶ 33.

¹⁴² *Id.* at 33, ¶ 40.

¹⁴³ *Id.* at 34, ¶ 43.

¹⁴⁴ *Id.* at 33-34, ¶ 41.

¹⁴⁵ OLIVER WENDELL HOLMES, JR., THE COMMON LAW 207 ("Lecture VI. — Possession") (1881), available at <http://www.gutenberg.org/dirs/etext00/cmlnw10.txt>.

¹⁴⁶ *Id.* at 220.

¹⁴⁷ LOCKE, *supra* note 1, at 31, ¶¶ 27-28.

¹⁴⁸ *Id.* at 31, ¶ 28.

¹⁴⁹ *Id.* at 36, ¶ 51.

apprentices, serfs; in almost all these classes, again, subordinate gradations.

The modern bourgeois society that has sprouted from the ruins of feudal society has not done away with class antagonisms. It has but established new classes, new conditions of oppression, new forms of struggle in place of the old ones.¹⁵⁰

By their time, they argued, the method of appropriation had become production, and the means of production had become centralized, placed in the hands of only a few.¹⁵¹ The labor which Locke extolled could itself be appropriated by the bourgeoisie they spoke against, and work could lose its individual character and become commodified.¹⁵² Implicitly, then, they sought to restore the ideal access to Locke's commons when they proposed to abolish all private property in favor of State ownership and require all to work equally.¹⁵³

The nineteenth century French philosopher Pierre-Joseph Proudhon similarly decried a commodified appropriation, one done without direct labor:

[C]an men legitimate property by mutual consent? I say, no. Such a contract, though drafted by Grotius, Montesquieu, and J. J. Rousseau, though signed by the whole human race, would be null in the eyes of justice, and an act to enforce it would be illegal. Man can no more give up labor than liberty. Now, to recognize the right of territorial property is to give up labor, since it is to relinquish the means of labor; it is to traffic in a natural right, and divest ourselves of manhood.¹⁵⁴

He attacked implicit universal consent, and argued that such a consent must necessarily be reciprocal. This reciprocity, however, returned to equality, and his argument ended:

Indeed, if, in the terms of the social compact, property has equality for its condition, at the moment when equality ceases to exist, the

¹⁵⁰ KARL MARX & FRIEDRICH ENGELS, MANIFESTO OF THE COMMUNIST PARTY (Samuel Moore trans., Friedrich Engels ed., London, 1888) (1848), in 50 GREAT BOOKS 419.

¹⁵¹ *Id.*, at 421.

¹⁵² *Id.*, at 422. Aoki, *supra* note 13, at 259-61.

¹⁵³ MARX & ENGELS, *supra* note 150, at 429.

¹⁵⁴ PROUDHON, *supra* note 2, at 93-94.

compact is broken and all property becomes usurpation. We gain nothing, then, by this pretended consent of mankind.¹⁵⁵

Absent equality, fundamental liberty is diminished, and one returns to the most colorful proposition of Proudhon's work: "Property is robbery!"¹⁵⁶

Certainly, the communist proposals of violent confrontation against the bourgeoisie and the abolition of private property have long since been refuted, judging from developments such as China's market economy and the Catholic Church's express condemnation. In a landmark encyclical, Pope Leo XIII wrote that a man naturally labors to own property,¹⁵⁷ thus:

They (socialists) hold that by thus transferring property from private individuals to the community, the present mischievous state of things will be set to rights, inasmuch as each citizen will then get his fair share of whatever there is to enjoy. But... the working man himself would be among the first to suffer. They are, moreover, emphatically unjust, for they would rob the lawful possessor, distort the functions of the State, and create utter confusion in the community.¹⁵⁸

This passage was reiterated by Pope John Paul II in 1991.¹⁵⁹ Nevertheless, even as the Catholic Church reiterates Locke's articulation of private property as Man's natural right,¹⁶⁰ its recent doctrine has made human development, the alleviation of poverty and the upliftment of developing countries integral to its definition of justice.¹⁶¹ As much as it upholds Locke's natural law foundation, the Church also upholds one key

¹⁵⁵ PROUDHON, *supra* note 2, at 94.

¹⁵⁶ *Id.*, at 12. This statement and Proudhon's work are widely referred to in modern intellectual property academic literature. See, e.g., LAWRENCE LESSIG, CODE AND THE COMMONS (Draft 2) 9 (1999), available at <http://www.lessig.org/content/articles/works/Fordham.pdf>.

¹⁵⁷ POPE LEO XIII, RERUM NOVARUM: ENCYCLICAL OF POPE LEO XIII ON CAPITAL AND LABOR, § 5 (May 15, 1891).

¹⁵⁸ *Id.*, § 4.

¹⁵⁹ POPE JOHN PAUL II, CENTESIMUS ANNUS: ON THE HUNDRETH ANNIVERSARY OF RERUM NOVARUM, § 12 (May 1, 1991).

¹⁶⁰ RERUM NOVARUM, *supra* note 157, § 8; POPE JOHN PAUL II, LABOREM EXERCENS: ON THE NINETIETH ANNIVERSARY OF RERUM NOVARUM, § 4, 10 (Sep. 14, 1981); CENTESIMUS ANNUS, *supra* note 159, § 30.

¹⁶¹ POPULORUM PROGRESSIO, *supra* note 104, § 12; LABOREM EXERCENS, *supra* note 160, § 2; POPE JOHN PAUL II, SOLLICITUDO REI SOCIALIS: FOR THE TWENTIETH ANNIVERSARY OF "POPULORUM PROGRESSIO", § 12 (Dec. 30, 1987); CENTESIMUS ANNUS, *supra* note 159, §§ 11, 28.

proposal of socialist philosophy: that property is distributed unequally, or that the equality in access to property integral to Locke is distorted.¹⁶² More importantly, Pope John Paul II affirms that this inequity with respect to the global commons exists on a country level, precisely between the developed North and the developing South.¹⁶³

It must be emphasized that access to mankind's intellectual commons is hardly an issue limited to traditional knowledge, and is in fact an increasingly important issue in Internet intellectual property law.¹⁶⁴ In his catalytic work *The Tragedy of the Commons*, Professor Garrett Hardin used the idealized example of a pasture:

It is to be expected that each herdsman will try to keep as many cattle as possible on the commons. Such an arrangement may work reasonably satisfactorily for centuries because tribal wars, poaching, and disease keep the numbers of both man and beast well below the carrying capacity of the land. Finally, however, comes the day of reckoning, that is, the day when the long-desired goal of social stability becomes a reality. At this point, the inherent logic of the commons remorselessly generates tragedy.¹⁶⁵

The herdsman's incentive is obvious: He gains the full benefit of an additional cow grazing in the pasture since he is the sole owner, but shoulders only a fraction of the benefits since these are borne by the community using the pasture. The tragic logic is that if each herdsman is a rational economic agent, each would add an infinite number of cows and gain each cow's marginal benefit to him, and the grass would die out in short

¹⁶² See JOHN FOLEY, PONTIFICAL COUNCIL FOR SOCIAL COMMUNICATIONS, THE CHURCH AND INTERNET, § 12 (Feb. 22, 2002), available at http://www.vatican.va/roman_curia/pontifical_councils/pccs/documents/rc_pc_pccs_doc_20020228_church-internet_en.html. "Justice is needed, especially justice in working to close the digital divide—the gap between the information-rich and the information-poor in today's world." The Marxist political economic analysis remains useful today despite the failure of its more radical proposals. Aoki, *supra* note 13, at 259.

¹⁶³ LABOREM EXERCENS, *supra* note 160, § 7; SOLLICITUDO REI SOCIALIS, *supra* note 161, § 14.

¹⁶⁴ See generally LAWRENCE LESSIG, THE FUTURE OF IDEAS: THE FATE OF THE COMMONS IN A CONNECTED WORLD (2001); Garrett Hardin, *The Tragedy of the Commons*, 162 SCIENCE 1243 (1968), available at <http://www.sciencemag.org/cgi/reprint/162/3859/1243.pdf>. Further, the United States recognizes a Constitutional right to a vigorous public domain. Gathii, *supra* note 111, at 655, citing LESSIG, *supra*, at 122-41.

¹⁶⁵ Hardin, *supra* note 164, at 1244.

order.¹⁶⁶ At its simplest, thus, the key to avoiding the tragedy of the commons is to force each user to shoulder his proportionate share of both the benefits and costs of appropriating his part of the commons. The inequity is expressed economically when one actor reaps the benefits, yet shunts the costs onto another.¹⁶⁷ Note that the reverse is also true and unless such costs are shared in proportion, each herdsman is discouraged from contributing to maintain the pasture.¹⁶⁸

While Locke himself used the image of Cain and Abel dividing pasture land,¹⁶⁹ ideas and intellectual property are more complex because of the property Stanford professor Lawrence Lessig calls "nonrivalrousness." That is, unlike most physical goods, one person's consumption does not interfere with another's and, for example, one man's reading of poems does not stop another from reading the same poems.¹⁷⁰ To add a further complication, especially with the advent of the Internet and allied technologies, it has become easier than before to duplicate and disseminate these intellectual objects,¹⁷¹ and they can theoretically be used by an infinite number of persons without degradation, akin to Locke's pre-industrial perspective of land use.

Despite such technological advances, however, intellectual property protections stand to contract the intellectual commons, and possibly obliterate it. Duke professor J.H. Reichman, for example, discusses that while scientific data has traditionally been made freely available and disseminated as widely as possible,¹⁷² commercial pressures mount to force such out of the commons. Universities, for example, become aware of the value of their research amidst increasing expenses and are encouraged to

¹⁶⁶ *Id.*

¹⁶⁷ Lee Anne Fennell, *Common Interest Tragedies*, 98 NW. U. L. REV. 907, 919-21 (2004). In Political Science, this phenomenon is known as the moral hazard. John Virgino, *Power Without Accountability: Unbundling the Moral Hazard Problem in the Philippine Power Market*, 79 PHIL. L.J. 130, 142-43 (2004).

¹⁶⁸ Fennell, *supra* note 167, at 915-16 (2004).

¹⁶⁹ LOCKE, *supra* note 1, at 33, ¶ 38.

¹⁷⁰ LAWRENCE LESSIG, *THE FUTURE OF IDEAS: THE FATE OF THE COMMONS IN A CONNECTED WORLD* 95 (2001). See Ong, *supra* note 131, at 48. Ong notes that the different characteristics of intellectual property compared to land and other physical property means Locke's conception is not straightforwardly applied.

¹⁷¹ Gana, *supra* note 116, at 741.

¹⁷² J.H. Reichman & Paul Uhler, *A Contractually Reconstructed Research Commons for Scientific Data in a Highly Protectionist Intellectual Property Environment*, 66-SPG LAW & CONTEMP. PROBS. 315, 318 (2003).

partner with private entities who have confidentiality requirements,¹⁷³ while budgetary constraints limit the contributions of government research agencies.¹⁷⁴ Proposals have been made to give non-copyrightable database information *sui generis* copyright protection to prevent such from entering the public domain once published.¹⁷⁵ The ruling in *Feist Publications, Inc. v. Rural Telephone Service Co.*¹⁷⁶ that denied copyright protection to a telephone directory has been watered down in practice to allow compilers to recoup costs.¹⁷⁷ Further, Lessig points out that computer advances allow copyright holders to exert more control over digital copies of their works:

As you move to the Internet, though, lots more control is possible. If you look in the permissions for an Adobe eBook, it has the power to control how many times you can print certain sections of the book, whether you can use technology to read the book aloud, whether you can cut and paste sections of the book. All these controls would not have existed without digital technology, because the cost of regulating those uses would have been too high.

... I have bought a number of eBooks, including Aristotle's Politics. Aristotle's Politics, of course, was never copyrighted, but the Adobe eBook reader forbids me from printing any pages of the book because the permissions have been set to disable any printing. If I try to interfere with those permissions – if I write a bit of code to disable the limitations that forbid me from printing Aristotle's Politics from my Adobe eBook – that would be circumventing an access technology, which under the Digital Millennium Copyright Act is a crime.¹⁷⁸

Such controls also allow copyright holders to price accordingly, even to charge differently for reading a text once and reading it twice.¹⁷⁹ Professor Lessig also argues that such strict copyright restrictions also have a noncommercial adverse effect on free speech, and at a certain point, the

¹⁷³ *Id.*, at 318, 370.

¹⁷⁴ *Id.*, at 368.

¹⁷⁵ *Id.*, at 355-56.

¹⁷⁶ 499 U.S. 340 (1991).

¹⁷⁷ Reichman & Uhler, *supra* note 172, at 374, citing *CDN, Inc. v. Kapes*, 197 F.3d 1256, 1259-60 (9th Cir. 1999); *CCC Info. Servs., Inc. v. Maclean Hunter Mkt. Reports, Inc.*, 44 F.3d 61, 65 (2d Cir. 1994).

¹⁷⁸ Jesse Walker, *Cyberspace's Legal Visionary: Lawrence Lessig on the Fate of Copyrights and Computer Networks in the Digital Future*, REASON, June 2002, ¶28, 30, at http://www.findarticles.com/p/articles/mi_m1568/is_2_34/ai_85701100.

¹⁷⁹ LESSIG, *supra* note 156, at 6. This was a keynote speech delivered at a Fordham Law School conference on media convergence on Feb. 9, 1999.

benefits of copyrights no longer justify the costs in public welfare.¹⁸⁰ Thus, Lessig calls for an active structuring of the Internet's architecture, and the Code or *Lex Informatica* that governs it, in order to engineer a balance between private exclusion of intellectual property and the commons.¹⁸¹ Pure market forces alone, he feels, would force the Internet into "a world of perfect property."¹⁸²

Whether one chooses the language of Locke's dishonesty, Marx's and Engels's oppression, Proudhon's usurpation, Hardin's tragedy, or Pope John Paul II's injustice, the philosophical articulation that condemns biopiracy is clear. Corporations are able to appropriate Third World resources and enjoy all the benefits reaped commercially yet render no compensation to the sources of the knowledge taken. Moreover, nonrivalry does not apply where patents are issued, and the inequity is exacerbated when the appropriation of a segment of the intellectual commons excludes every other user including the original holders, thereby removing it from the commons. As American lawyer Jeremy Rifkin stated with respect to the neem tree:

The real battle is whether the genetic resources of the planet will be maintained as a shared commons or whether this common inheritance will be commercially enclosed and become the intellectual property of a few big corporations.¹⁸³

Indeed, Indian scientists were precisely reluctant to patent neem because they knew knowledge of its properties came from generations of anonymous users.¹⁸⁴ Finally, given the North-South imbalance, equality in access to the commons in the global setting is illusory.

Again, however, biopiracy and traditional knowledge cannot be viewed from the pure economic perspective alone. The Catholic Church goes this step further, and Pope John Paul II precisely condemned socialism because it treated the worker as a mere cog in the machine without regard for social relationships, yet condemned unbridled capitalism as materialism that committed the same sin.¹⁸⁵ He concluded:

¹⁸⁰ *Id.*, at 8-9.

¹⁸¹ *Id.*, at 9.

¹⁸² *Id.*, at 7.

¹⁸³ Marden, *supra* note 6, at 292.

¹⁸⁴ Sarma, *supra* note 10, at 118.

¹⁸⁵ LABOREM EXERCENS, *supra* note 160, §§ 7, 14.

[T]he analysis of human work in the light of the words concerning man's "dominion" over the earth goes to the very heart of the ethical and social question. This concept should also find a central place in the whole sphere of social and economic policy, both within individual countries and in the wider field of international and intercontinental relationships, particularly with reference to the tensions making themselves felt in the world not only between East and West but also between North and South.¹⁸⁶

From the more holistic moral perspective, then, biopiracy becomes all the more insidious because it is arguably the ultimate commodification of labor, able to tear traditional knowledge from the cultural moorings it has found and appropriate generations' worth of that society's labor in one stroke. Worse, in many cases, the current Western-oriented patent system further imposes an alien understanding of their own intellectual property onto societies.¹⁸⁷ Indeed, returning to Locke's comparison of the Indian chief and the English laborer, how is a bioprospector to justify that the taking of the neem tree or the ayahuasca vine to a distant shore does not prejudice the original community?

PART II: BRINGING TRADITIONAL KNOWLEDGE WITHIN MODERN INTELLECTUAL PROPERTY DOCTRINE

A. THE TRIPS AGREEMENT

The preceding section articulated the inequities of biopiracy in its economic, social, cultural, philosophical, and moral dimensions, and argues that it is even an affront to natural law, on which Locke's original conception of property is grounded. Viewing the problem from the North-South imbalance, one notes how the international regime which often condones biopiracy was not wholly a product of consensus. However, regardless of all these, it is too late in the day to seek to radically change the existing regimes. Neither can developing countries refuse to accept these regimes and isolate themselves into the international community's periphery. Rather, a path of lesser resistance may well be to articulate the inequities in terms of the present governing treaties, and address the inequities in implementation. University of Oklahoma professor Ruth Gana articulates:

¹⁸⁶ *Id.*, § 7.

¹⁸⁷ Ghosh, *supra* note 10, at 900; Robert Paterson & Dennis Karjala, *Looking Beyond Intellectual Property in Resolving Protection of the Intangible Cultural Heritage of Indigenous Peoples*, 11 CARDOZO J. INT'L & COMP. L. 633, 640-41 (2003); Adewopo, *supra* note 122, at 753; Long, *Globalization*, *supra* note 111, at 349.

It is possible, for example, under the TRIPS Agreement for developing countries to define the content of the standards imposed by the TRIPS Agreement. The singular requirement of international law is that this must be done in good faith. Developing countries should utilize this opportunity to tailor domestic legislation in a way that promotes local inventiveness by, for example, permitting lower standards of inventiveness, preventing broad claims, avoiding elements such as the equivalence doctrine, protecting improvements as separate inventions, and employing a liberal test for nonobviousness. ... What is important is that developing countries provide content to domestic legislation in a way that clearly benefits their immediate societies.¹⁸⁸

The Trade-Related Aspects of Intellectual Property Rights (TRIPS) Agreement that forms Annex 1C of the Marrakesh Agreement that established the WTO in 1994 remains "to date the most comprehensive multilateral agreement on intellectual property."¹⁸⁹ It is readily possible to work within its framework to address biopiracy, but developing countries must address four key doctrinal areas:

- (1) why traditional knowledge must be recognized as prior art;
- (2) how the nonobviousness bar must be applied with respect to it;
- (3) why precise author identification is not paramount; and
- (4) why moral concerns must be a factor in patent grants.

1. Delimiting possible TRIPS protections

TRIPS' three main requisites for patentability are contained in its deceptively succinct introduction, article 27:

[P]atents shall be available for any inventions, whether products or processes, in all fields of technology, provided that they are new, involve an inventive step and are capable of industrial application.¹⁹⁰

¹⁸⁸ Gana, *supra* note 116, at 757.

¹⁸⁹ World Trade Organization, *Overview: The TRIPS Agreement*, at http://www.wto.org/english/tratop_e/trips_e/intel2_e.htm (last visited Oct. 9, 2004).

¹⁹⁰ Agreement on Trade-Related Aspects of Intellectual Property Rights (Annex 1C, Marrakesh Agreement Establishing the World Trade Organization) (hereinafter "TRIPS"), art. 27, Apr. 15, 1994, available at http://www.wto.org/english/docs_e/legal_e/27-trips.doc. See INTELLECTUAL PROP. CODE, § 21.

The same article explicitly interprets "inventive step" as synonymous with "non-obvious."¹⁹¹ These two primary requirements present the most obvious stumbling block, since the traditional intellectual properties discussed here are hardly novel and, on the surface, involve no visible inventive step that adds unto existing knowledge. Thus, one must draw an intellectual demarcation when seeking to protect traditional knowledge because this is actually a twofold process. First, one must successfully exclude it from patent monopolies and retain it within the commons.¹⁹² Second, following the philosophical framework, one must avoid a tragedy of the commons by placing the proper burdens and benefits on all users, and in particular, grant communities that have used traditional knowledge their fair share from commercial exploitation. This was clearly illustrated in the basmati controversy, since Indians were able to have a number of RiceTec's patents cancelled, yet unable to protect the basmati rice varieties from all possible future patent applications or even definitively exclude the term "basmati."¹⁹³ Neem ended similarly in the sense that Grace did not intend to file for a patent in India.¹⁹⁴

From article 27, it is clear that TRIPS is not equipped to effect the second,¹⁹⁵ and doctrinal solutions under this instrument necessarily deal with the more immediate first goal, which is to exclude traditional knowledge from TRIPS-supported monopolies. Once this is achieved, it forms a foundation for moving to the second goal using other legal bases.

1. Defining Traditional Knowledge as Prior Art Within the Commons

The article 27 requisites may be restated as:

- (1) Novelty
- (2) Inventive step or non-obviousness
- (3) Usefulness or industrial application

The most straightforward way of excluding traditional knowledge from patents under TRIPS is to show that it is not new or novel, which follows by definition, considering these are usually older than the current holders. This is done by showing that the object of a patent application is

¹⁹¹ *Id.*, at n.5.

¹⁹² See Oguamanam, *supra* note 16, at 143.

¹⁹³ Subbiah, *supra* note 9, at 556.

¹⁹⁴ Marden, *supra* note 6, at 285.

¹⁹⁵ See Effross, *supra* note 97, at 587; Craig Allen Nard, *In Defense of Geographic Disparity*, 88 MINN. L. REV. 222, 231-32 (2003).

already part of prior art. This is not the same as the public domain or the idealized commons. The Philippines, following the WIPO Model Law for Developing Countries,¹⁹⁶ provides:

Sec. 23. *Novelty*. – An invention shall not be considered new if it forms part of a prior art.

Sec. 24. *Prior Art*. – Prior art shall consist of:

24.1. Everything which has been made available to the public anywhere in the world, before the filing date or the priority date of the application claiming the invention; and

24.2. The whole contents of an application for a patent, utility model, or industrial design registration....¹⁹⁷

This formulation embodies the very high bar of absolute novelty, meaning what is sought to be patented must be new relative to the entire world and not previously disclosed through a previous patent application, publication, or other public release.¹⁹⁸ The challenge, however, is that absolute novelty is not part of TRIPS, and article 27 merely uses the single word “new.”¹⁹⁹

a. Relative novelty and the geographical bar applied to prior art

The first challenge is to address domestic patent systems whose bar falls short of absolute novelty, particularly those that consider as novel ideas that have not been publicly released in that country, even if they are of public knowledge elsewhere. Such a definition would actually favor developing countries and it was used in early English statutes to encourage the importation of useful foreign technologies,²⁰⁰ but the main country using it is actually the United States.²⁰¹ Its statute reads:

A person shall be entitled to a patent unless ... the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior

¹⁹⁶ AMADOR, *supra* note 103, at 110.

¹⁹⁷ INTELLECTUAL PROP. CODE, §§ 23-24.

¹⁹⁸ AMADOR, *supra* note 103, at 111.

¹⁹⁹ TRIPS, art. 27.

²⁰⁰ Bagley, *Still Patently Unconstitutional*, *supra* note 128, at 241-42; Bagley, *Patently Unconstitutional*, *supra* note 64, at 684, 696 n.65.

²⁰¹ Bagley, *Patently Unconstitutional*, *supra* note 64, at 682-84, 734.

to the date of the application for patent in the United States.
(emphasis added)²⁰²

This geographic bar was implemented only in 1836, and was not in the United States' first patent law passed in 1790.²⁰³ When the latter was being passed, no less than James Madison opined that such a bar would be unconstitutional:

Your idea of appropriating a district of territory to the encouragement of imported inventions is new and worthy of consideration. I cannot but apprehend however that the clause in the constitution which forbids patents for that purpose will lie equally in the way of your expedient.²⁰⁴

Similarly, Alexander Hamilton wrote:

[I]t is desireable [sic] in regard to improvements and secrets of extraordinary value, to be able to extend the same benefit to Introducers (importers), as well as Authors and Inventors; a policy which has been practiced with advantage in other countries. Here, however, as in some other cases, there is cause to regret, that the competency of the authority of the National Government to the good, which might be done, is not without a question.²⁰⁵

Emory Professor Margo Bagley explains that the United States Congress failed to articulate its reasons for both the original doctrine and the change in 1836, but presents dicta in the 1850 Supreme Court decision *Gayler v. Wilder*²⁰⁶ to shed light on the latter:

If the foreign invention had been printed or patented, it was already given to the world and open to the people of this country... upon reasonable inquiry. They would therefore derive no advantage from the invention here... and the inventor therefore is not considered to

²⁰² 35 U.S.C. § 102(b) (2000). Compare to INTELLECTUAL PROP. CODE, § 24.

²⁰³ Patent Act of 1836, chap. 357, 5 STAT. 117; Patent Act of Apr. 10, 1790 (An Act to Promote the Progress of the Useful Arts), chap. 7, 1 STAT. 109 (repealed by the Patent Act of 1793).

²⁰⁴ Letter to Tench Coxe (March 28, 1790), in 13 THE PAPERS OF JAMES MADISON 128 (Charles F. Hobson et. al., eds, Univ. of Va. Press 1981), quoted in Bagley, *Patently Unconstitutional*, *supra* note 64, at 696 n.65.

²⁰⁵ 10 THE PAPERS OF ALEXANDER HAMILTON 308 (Harold Syrett, ed., 1966), quoted in Bagley, *Patently Unconstitutional*, *supra* note 64, at 696 n.65. George Washington was among those who disagreed, but the United States Congress passed the law without the bar. *Id.*

²⁰⁶ *Gayler v. Wilder*, 51 U.S. (10 How.) 477 (1850).

be entitled to the reward. But if the foreign discovery is not patented, nor described in any printed publication, it might be known and used in remote places for ages, and the people of this country be unable to profit by it. The means of obtaining [the] knowledge would not be within their reach ... [I]t would be the same thing as if the improvement had never been discovered. It is the inventor here that brings it to them, and places it in their possession. And as he does this by the effort of his own genius, the law regards him as the first ... inventor ... although the improvement had in fact been invented before, and used by others.²⁰⁷

Thus, she argues that the sole reason for the statutory policy was to limit prior art to a "convenient presumption of accessibility" regarding sources.²⁰⁸ The same assumption applies in reverse to the geographical bar's exception regarding published material in a foreign country. Its threshold for publication is actually low. One American decision, for example, accepted as sufficient a single copy of a doctoral thesis stored in a small library in Germany, written in German, and indexed only in that library's card catalog.²⁰⁹ Another accepted a patent application deposited only in a remote courthouse in Germany:

We recognize that Geschmacksmuster (German design patent) on display for public view in remote cities in a far-away land may create a burden of discovery.... Such a burden, however, is by law imposed upon the hypothetical person of ordinary skill in the art who is charged with knowledge of all the contents of the relevant prior art.²¹⁰

It must be emphasized, thus, that American law requires not actual knowledge, but uses this hypothetical person of ordinary skill in the art as the gauge for novelty. Moreover, later rulings on public use set similarly low thresholds, with a "constructive accessibility" sufficient when the use was

²⁰⁷ Bagley, *Patently Unconstitutional*, *supra* note 64, at 698-99, quoting Gayler, 51 U.S. at 497.

²⁰⁸ Bagley, *Patently Unconstitutional*, *supra* note 64, at 699, quoting Donald Chisum, *Foreign Activity: Its Effect on Patentability Under United States Law*, 11 INT'L REV. INDUS. PROP. & COPYRIGHT 26, 36 (1980). Professor Chisum added that the policy also avoided evidentiary burdens. Bagley, *supra*, at 699-700.

²⁰⁹ Bagley, *Patently Unconstitutional*, *supra* note 64, at 709, citing *In re Hall*, 781 F.2d 897, 900 (Fed. Cir. 1986). Margo Bagley, *Still Patently Unconstitutional: A Reply to Professor Nard*, 88 MINN. L. REV. 239, 239 (2003).

²¹⁰ Bagley, *Patently Unconstitutional*, *supra* note 64, at 710, quoting *In re Carlson*, 983 F.2d 1032, 1037 (Fed. Cir. 1992).

never kept confidential.²¹¹ Thus, applying Professor Lessig's theory that one changes Constitutional interpretations in new contexts to maintain fidelity to old meanings in old contexts,²¹² Professor Bagley concludes that the geographical bar must be unconstitutional two centuries later where the hypothetical person of ordinary skill has access to the Internet, professional publications and commercial databases, and even discounted airline tickets.²¹³

Further, from a policy perspective, she argues that the geographical bar prejudices American consumers because while patents are granted as economic incentives, they increase prices artificially when granted incorrectly. For example, the bar was the reason neem patents were granted in the United States but not in Europe, meaning Americans may only purchase neem-derived products at above-market prices.²¹⁴ She notes that Japan, the third major patent grantor, amended its patent law in 1999 and removed its geographical bar.²¹⁵ Finally, from a moral perspective, the bar makes American negotiation positions hypocritical and condones biopiracy, and she blames it for making the Enola bean absurdity possible – one that arose from beans that were originally cultivated just across the United States-Mexico border.²¹⁶

Clearly, the first step for developing countries is to push for absolute novelty as article 27's proper interpretation, which can be done without amending TRIPS. Again, the European and Japanese Patent Offices do not impose the geographical bar, and they rank first and third in patents granted annually.²¹⁷ Developing countries must, for example, network and impose absolute novelty through domestic legislation, then demand reciprocity.

²¹¹ Bagley, *Patently Unconstitutional*, *supra* note 64, at 710-11, citing *Baxter International, Inc. v. Cobe Laboratories, Inc.*, 88 F.3d 1054, 1061 (Fed. Cir. 1996); *W.L. Gore & Assoc. v. Garlock, Inc.*, 721 F.2d 1540, 1550 (Fed. Cir. 1983).

²¹² Bagley, *Patently Unconstitutional*, *supra* note 64, at 686 n.29, citing Lawrence Lessig, *Understanding Changed Readings: Fidelity and Theory*, 47 STAN. L. REV. 395, 396, 398 (1995). See, however, Michael Dorf, *Integrating Normative and Descriptive Constitutional Theory: The Case of Original Meaning*, 85 GEO. L.J. 1765, 1787 (2000).

²¹³ Bagley, *Patently Unconstitutional*, *supra* note 64, at 687, 712.

²¹⁴ *Id.*, at 688-89. See, however, Nard, *supra* note 195.

²¹⁵ Patent Law No. 220, art. 29 (1999) (Japan), available at <http://www.jpo.go.jp/shoukaie/patent.htm> (last updated July 27, 2001), amending Patent Law No. 121 (1959); Bagley, *Patently Unconstitutional*, *supra* note 64, at 732, 732 n.204.

²¹⁶ Bagley, *Patently Unconstitutional*, *supra* note 64, at 725-26; Rattray, *supra* note 63, at 6.

²¹⁷ Bagley, *Patently Unconstitutional*, *supra* note 64, at 731 n.202.

Professor Bagley opines, however, that the United States is withholding amendment of its patent law as a bargaining chip.²¹⁸

b. Prior art and unpublished traditional knowledge

One notes that the Philippines recognizes foreign prior art so long as it has been "made available to the public,"²¹⁹ while the United States requires that it must have been "described in a printed publication."²²⁰ Such distinctions are crucial, because much of traditional knowledge is stored in community oral traditions. Knowledge may also be stored through other means. For indigenous farmers, for example, intellectual property may be tied to their seeds, since one who successfully cross-breeds a better variety needs no further record than the seeds produced, which can be replanted or sold to neighbors.²²¹

This presents the same difficulties such as those of authenticity addressed by legal rules such as the Best Evidence Rule and the Statute of Frauds, and other procedural difficulties such as transformation into written form and technical language for use in patent challenges.²²²

However, it must again be noted that the distinction is not found in TRIPS itself, and the publication requirement stands to circumvent TRIPS' novelty requirement in many cases involving traditional knowledge, as already evidenced by many biopiracy incidents. As with the geographical bar, developing countries must push for an expansive interpretation of article 27, whether an absolute novelty threshold with no requirement regarding form, a very low threshold for publication, or some reasonable substitute for publication, though the difficulty in defining traditional knowledge must be noted. In the interim, while governments and traditional communities may lack the resources to document the resources, the academe, media, and NGOs may be sources of documentation. Note, finally, that in some cases, ancient documentation does exist, such as in the case of ancient texts such as India's ayurvedic medicines. Or, as in the ayahuasca case and the Fields Museum herbarium, the requirement might be sidestepped because of documentation in that foreign jurisdiction.

²¹⁸ *Id.*, at 682-84, 735.

²¹⁹ INTELLECTUAL PROP. CODE, § 24.1.

²²⁰ 35 U.S.C. § 102(b) (2000).

²²¹ Cripps, *supra* note 128, at 128.

²²² Oguamanam, *supra* note 16, at 143.

2. Defeating Biopiracy Claims With Nonobviousness

After novelty, article 27 requires that the object of a patent application must exhibit an inventive step, defined as a visible difference between the purported invention and prior art, one not obvious to the hypothetical person of ordinary skill in that art or field.²²³ Again, by definition, traditional knowledge exhibits no such step because it generally represents the accumulated knowledge of generations. Some might argue that this is merely a Western bias, one that sees the inventive step narrowly in terms of structured laboratory or academic research and thus disregards the accumulated contribution of traditional communities through induction and oral history.²²⁴ However, patentability and an individual or community's advancement of human knowledge are not identical, and such an argument makes the issue moot because it would follow that the twenty-year period of any patent that should have been issued would long since have expired.²²⁵ Thus, a patent challenge alleging a lack of inventive step would be near-identical to a challenge alleging a lack of novelty, raising the issue that because the supposed invention is part of a community's traditional knowledge.

The danger to traditional knowledge, however, lies in low thresholds for non-obviousness that allow a corporation to sidestep novelty and prior art through an application with a craftily described inventive step. In these cases, the challenger would have to rebut a claim of non-obviousness to establish a lack of novelty. This was seen in the turmeric and neem cases where the claims were buttressed by further processing, but, for example, the Enola bean controversy was striking in that the inventive step alleged was mainly a particular shade of yellow.²²⁶ And in the Enola bean and ayahuasca cases, cross-pollination and cultivation sufficed to create an inventive step, yet these are routine procedures among breeders.²²⁷

Of distinctions: Patents, plants, and protein sequences

Biopiracy-related claims of non-obviousness are intertwined with the contentious issue of patentability of life forms. Supposedly, this is not an issue and the remainder of article 27 provides:

²²³ INTELLECTUAL PROP. CODE, § 26; AMADOR, *supra* note 103, at 115, 226.

²²⁴ Donovan, *supra* note 10, at 135.

²²⁵ TRIPS, art. 33. The term is counted from the filing date. A patent for traditional knowledge filed generations later would thus be rejected because by then, the contribution would no longer be novel.

²²⁶ Ratray, *supra* note 63, at 7.

²²⁷ *Id.* at 9. See Ong, *supra* note 131, at 50.

2. Members may exclude from patentability inventions, the prevention within their territory of the commercial exploitation of which is necessary to protect *ordre public* 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 their law.

3. Members may also exclude from patentability:

(a) diagnostic, therapeutic and surgical methods for the treatment of humans or animals;

(b) *plants and animals other than micro-organisms*, and essentially biological processes for the production of plants or animals other than non-biological and microbiological processes. However, Members shall provide for the protection of plant varieties either by patents or by an effective *sui generis* system or by any combination thereof. The provisions of this subparagraph shall be reviewed four years after the date of entry into force of the WTO Agreement. (emphasis added)²²⁸

The reason for the exception follows directly from the commons, as articulated in *Funk Bros. Seed Co. v. Kalo Inoculant Co.*²²⁹

[P]atents cannot issue for the discovery of the phenomena of nature. The qualities of these bacteria, like the heat of the sun, electricity, or the qualities of metals, are part of the storehouse of knowledge of all men. They are manifestations of laws of nature, free to all men and reserved exclusively to none. He who discovers a hitherto unknown phenomenon of nature has no claim to a monopoly of it which the law recognizes. (internal citation omitted)²³⁰

However, the exception regarding plants and animals is itself not absolute, and the point of contention is the definition of "micro-organisms," "non-biological" and "microbiological processes." Returning to the neem case, again, it may be argued that a patent over a chemical sequence derived or developed from a plant is not the same as a patent over the plant, though the resulting exclusions may very well be similar. In the same vein, there is no bar to extracting gene sequences from a plant sample, possibly manipulating and reordering them, and then patenting the sequence, which

²²⁸ TRIPS, art. 27.

²²⁹ 333 U.S. 127 (1948).

²³⁰ *Id.*, at 130. Note that *Funk Bros.* emphasized that it addressed only the question of patentability regarding the bacteria discussed in the case, and not the methods of testing or selecting the particular strains.

would of course be contained in the plants themselves. Such technical sophistry sidesteps the exception to article 27.

The legal basis for all this is the landmark American decision *Diamond v. Chakrabarty*.²³¹ Although the case involved only bacteria genetically engineered to consume oil, it broadly held that life forms may be the subject of patents. It turned the issue into a narrow one of interpreting the relevant patent provision:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefore....²³²

Construing "manufacture" and "composition of matter" broadly, it held:

His claim is not to a hitherto unknown natural phenomenon, but to a nonnaturally occurring manufacture or composition of matter – a product of human ingenuity.... The point is underscored dramatically by comparison of the invention here with that in *Funk*. ...

Here, by contrast, the patentee has produced a new bacterium with markedly different characteristics from any found in nature and one having the potential for significant utility.²³³

Diamond thus interpreted that the key distinction was "not between living and inanimate things, but between products of nature, whether living or not, and human-made inventions."²³⁴

The decision had broad effects. In *Ex Parte Hibberd*,²³⁵ the Board of Patent Appeals held that following *Diamond's* discussion, plants themselves, beyond microorganisms, were patentable, and that the separate protections under the Plant Patent Act²³⁶ and the Plant Variety Protection Act²³⁷ did not exclude general patent protections so long as the requisites of novelty, inventive step, and usefulness were met.²³⁸ *Hibberd* stated that *Diamond*

²³¹ 447 U.S. 303 (1980).

²³² 35 U.S.C. § 101.

²³³ *Diamond*, 447 U.S. at 310-11.

²³⁴ *Id.*, at 313.

²³⁵ 227 U.S.P.Q. 443 (1985).

²³⁶ 35 U.S.C. § 161.

²³⁷ 7 U.S.C. § 2321. See Spectar, *supra* note 6, at 232-33.

²³⁸ *Hibberd*, 227 U.S.P.Q. at 444-45. This was later affirmed by the Supreme Court. *J.E.M. AG Supply, Inc. v. Pioneer Hi-Bred International, Inc.*, 534 U.S. 124, 131 (2001).

applied such general protections to "everything under the sun made by man."²³⁹ Thus, the USPO granted almost two thousand patent applications for plant germplasm,²⁴⁰ which have more expansive protections than plant variety protection certificates.²⁴¹

In *J.E.M. AG Supply, Inc. v. Pioneer Hi-Bred International, Inc.*,²⁴² the Supreme Court affirmed *Hibberd's* ruling on the patentability of plants:

Several years after *Chakrabarty*, the PTO Board of Patent Appeals and Interferences held that plants were within the understood meaning of "manufacture" or "composition of matter".... To obtain utility patent protection, a plant breeder must show that the plant he has developed is new, useful, and non-obvious. In addition, the plant must meet the specifications of § 112, which require a written description of the plant and a deposit of seed that is publicly accessible.²⁴³

Further, *J.E.M. AG Supply* involved plants that were never genetically engineered, but merely cross-bred.²⁴⁴ The actual holding refers only to the patentability of "newly developed plant breeds"²⁴⁵ without qualifying that the human manipulation must be on the cellular level. This follows from *Diamond's* breadth and only on the input of human ingenuity without specifying any method. This expansion of *Diamond* was precisely responsible for the basmati and Enola bean controversies.²⁴⁶ The breadth of the American doctrine is seen by its advocates as the key to maintaining the country's global monopoly in many areas of biotechnology.²⁴⁷

It must be emphasized, however, that *Diamond* and its progeny are explicitly based on the introductory sentence of American patent law, and the legal formulations vary across countries. For example, the Canadian Supreme Court discussed the same line of cases, but handed down an opposite ruling under Canadian law.²⁴⁸ The Philippines provides:

²³⁹ *Hibberd*, 227 U.S.P.Q. at 447.

²⁴⁰ *J.E.M.* 534 U.S. at 127.

²⁴¹ *Aoki*, *supra* note 13, at 289.

²⁴² 534 U.S. 124 (2001).

²⁴³ *Id.*, at 131.

²⁴⁴ *Id.*, at 127-28.

²⁴⁵ *Id.*, at 145.

²⁴⁶ *Woods*, *supra* note 6, at 129.

²⁴⁷ *Carroll*, *supra* note 8, at 2438-39.

²⁴⁸ 35 U.S.C. § 101. "But, until Congress takes such action, this Court must construe the language of Section 101 as it is. The language of that section fairly

Sec. 22. *Non-Patentable Inventions.* - The following shall be excluded from patent protection:

...
22.4. Plant varieties or animal breeds or essentially biological process for the production of plants or animals. This provision shall not apply to micro-organisms and non-biological and microbiological processes.²⁴⁹

Similarly, the European Patent Convention provides:

European patents shall not be granted in respect of:

...
(b) plant or animal varieties or essentially biological processes for the production of plants or animals; this provision does not apply to microbiological processes or the products thereof.²⁵⁰

Many other countries disallow patents over plants and animals, such as Cuba, Germany, Mexico, Sri Lanka, Thailand, and China.²⁵¹ Nevertheless, it must also be emphasized that the exceptions regarding micro-organisms mean the exclusions are not absolute, and that the TRIPS exclusion is merely optional.²⁵² First, this means that countries are free to issue patents over plant varieties themselves, as the United States has, and the basmati and Enola bean controversies show how prejudicial this is when the legal regime governs one of the world's largest consumer markets. Second, even a country such as the Philippines may find its exception eroded by loopholes exploiting the exception for micro-organisms, or by arguing that the plants and animals that are excluded do not include genetically engineered organisms. *Diamond* remains standard reading in Philippine Intellectual Property classes,²⁵³ and adopting its mindset lays a foundation for accepting the later decisions that expanded it further. Professor Vicente Amador, for example, describes biotechnology as "one of the oldest technologies" that includes beer brewing and animal breeding,²⁵⁴ but implies that it is time to

embraces respondent's invention." *Diamond v. Chakrabarty*, 447 U.S. 303, 318 (1980). Compare to *Commissioner of Patents v. President and Fellows of Harvard College*, [2002] S.C.C. 76; George Wei Sze Shun, *Mus Musculus and Homo Sapiens: Murine Metaphysics, and the Canadian Supreme Court*, 2003 SING. J. LEGAL STUD. 38.

²⁴⁹ INTELLECTUAL PROP. CODE, § 22.4. See Rep. Act No. 9168 ("The Plant Variety Protection Act of 2002") (2002).

²⁵⁰ Convention on the Grant of European Patents, art. 53(b), Oct. 5, 1973, available at <http://www.european-patent-office.org/legal/epc/e/ma1.html#CVN>.

²⁵¹ AMADOR, *supra* note 103, at 106.

²⁵² TRIPS, art. 27(3). "Members may also exclude from patentability..."

²⁵³ See, e.g., AMADOR, *supra* note 103, at 98-102.

²⁵⁴ See, e.g., AMADOR, *supra* note 103, at 103.

change the traditional notion that it is beyond the scope of technology patents because science has advanced to the point that the biological processes involved can be controlled and duplicated. He writes:

If it is possible to control a biotechnological process and to describe such a process in a way that experts in the field can carry it out on the basis of the description, then an invention in the field of biotechnology has been made....

Such inventions are creations of the human mind just as much as are other inventions, and typically they are the result of substantial research and inventive effort and investment in sophisticated laboratories.²⁵⁵

While such contentions are supported by the underlying goals of patent laws, developing countries must push for safeguards related to non-obviousness to prevent corporations from obtaining patents over a variety with minimal variation and excluding a number of similar traditional varieties. The Philippines' Plant Variety Protection Act of 2002, for example, has a more detailed criteria for granting *sui generis* protection:

Section 4. The Certificate of Plant Variety Protection shall be granted for varieties that are:

- a) New;
- b) Distinct;
- c) Uniform; and
- d) Stable.

Section 5. *Newness.* - A variety shall be deemed new if the propagating or harvested material of the variety has not been sold, offered for sale or otherwise disposed of to others, by or with the consent of the breeder, for purposes of exploitation of the variety;

- a) In the Philippines for more than one (1) year before the date of filing of an application for plant variety protection; or
- b) In other countries or territories in which the application has been filed, for more than four (4) years or, in the case of vines or tress, more than six (6) years before the date of filing of an application for Plant Variety Protection.

However, the requirement of novelty provided for in this Act shall not apply to varieties sold, offered for sale or disposed of to others for a period of five (5) years before the approval of this Act.

²⁵⁵ *Id.*, at 103-04.

Provided, That application for PVP shall be filed within one (1) year from the approval of this act.

Section 6. *Distinctness.* - A variety shall be deemed distinct if it is clearly distinguishable from any commonly known variety. The filing of an application for the granting of a plant variety protection or for the entering of a new variety in an official register of variety in the Philippines or in any country, shall render the said variety a matter of public knowledge from the date of the said application: *Provided, That* the application leads to the granting of a Certificate of Plant Variety Protection or the entering of the said other variety in the official register of variety as the case may be.

Section 7. *Uniformity.* - The variety shall be deemed uniform if, subject to the variation that may be expected from the particular features of its propagation, it is sufficiently uniform in its relevant characteristics.

Section 8. *Stability.* - The variety shall be deemed stable if its relevant characteristics remain unchanged after repeated propagation or, in the case of a particular cycle of propagation, at the end of each such cycle.

3. The irrelevance of identifying an actual inventor

It would be difficult to seek patents over traditional knowledge also because it is often impossible to identify the creator, though one professor quips that the inability to identify which of a hundred scientists working in a corporate laboratory is responsible for a particular insight has not stopped corporate entities from obtaining patents, either.²⁵⁶ Again, however, there is a difference between applying for a patent over traditional knowledge and challenging an application. In the latter, one is presenting evidence of prior art. This may be part of the public domain, and one only needs to show that the subject is already of public knowledge without having to identify an inventor. Further, there is generally no requirement that the challenge must be done by a person claiming to be the inventor. Thus, other entities may make the challenges on behalf of governments or traditional communities without the resources to do so.

²⁵⁶ Ikechi Mgbeoji, *Patents and the Traditional Knowledge of the Uses of Plants: Is a Communal Patent Regime Part of the Solution to the Scourge of Bio Piracy?*, 9 IND. J. GLOBAL LEGAL STUD. 163, 183 (2001). "[T]he growth of doctrines such as 'work for hire,' which grant copyright ownership to the employer for works created by employees within the scope of their employment, and the protection of collective works have already seriously eroded the view that 'authorship' requires a sole human agent as the focus for copyright protection." 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, 272-73 (1998).

4. Asserting moral objections to patent applications

Again, article 27 provides:

2. Members may exclude from patentability inventions, the prevention within their territory of the commercial exploitation of which is necessary to protect *ordre public* 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 their law.²⁵⁷

Returning to the neem, basmati, jasmine, and ayahuasca controversies, representatives of developing countries decried how moral objections were never addressed, namely the cultural or religious significance of these plants to the original communities.²⁵⁸ The exception pertaining to public order and morality, however, is again optional and depends on domestic legislation and its interpretation.

A decision such as *Diamond* that places life within the category "manufacture" or "composition of matter" takes a purely utilitarian perspective without regard to the many ethical concerns raised against it.²⁵⁹ The Lockean framework is narrow in this sense, in that it focuses solely on labor invested in order to appropriate a portion of the commons, a very economic perspective. Locke's is not the only philosophical basis for the concept of property, however. Georg Hegel proposed a framework with a different focus.²⁶⁰ He similarly began with Man and his body:

Man, pursuant to his *immediate* existence within himself, is something natural, external to his concept. It is only through the development of his own body and mind, essentially through his self-consciousness's apprehension of itself as free, that he takes possession of himself and becomes his own property and no one else's.²⁶¹

He goes on that "[a] person must translate his freedom into an external sphere,"²⁶² and completes his personality by forging relationships with objects in his physical environment. He extends his will over them, and

²⁵⁷ TRIPS, art. 27(2); Fecteau, *supra* note 71, at 89-90, 92-93, 94.

²⁵⁸ Woods, *supra* note 6, at 138; Fecteau, *supra* note 71, at 85, 87.

²⁵⁹ Ghosh, *supra* note 10, at 894; Donovan, *supra* note 10, at 134.

²⁶⁰ See Paul Heald, *The Rhetoric of Biopiracy*, 11 CARDOZO J. INT'L & COMP. L. 519, 528 (2003).

²⁶¹ GEORG HEGEL, *THE PHILOSOPHY OF RIGHT*, § 57 (T.M. Knox trans. 1971) (1821), in 46 GREAT BOOKS 26.

²⁶² *Id.*, at 22, § 41.

integrates his property into his personality.²⁶³ Hegel, thus, views labor as more than the manner of appropriation, but focuses on it as an act of will that constitutes a man's personality. This is echoed today by Pope John Paul II's discussions of labor in the context of human dignity and self-fulfillment.²⁶⁴ Hegel further discusses:

Since my will, as the will of a person, and so as a single will, becomes objective to me in property, property acquires the character of private property; and common property of such a nature that it may be owned by separate persons acquires the character of an inherently dissoluble partnership in which the retention of my share is explicitly a matter of my arbitrary preference.²⁶⁵

Such an integration of property and personality, for example, forms the philosophical basis for the protest against the commodification of human labor. It also explains an author's residual moral rights over a work,²⁶⁶ and underlies the holistic perspective raised against patent abuse, as opposed to the purely utilitarian perspective. It is readily seen in farmers with respect to their crops, and underlies why a Filipino protested, "A patent on seeds is a patent on freedom."²⁶⁷

Beyond the objection against corporate appropriation of plants and other components of traditional knowledge that have become intertwined with a community's culture, the strongest moral objections are raised against the very idea of patenting of life forms. Developing countries have historically prohibited such patents due to colonial legacies and food security concerns.²⁶⁸ Ethical and religious reasons, however, place life forms in a moral category where their autonomy precludes them from ownership through patent. Indian patent law, for example, prohibits patents on life forms because Hindu tradition sees these and even rivers, lakes, and hills as representations of god.²⁶⁹ Other communities such as those of American Indians similarly see the spirit world present in plants and animals.²⁷⁰ This

²⁶³ HOLMES, *supra* note 145, at 207; Margaret Jane Radin, *Property and Personhood*, 34 STAN. L. REV. 957, 977-78 (1982).

²⁶⁴ LABOREM EXERCENS, *supra* note 185, § 1; CENTISIMUS ANNUS, *supra* note 159, § 6.

²⁶⁵ HEGEL, *supra* note 261, at 23.

²⁶⁶ INTELLECTUAL PROP. CODE, § 193; Ghosh, *supra* note 10, at 894; Paterson & Karjala, *supra* note 187, at 641-42. See Ong, *supra* note 131, at 54 n.180.

²⁶⁷ Assisi Foundation, *supra* note 12, ¶ 19.

²⁶⁸ Bender, *supra* note 10, at 290.

²⁶⁹ Marden, *supra* note 6, at 292-93.

²⁷⁰ Amriott, *supra* note 18, at 10.

conflict is an old philosophical tension with *Diamond* on one side holding that life forms are chemical compounds merely with more complex organization, and the other holding that patents over life is "a form of secular sacrilege."²⁷¹

Admittedly, however, TRIPS by name focuses only on trade-related issues, and does not embrace a moral framework outside article 27(2)'s optional exception. Developing countries, however, may easily translate cultural and moral objections, short of the fundamental objection against the patenting of life itself, into the language of TRIPS. Longtime cultural or religious use, for example, may be presented as evidence of prior art instead. And while this is not completely satisfying because the moral issues will not be explicitly addressed, the fact that these issues have no legal weight does not prevent them from being raised, as in the case of the Thai government's strong stance regarding jasmine rice.

This is not to say that morality has never been invoked in developed countries, however. The 1817 Massachusetts case *Lowell v. Lewis*²⁷² held:

All that the law requires is, that the invention should not be frivolous or injurious to the well-being, good policy, or sound morals of society. The word "useful," therefore, is incorporated into the act in contradistinction to mischievous or immoral.²⁷³

If one accepts the morality and public order bar as subsumed within the usefulness requirement, then it remains an option regardless of the actual domestic law, and TRIPS itself only requires that the patent application's denial be made to protect morality in relation to the invention's commercial use.²⁷⁴ *Lowell* was reiterated by a federal circuit court in 1991,²⁷⁵ and the USPO issued an advisory that read:

These include requirements that the invention have utility, be novel and non-obvious, and be adequately described and disclosed so as to enable the making and using of the invention. The PTO will not, therefore, issue a patent for an invention of incredible or specious

²⁷¹ Robert Merges, *Intellectual Property in Higher Life Forms: The Patent System and Controversial Technologies*, 47 MD. L. REV. 1051, 1059-60 (1988), quoted in Ong, *supra* note 131, at 4.

²⁷² 15 F. Cas. 1018 (C.C.D. Mass. 1817) (No. 8568).

²⁷³ *Id.*, at 1019.

²⁷⁴ Fecteau, *supra* note 71, at 94.

²⁷⁵ *Id.*, at 89, citing *Tol-O-Matic, Inc. v. Proma Produkt-Und Marketing Gesellschaft, m.b.H.*, 945 F.2d 1546, 1552-53 (Fed. Cir. 1991).

utility or for inventions whose utilization is not adequately disclosed in the application. Additionally, 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." *Lowell v. Lewis*, Fed. Cas. No. 8568 (C.C. Mass. 1817) (Story, J.), quoted in *Tol-O-Matic, Inc. v. Proma Product-und Marketing Gesellschaft M.b.H.*, 945 F.2d 1546, 1552, 20 USPQ2d 1332, 1338 (Fed. Cir. 1991).²⁷⁶

Other nineteenth century American decisions refused patents over inventions that would be used for fraud, gambling and the like.²⁷⁷ However, the morality bar has been aimed at different perceived abuse, and the above USPO statement was directed against human cloning. It sought to preempt a patent application made in 1997 by activists for a genetically engineered creature with up to 50% human DNA, either to bar scientists from experimenting with such "chimeras" for the patent's term or to force the USPO to reject it on grounds of morality.²⁷⁸ Similarly, in 1998, the European Union issued a biotechnology directive that devoted one article to "commercial exploitation would be contrary to *ordre public* or morality," and specifically addressed human cloning, commercial use of human embryos, and genetic modifications on animals that would cause suffering without apparent benefit.²⁷⁹

B. ALTERNATIVES AND SUPPLEMENTS TO TRIPS

1. The Convention on Biological Diversity

As emphasized, there is a "difference in seeking to patent a component of traditional knowledge, and in seeking to exclude that component from all patents. Depending on the nuances of a particular country's patent laws, the latter is readily possible under TRIPS by applying novelty and prior art. Such exclusions, however, mean that the former is impossible, and that the knowledge is established as part of the public domain.

²⁷⁶ United States Patent and Trademark Office, *Facts on Patenting Life Forms Having a Relationship to Humans*, ¶ 2 (Media Advisory 98-6) (Apr. 1, 1998), at <http://www.uspto.gov/web/offices/com/speeches/98-06.htm>.

²⁷⁷ Fecteau, *supra* note 71, at 88-89.

²⁷⁸ *Id.*, at 90.

²⁷⁹ Council of the European Union Directive 98/44/EC, art. 6, 1998 O.J. (L 213) 13, cited in Fecteau, *supra* note 71, at 93. Of course, moral objections regarding the inequity in bargaining positions in TRIPS is left only to the negotiating table. Specifically with respect to traditional knowledge, an Indian WTO delegation, for example, criticized TRIPS for failing to require prior informed consent from knowledge holders in another country. Longacre, *supra* note 77, at 992.

This remains an incomplete result because it fails to prevent the tragedy of the commons. At best it prevents the "tragedy of the anti-commons," a situation where a single party is able to block access to what should be a commons, leading to its underuse, which is just as undesirable.²⁸⁰ To resummarize, as in the neem case, the American patent never excluded neem from its traditional use in India, but neither would its disapproval bar the use of neem derivatives outside India. Such disapproval merely disallows a monopoly on the neem products, but their commercial sale would continue, without the original holders receiving any benefits. This remains the best possible result under TRIPS itself, a trade-focused regime traditionally seen as bereft of provisions for members' development goals beyond the underlying presumption that increased trade will fuel development, and lacking a real framework to resolve the moral objections discussed in the preceding section. This narrow view only encourages bioprospectors as "free-riding second-comers,"²⁸¹ who stand to reap enormous profits only for the price of traveling to the South and collecting samples.²⁸²

However, the legal basis is broadened by implementing TRIPS in conjunction with other international instruments that address development goals. With respect to biopiracy, this is primarily the Convention on Biological Diversity (CBD),²⁸³ adopted in 1992 at the Rio Earth Summit in Brazil as part of a world strategy for sustainable development.²⁸⁴ It came into effect in 1993 and has 188 parties to date.²⁸⁵ Under international law, given the broad participation in the CBD, particularly those of the developing countries most concerned with safeguarding their biodiversity resources, it must be argued that the CBD is at least as important as TRIPS with respect to biopiracy. Considering that countries must abide by all treaty

²⁸⁰ Keith Aoki, *Sovereignty and the Globalization of Intellectual Property: Neocolonialism, Anticommons Property, and Biopiracy in the (Not-So-Brave) New World Order of International Property Protection*, 6 IND. J. GLOBAL LEG. STUD. 11, 28 (1998).

²⁸¹ Reichman & Uhler, *supra* note 172, at 362.

²⁸² Rattray, *supra* note 63, at 13.

²⁸³ Convention on Biological Diversity (hereinafter "CBD"), Jun. 1992, 31 I.L.M. 818 (1992); Amiot, *supra* note 18, at 37.

²⁸⁴ Secretariat of the Convention on Biological Diversity, *Sustaining Life on Earth: How the Convention on Biological Diversity Came Into Being*, ¶ 6, at <http://www.biodiv.org/doc/publications/guide.asp> (last updated May 4, 2004).

²⁸⁵ Secretariat of the Convention on Biological Diversity, *Parties to the Convention on Biological Diversity / Cartagena Protocol on Biosafety*, at <http://www.biodiv.org/world/parties.asp> (last updated Oct. 12, 2004). The Philippines was among the first countries to ratify the Convention, doing so on October 8, 1993.

obligations in good faith, there is no reason why the additional CBD requirements cannot be binding at the same time as those in TRIPS,²⁸⁶ just as bilateral "TRIPS plus" agreements that exceed minimum TRIPS standards are binding on State parties.

Several key CBD provisions complete the TRIPS regime and transform it into one more equitable to developing countries. First and foremost, the CBD squarely addresses the tragedy of the commons that accompanies the unpatentability of traditional knowledge by:

Recognizing the sovereign rights of States over their natural resources, the authority to determine access to genetic resources rests with the national governments and is subject to national legislation.

Each Contracting Party shall endeavour to create conditions to facilitate access to genetic resources for environmentally sound uses by other Contracting Parties and not to impose restrictions that run counter to the objectives of this Convention.²⁸⁷

The recognition of sovereign rights allows individual countries to impose legislative specific moral bars in addition to the TRIPS article 27 exceptions. Professor John Ntambirweki, however, opines that developing countries failed to win more concessions at Rio, and that the absence of moral considerations still dominates the international patent regime today.²⁸⁸

Second, source countries must receive their share of benefits from the use of biological resources:

2. Each Contracting Party shall take all practicable measures to promote and advance priority access on a fair and equitable basis by Contracting Parties, especially developing countries, to the results and benefits arising from biotechnologies based upon genetic resources provided by those Contracting Parties. Such access shall be on mutually agreed terms.²⁸⁹

²⁸⁶ "The provisions of this Convention shall not affect the rights and obligations of any Contracting Party deriving from any existing international agreement, except where the exercise of those rights and obligations would cause a serious damage or threat to biological diversity." CBD, art. 22(1).

²⁸⁷ CBD, art. 15(1-2). These rights were at the fore of Rio negotiations. Spectar, *supra* note 6, at 247.

²⁸⁸ John Ntambirweki, *Biotechnology and International Law Within the North-South Context*, 14 TRANSNAT'L LAW. 103, 124 (2001).

²⁸⁹ CBD, art. 19(2). Benefits sharing was the initial goal of negotiations prior to Rio, until concern about sovereign rights resurfaced. Ntambirweki, *supra* note 288, at 116.

This is interpreted to include a share of financial benefits.²⁹⁰

Third, access to a country's biological resources is subject to prior informed consent from that country.²⁹¹ Its elements are:

- (a) full information about the access to biological diversity that is required;
- (b) reasons for such access;
- (c) possible benefits of such access; and
- (d) any other information relating to the consequences of such access.²⁹²

The concept originated in medicine with respect to invasive surgical procedures. In present international law, it is applied in transboundary movements of dangerous wastes, international trade in restricted chemicals, and in the use of pesticides.²⁹³

Fourth, the CBD also bars parties from implementing patent legislation contrary to the Convention:

5. The Contracting Parties, recognizing that patents and other intellectual property rights may have an influence on the implementation of this Convention, shall cooperate in this regard subject to national legislation and international law in order to ensure that such rights are supportive of and do not run counter to its objectives.²⁹⁴

This provision was actually a compromise between two extreme views: the developed country view that intellectual property protections are paramount in technology transfers, and the developing country view that they should be ignored.²⁹⁵

The CBD also mandates technology transfer to developing countries on favorable terms²⁹⁶ as well as financial support from developed

²⁹⁰ Sarma, *supra* note 10, at 121. However, some argue that the emphasis on economic benefits may result in pressure at odds with the preservation of traditional cultures. Amriott, *supra* note 18, at 34.

²⁹¹ CBD, art. 15(5).

²⁹² Ntambirweki, *supra* note 288, at 119.

²⁹³ *Id.*

²⁹⁴ CBD, art. 16(5).

²⁹⁵ McManis, *supra* note 16, at 264.

²⁹⁶ CBD, art. 16(1-2).

countries.²⁹⁷ Finally, it also requires that biological research be carried out with the source country's participation,²⁹⁸ and that parties must facilitate private sector joint development and technology transfer.²⁹⁹

Returning to the philosophical framework, despite the unpatentability of traditional knowledge under TRIPS, the CBD does not place biodiversity resources in the global commons. In fact, developed countries failed to pass wording that would categorize these resources as part of the common heritage of mankind and grant their nationals free access, and the final CBD preamble fell short by stating "common concern of humankind."³⁰⁰

To date, the United States remains a prominent non-party to the CBD, and it was the only signatory that failed to ratify the Convention.³⁰¹ In the early 1990s, the Bush administration objected to the CBD and claimed that it diminished intellectual property protections.³⁰² In particular, American pharmaceutical companies objected to the provision regarding private sector assistance to developing countries, which they considered a compulsory licensing provision.³⁰³ While the WTO itself has called for reexamination of TRIPS in the context of the CBD, nothing has resulted from this.³⁰⁴

Returning to the intellectual framework of Locke's and Hardin's commons, without going into the nuances and critiques of various models,³⁰⁵ there is a seeming self-contradiction and one asks if traditional knowledge would be deemed part of the commons or private property. This is addressed with the concept of the limited commons, or property which constitutes a commons with respect to a particular group, but property from

²⁹⁷ art. 20(1-2).

²⁹⁸ art. 15(6), 19(1).

²⁹⁹ art. 16(4).

³⁰⁰ Spectar, *supra* note 6, at 248; Ntambirweki, *supra* note 288, at 117.

³⁰¹ Secretariat of the Convention on Biological Diversity, *Parties to the Convention on Biological Diversity / Cartagena Protocol on Biosafety*, at <http://www.biodiv.org/world/parties.asp> (last updated Oct. 12, 2004). The Philippines was among the first countries to ratify the Convention, doing so on October 8, 1993.

³⁰² Fecteau, *supra* note 71, at 83-84; McManis, *supra* note 16, at 263.

³⁰³ Spectar, *supra* note 6, at 249; Carroll, *supra* note 8, at 2462-63; McManis, *supra* note 16, at 263. However, the Paris Convention had already opened whatever door the CBD allegedly did regarding compulsory licensing. *Id.* at 264.

³⁰⁴ DOHA MINISTERIAL DECLARATION, WT/MIN(01)/DEC/1, at 4, ¶ 19, (Nov. 14, 2001).

³⁰⁵ See generally Aoki, *supra* note 13, at 325-26.

which the group may exclude outsiders.³⁰⁶ Seeing the CBD in this light conforms to the community or collective nature of most traditional knowledge, and recognizes the labor invested in it by people of a particular community or area. Part of the limited commons' collective appropriation is achieved in a non-economic manner, and language and traditional culture, for example, serve as barriers. A traditional community's structure may also have intrinsic barriers, as in the case of knowledge preserved in ritual, or passed only to elders, shamans, or healers.³⁰⁷

2. Other Key Declarations

Although the CBD is the major convention calling for actual benefits sharing, its thrust is echoed in other key international declarations. While the CBD focuses on sovereign rights, for example, the rights of individual indigenous communities themselves enjoy protection, and the CBD itself is criticized for failing to explicitly involve these communities.³⁰⁸ By the end of 2004, the final year of the International Decade for the World's Indigenous Peoples, it is hoped that the United Nations General Assembly will adopt the Draft Declaration on the Rights of Indigenous Peoples,³⁰⁹ which provides:

Indigenous peoples are entitled to the recognition of the full ownership, control and protection of their cultural and intellectual property.

They have the right to special measures to control, develop and protect their sciences, technologies and cultural manifestations, including human and other genetic resources, seeds, medicines, knowledge of the properties of fauna and flora, oral traditions, literatures, designs and visual and performing arts.³¹⁰

Further:

Indigenous peoples have the right to practise and revitalize their cultural traditions and customs. This includes the right to maintain,

³⁰⁶ Carol Rose, *The Several Futures of Property: of Cyberspace and Folk Tales, Emission Trades and Ecosystems*, 83 MINN. L. REV. 129 (1998); Aoki, *supra* note 13, at 326; Ghosh, *supra* note 10, at 917.

³⁰⁷ Ghosh, *supra* note 10, at 916; Aoki, *supra* note 13, at 326; Bender, *supra* note 10, at 294.

³⁰⁸ Amiot, *supra* note 18, at 33.

³⁰⁹ International Decade of the World's Indigenous People, U.N. Doc. A/RES/49/214 (1994).

³¹⁰ Draft United Nations Declaration on the Rights of Indigenous Peoples, art. 29, U.N. Doc. E/CN.4/Sub.2/1994/2/Add.1 (1994).

protect and develop the past, present and future manifestations of their cultures, such as archaeological and historical sites, artifacts, designs, ceremonies, technologies and visual and performing arts and literature, as well as the right to the restitution of cultural, intellectual, religious and spiritual property taken without their free and informed consent or in violation of their laws, traditions and customs.³¹¹

The UN Draft Declaration is the most comprehensive instrument regarding indigenous peoples to date, and embodies what had been established in previous instruments. The International Covenant on Civil and Political Rights (ICCPR) recognizes the right of minorities to enjoy their culture as a community.³¹² The Universal Declaration of Human Rights (UDHR) grants "economic, social and cultural rights indispensable for his dignity and the free development of his personality."³¹³ The European Union recognizes indigenous cultures as "a heritage of diverse knowledge and ideas, which is a potential resource to the entire planet."³¹⁴ The Rio Declaration on Environment and Development recognized the role of traditional communities' knowledge in conservation efforts and that "[s]tates should recognize and duly support their identity, culture and interests."³¹⁵ International Labor Organization Convention No. 169 calls for special measures to safeguard indigenous culture.³¹⁶

Finally, the UN Draft Declaration's explicit provisions on intellectual property are echoed by the Proposed American Declaration on the Rights of Indigenous Peoples:

1. Indigenous peoples have the right to the recognition and the full ownership, control and protection of their cultural, artistic, spiritual, technological and scientific heritage, and legal protection for their

³¹¹ *Id.*, art. 10.

³¹² International Covenant on Civil and Political Rights, art. 27, U.N. Doc. A/6316 (1966). See International Covenant on Economic, Social and Cultural Rights, art. 15, U.N. Doc. A/6316 (1966).

³¹³ Universal Declaration of Human Rights, art. 22, U.N. Doc. A/810 (1948). See Orit Fischman Afori, *Human Rights and Copyright: The Introduction of Natural Law into American Copyright Law*, 14 FORDHAM INTELL. PROP. MEDIA & ENT. L.J. 497 (2004).

³¹⁴ Council of the European Union, Council Resolution of 30 November 1998: Indigenous peoples within the framework of the development cooperation of the Community and the Member States, ¶ 2 available at http://europa.eu.int/comm/external_relations/human_rights/ip/res98.pdf.

³¹⁵ Rio Declaration on Environment and Development, Principle 22, U.N. Doc. A/CONF.151/26 (Vol. I) (1992).

³¹⁶ International Labor Organization Convention No. 169, Concerning Indigenous and Tribal Peoples in Independent Countries, art. 4(1), Jun. 27, 1989, 28 I.L.M. 1382.

intellectual property through trademarks, patents, copyright and other such procedures as established under domestic law; as well as to special measures to ensure them legal status and institutional capacity to develop, use, share, market and bequeath that heritage to future generations.

2. Indigenous peoples have the right to control, develop and protect their sciences and technologies, including their human and genetic resources in general, seed, medicine, knowledge of plant and animal life, original designs and procedure.³¹⁷

Although the United States has not ratified the CBD, it must be argued that it will have to conform to a clearly emerging international customary norm with respect to indigenous intellectual property rights as gleaned from the CBD and its broad participation, the UN Draft Declaration, and the OAS Proposed Declaration.³¹⁸ This represents a very specific evolution from the right to culture long enshrined in the UDHR and ICCPR.

PART III: FRAMEWORKS FOR IMPLEMENTING SAFEGUARDS

The first part of this article described biopiracy and its economic and philosophical contexts. The second described the applicable international patent regimes, particularly the legal bases for excluding traditional knowledge from patenting by Western corporations and for requiring that benefits from such knowledge be shared with its holders. What remains is to develop Third World strategies that concretely address the problems raised in the first part and actualize the legal solutions presented in the second.

A. PUBLIC DOMAIN MODEL

The discussion begins using four models adapted from the discussion of Buffalo professor Shubha Ghosh.³¹⁹ The default strategy would be to preserve traditional knowledge as part of the public domain, or the global commons in the philosophical model. At the outset, this is

³¹⁷ Proposed American Declaration on the Rights of Indigenous Peoples, art. XX, OEA/Ser/L/V/II.95 Doc.6 (1997). This was approved by the Inter-American Commission on Human Rights on February 26, 1997 at its 95th Regular Session.

³¹⁸ Case Concerning Military and Paramilitary Activities In and Against Nicaragua (U.S. v. Nicar.), 1986 I.C.J. 14, 99-105, ¶¶ 188-199.

³¹⁹ Ghosh, *supra* note 10, at 915-24.

unsatisfactory for the reason already articulated by Locke: it cannot be supposed that God "meant it should always remain common and uncultivated."³²⁰ This is similarly a strategy that stops at TRIPS, at most pushing for explicit recognition of a country's moral and cultural rights over its traditional knowledge, and even implies that social and cultural barriers that separate the traditional community's knowledge from outsiders should be set aside so that the knowledge may freely circulate.³²¹ It fails to stop the tragedy of the commons as well, and especially with nonrivalrousness, and a foreign party easily appropriates all the commercial benefits at the cost of merely gathering samples in the source country. It fails to recognize the accumulated labor represented by traditional knowledge, and if a patent is issued, it would be to one who provided only a modest incremental improvement and not the entire advance.³²² Such a result only encourages developing countries to block access to their biodiversity resources, which fails to benefit anyone.³²³

B. PRIVATE PROPERTY MODEL

Professor Ghosh presented a second model, the ownership model.³²⁴ The CBD models a limited instead of an absolute commons, one localized in the traditional community. Although it does not grant patent rights over traditional knowledge, the recognition of sovereign rights over these means outsiders interact with traditional knowledge holders roughly as though they were private property holders. Ghosh would actualize this idea by finding a method to assign actual or analogous private property rights to a particular group or community.

Such a concept improves upon the public domain model by better reconciling the commerce-minded TRIPS regime and the culture-minded traditional perspective. Such would recognize and preserve the collective ownership practiced by the traditional society, yet facilitate an equitable

³²⁰ LOCKE, *supra* note 1, at 32, ¶ 33. Professor Bagley posits that some traditional communities may not want their traditional knowledge exploited, regardless of compensation. Given the concerns embodied in the CBD, this appears unrealistic, or at least not representative. Bagley, *Still Patently Unconstitutional*, *supra* note 128, at 245. See, however, Aoki, *supra* note 13, at 326. "With certain CPRs, the more they are used, the more valuable they become to those who use the resource and increasing participation enhances the value of the activity or property rather than diminishing it."

³²¹ Ghosh, *supra* note 10, at 917.

³²² Ong, *supra* note 131, at 21-22; Aoki, *supra* note 13, at 287.

³²³ Fecteau, *supra* note 71, at 86-87.

³²⁴ Ghosh, *supra* note 10, at 922-23.

benefits-sharing when knowledge is commercially exploited outside that community, which is again what the result the CBD seeks.

The stumbling block, however, is that the CBD is hardly as concrete as TRIPS, and there is presently no mechanism to effect much less enforce such a limited commons conception. Again, if requisites such as novelty are applied equitably, while a community would not be excluded by TRIPS from its traditional knowledge, this also means that the community is not allowed to exclude even outsiders from using the knowledge. While the limited commons is enforced socio-culturally through barriers such as language, these become superfluous once a translation, plant sample, or explanation is obtained by an outsider, which is sufficient to mass produce a product based on that knowledge. At best, a group would use unscrupulous corporations' own tactics and file activist patents designed to preempt commercial ones, such as Rifkin's chimera and the ActionAid chip.

The recognition that traditional knowledge, while ostensibly part of the public domain, may be attributed to a particular community is significant in itself, even if it cannot be legally enforced. Again, in many cases, one cannot presume that a traditional community wishes to monopolize its knowledge in the sense that it wishes to exclude the rest of mankind from using it.³²⁵ This even goes against the grain of their sense of being collective holders. Because of traditional knowledge's inherent cultural value, however, a share of the commercial profits may be secondary to having outside users properly attribute the knowledge's origins and to preserve the traditional community's sense of respect for it.³²⁶ Again, this would be akin to the residual moral rights granted to an author under copyright law.³²⁷

This value is seen in the Lego Corporation's brush with the Maori people. In 2001, Maori lawyers wrote it, complaining that its "Bionicle" toys used Maori words and historical figures, but liberally and erroneously combined them with parallel components from Easter Island and Polynesian cultures. The Maori, however, emphasized that they did not want to prohibit depictions of their culture in toys, and the corporation eventually employed

³²⁵ Eliana de Carvalho, *supra* note 12, at 39-40.

³²⁶ Gana, *Creativity*, *supra* note 126, at 134; Michael Davis, *Some Realism About Indigenism*, 11 CARDOZO J. INT'L & COMP. L. 815, 817 (2003).

³²⁷ "Moral rights offer a powerful means of bringing cultural interests into the legal arena." Mira T Sundara Rajan, *Moral Rights in the Public Domain: Copyright Matters in the Works of Indian National Poet C Subramania Bharati*, 2001 SING. J. LEGAL STUD. 161.

Maori consultants to ensure respectful usage of the traditional knowledge. There was little evidence that Lego adhered to the bargain, however.³²⁸

Finally, the concept of traditional knowledge as a limited commons finds resonance in the evolving International Environmental Law regime, of which the CBD is a key component. Setting aside TRIPS momentarily, the limited commons is justified by the strengthening link between environmental and biodiversity concerns and thrusts regarding sustainable development. Thus, formally attributing traditional knowledge to the origin community may be seen not as an incentive the way patents are under TRIPS, but as part of a global social agenda that seeks to grant these traditional communities the tools needed for economic development.³²⁹

C. CONTRACT MODEL

Beginning from the foundation that traditional knowledge may be properly attributed to the origin community even though it may not be patented under the current intellectual property regime, Professor Ghosh articulates a third model, the commercial use or contract model.³³⁰ He cites examples where traditional communities have successfully entered into contracts with multinational corporations to identify and develop aspects of their traditional knowledge, and receive royalties for them.

At the outset, however, there are three significant difficulties with this intellectual framework. First, by going beyond TRIPS but through private and not-state action, the contract model is purely voluntary. Without downplaying its successes, it cannot be enforced should a company refuse to enter into a contract and simply take action that is deemed legal under TRIPS.³³¹ In other words, it has no coercive power to change the biopiracy status quo being complained of. Second, even after a company enters into a binding contract, there is no clear standard or safeguard that ensures that a community receives a fair share of any commercial profit. It does not in itself ensure equitable bargaining positions between the community and the

³²⁸ Rosemary Coombe, *Fear, Hope, and Longing for the Future of Authorship and a Revitalized Public Domain in Global Regimes of Intellectual Property*, 52 DEPAUL L. REV. 1171, 1189-90 (2003).

³²⁹ See Michael Davis, *Some Realism About Indigenism*, 11 CARDOZO J. INT'L. & COMP. L. 815, 818 (2003).

³³⁰ Ghosh, *supra* note 10, at 922-23; Bagley, *Still Patently Unconstitutional*, *supra* note 128, at 245.

³³¹ Nard, *supra* note 195, at 233.

corporation.³³² Finally, even with a contract, there remains the secondary problem of equitably distributing benefits within the society. There is even the danger, for example, that a corporation may inadvertently contract with just one of many traditional holders, or even the incorrect or an insufficiently authorized party.

This is not to say, again, that the voluntary contract concept has not enjoyed its successes. Ghosh himself gives the example of the *Trichopuszela miscu* plant, a medicinal herb traditionally used by the Kani people of Thrivanthpuram, India to combat fatigue. The Tropical Botanical & Garden Research Institute, however, found that it could enhance the human immune system. To circumvent lengthy process patent application procedures in India, the Institute instead negotiated a license with the Kani, then sold their rights to a drug company for an initial sum plus royalties for seven years. Half the proceeds were placed in a welfare fund for the tribe.³³³

In the highest-profile example in academic literature, the United States' Merck paid USD1.35 million to the Instituto Nacional de Biodiversidad (INBio), a nonprofit Costa Rican organization, for 10,000 samples of soil, micro-organisms, insects and plants. The corporation is also expected to pay royalties that will fund conservation efforts, although the exact arrangement is confidential.³³⁴ INBio organized groups of lay "parataxonomists" to inventory Costa Rica's biodiversity resources in rural areas for eventual use in government or private research, with the goal of enabling biodiversity to pay for itself. Later, Bristol-Myers-Squibb negotiated a similar arrangement for a different category of samples.³³⁵ The INBio approach was emulated in other countries. Japan launched a major biodiversity research program in Micronesia, and Indonesia and Kenya are forming similar organizations.³³⁶

Experience, however, has also clearly shown the hidden dangers in such contractual arrangements. The United States National Cancer Institute (NCI), for example, launched an ambitious eight million dollar program to screen 10,000 substances against a hundred cancer cell lines and HIV, enlisting ethnobotanists screening plants in Central and South America, Africa and Asia, and marine biologists searching coral reefs. However, all

³³² WTO Doc. IP/C/W/403, at 5 (Jun. 24, 2003); Ghosh, *supra* note 10, at 919.

³³³ Ghosh, *supra* note 10, at 920.

³³⁴ Nard, *supra* note 195, at 233-34; McManis, *supra* note 16, at 270.

³³⁵ McManis, *supra* note 16, at 271.

³³⁶ *Id.*, at 271-72.

NCI initially offered source countries was the initial opportunity to supply raw material should a drug be produced, and training for local scientists. Any patents obtained would belong to NCI, and there was no concrete commitment to share profits with the country.³³⁷ Further, NCI arrangements with Amazon and Mayan communities were challenged for lack of prior informed consent. Mayan groups, for example, protested that the project had been implemented with the support of only a minority of organizations, and it was later terminated.³³⁸

D. TRUST MODEL

Professor Ghosh's final model, the trust model, appears to address the problems discussed in the contract model by assigning the analogous ownership rights to a community other than the traditional community itself. This would either be the State itself, or an NGO it accredits. Presumably, this solves many problems because the bargaining agent's authority is unassailable, and a State is in a better negotiating position and has greater technical and legal expertise. This, in fact, actualizes the CBD and its emphasis on sovereignty over biodiversity resources. Further, the trust model appears to fit the intellectual commons conception, since the State or public sector should shoulder the development of a public good rather than leave the matter to private actors with insufficient incentive to protect these collectively held resources.³³⁹ The State thus pioneers the effort, hopefully attracting private groups later on when a foundation has been laid.³⁴⁰

The very solution, however, was criticized as the problem in the CBD, namely its emphasis on the role of States without a concurrent emphasis on participation by the indigenous communities themselves. The key presumption is that governments are the best channels for distributing benefits to these communities. Professor Rosemary Coombe, for example, opines that the "assumption that transnational corporations or more developed countries are unfairly exploiting local communities is exaggerated in comparison to the exploitation by the political-economic elites of less developed countries who are far more likely to be engaged in commercial

³³⁷ *Id.*, at 273-75.

³³⁸ Bodeker, *supra* note 24, at 792.

³³⁹ Reichman & Uhler, *supra* note 172, at 362.

³⁴⁰ *Id.*, at 364.

extraction resulting in the resource degradation that impoverishes local communities."³⁴¹

Further, the trust model does not in itself ensure that these communities are made conscious of their traditional knowledge's value nor empower them to make informed consent.³⁴² The CBD itself does not explicitly require this nor equitable benefits sharing, and States are only required to:

Subject to its national legislation, respect, preserve and maintain knowledge, innovations and practices of indigenous and local communities embodying traditional lifestyles relevant for the conservation and sustainable use of biological diversity and promote their wider application with the approval and involvement of the holders of such knowledge, innovations and practices and encourage the equitable sharing of the benefits arising from the utilization of such knowledge, innovations and practices;³⁴³

In fact, one author criticizes the implementation of even this CBD provision as of 2001:

[M]any Parties have failed to carry out their duties to report on their efforts to implement article 8(j). Of those that have reported, few Parties have indicated that they consider the protection of traditional knowledge to be a "high priority." Moreover, while just over half the submitted reports have shown that Parties were taking or considering some action to address the implementation of article 8(j), about a third of the responding Parties indicated that they were taking no measures to address the protection of traditional knowledge.³⁴⁴

³⁴¹ Rosemary Coombe, *Intellectual Property Human Rights & Sovereignty: New Dilemmas in International Law Posed by the Recognition of Indigenous Knowledge and the Conservation of Biodiversity*, 6 IND. J. GLOBAL LEG. STUD. 59 (1998), quoted in Ghosh, *supra* note 10, at 921. Thus, governments could conceivably open local communities' biodiversity resources for exploitation without ensuring equitable compensation. Sarma, *supra* note 10, at 123. Further, NGOs and tribal communities themselves may have their own internal power imbalances. Ghosh, *supra*, at 922.

See Daniel Nicer, *The Law That Giveth Life To A Watershed: Defending The Marikina Watershed Reservation*, 79 PHIL. L.J. 151, 177-78 (2004). Nicer discusses how local officials themselves impede Philippine conservation efforts.

³⁴² Amiott, *supra* note 18, at 6; Longacre, *supra* note 77, at 978; Fecteau, *supra* note 71, at 82-83.

³⁴³ CBD, art. 8(j).

³⁴⁴ Amiott, *supra* note 18, at 6, citing CBD, Ad Hoc Open-Ended Inter-Sessional Working Group on Article 8(j) and Related Provisions of the Convention on Biological

Part of the problem is the associated issue of traditional communities' land rights, considering it is tempting and highly profitable to turn these over for commercial exploitation.³⁴⁵

E. DOMESTIC LEGISLATION IMPLEMENTING *SUI GENERIS* SYSTEMS

To a limited extent, the trust model is capable of implementation under TRIPS.³⁴⁶ The last subsection of article 27 itself reads:

3. Members may also exclude from patentability:

...
(b) plants and animals other than micro-organisms, and essentially biological processes for the production of plants or animals other than non-biological and microbiological processes. However, Members shall provide for the protection of plant varieties either by patents or by an effective *sui generis* system or by any combination thereof. The provisions of this subparagraph shall be reviewed four years after the date of entry into force of the WTO Agreement.³⁴⁷

The Philippines has applied this exception, and plants are protected not under the Intellectual Property Code, but under the Plant Variety Protection Act of 2002.³⁴⁸ As already discussed, however, such domestic protections are illusory because of the extremely liberal patent treatment in key consumer markets, namely the United States'. Again, it has ruled that such *sui generis* protections do not preclude patent protection over the same object, and one recalls the Enola bean controversy.

Beyond general plant and animal protections, however, developing countries would use the *sui generis* exception specifically to protect biodiversity resources and traditional knowledge. Some African countries, for example, have proposed to footnote the above exception so as to explicitly protect indigenous peoples and farmers under *sui generis* systems. The United States and Europe, however, refused to entertain the

Diversity, Review of Progress in the Implementation of the Priority Tasks of the Programme of Work on Article 8(j) and Related Provisions, at 2 (UNEP/CBD/WG8J/2/3), available at <http://www.biodiv.org/doc/meetings/tk/wg8j-02/official/wg8j-02-03-en.pdf> (last updated Oct. 24, 2003).

³⁴⁵ Amiot, *supra* note 18, at 32.

³⁴⁶ Obijiofor Aginam, *From the Core to the Peripheries: Multilateral Governance of Malaria in a Multi-Cultural World*, 3 CHI. J. INT'L L. 87, 101-02 (2002).

³⁴⁷ TRIPS, art. 27.3(b).

³⁴⁸ Rep. Act No. 9168 (2002); INTELLECTUAL PROP. CODE, § 22.4.

proposal.³⁴⁹ In fact, there is no consensus as to what a *sui generis* system should be, and, for example, the United States is pushing the corporate-friendly Union for the Protection of New Varieties of Plants (UPOV) as amended in 1991 against other countries attempting to reinforce the CBD.³⁵⁰ The Doha Ministerial Declaration specifically called for the reexamination of article 27.3(b) *vis-à-vis* the CBD, but nothing has yet resulted from this.³⁵¹

Nevertheless, some developing countries have implemented such detailed *sui generis* regimes through domestic legislation. Guatemala created a national cultural goods registry that covers folk traditions, medicinal knowledge, and other cultural expressions. These are placed under State protection and are prevented from being sold through contracts.³⁵² Panama has provided for inalienable registration of collectively owned traditional knowledge and even co-ownership by multiple communities, and further provided for benefits-sharing, although its 2000 law focuses on folklore and native art.³⁵³

In 2002, Peru passed its comprehensive "Law Introducing a Protection Regime for the Collective Knowledge of Indigenous Peoples Derived from Biological Resources," whose first article reads:

The Peruvian State recognizes the rights and power of indigenous peoples and communities to dispose of their collective knowledge as they see fit.³⁵⁴

³⁴⁹ Bender, *supra* note 10, at 317-18.

³⁵⁰ Shalini Bhutani & Ashish Kothari, *The Biodiversity Rights of Developing Nations: A Perspective from India*, 32 GOLDEN GATE U. L. REV. 587, 611-12 (2002); Susan Sell, *Industry Strategies for Intellectual Property and Trade: The Quest for TRIPS and post-TRIPS Strategies*, 10 CARDOZO J. INT'L & COMP. L. 79, 106 (2002); David Fazzino, *The Meaning and Relevance of Food Security in the Context of Current Globalization Trends*, 19 J. LAND USE & ENVT'L L. 435, 443 (2004).

³⁵¹ DOHA MINISTERIAL DECLARATION, *supra* note 304, at 4, ¶ 19. "We instruct the Council for TRIPS, in pursuing its work programme including under the review of Article 27.3(b), the review of the implementation of the TRIPS Agreement under Article 71.1 and the work foreseen pursuant to paragraph 12 of this Declaration, to examine, *inter alia*, the relationship between the TRIPS Agreement and the Convention on Biological Diversity, the protection of traditional knowledge and folklore, and other relevant new developments raised by Members pursuant to Article 71.1."

³⁵² Longacre, *supra* note 77, at 989.

³⁵³ Law No. 20, art. 4-5 (2000) (Pan.).

³⁵⁴ Law No. 27811, art. 1 (2002) (Peru).

The law requires bioprospectors to apply for communities' prior informed consent through designated indigenous organizations, who are in turn required to inform the communities regarding the negotiations.³⁵⁵ It requires contracts to provide for benefits sharing, and further requires that at least 10% of gross profits from products be placed in the Fund of the Development of Indigenous Peoples.³⁵⁶ The law recognizes not only collective ownership of traditional knowledge, but their inalienability and the concept of inter-generational equity that requires present generations of indigenous peoples to preserve knowledge for future ones.³⁵⁷ It also created special registers for traditional knowledge.³⁵⁸ Finally, the law enacted a progressive definition of "public domain" with respect to indigenous knowledge:

For the purposes of this regime, it shall be understood that collective knowledge is in the public domain when it has been made accessible to persons other than the indigenous peoples by mass communication media such as publication or, when the properties, uses or characteristics of a biological resource are concerned, where it has become extensively known outside the confines of the indigenous peoples and communities. In cases where the collective knowledge has passed into the public domain within the previous 20 years, a percentage of the value, before tax, of the gross sales resulting from the marketing of the goods developed on the basis of that knowledge shall be set aside for the Fund for the Development of Indigenous Peoples provided for in articles 37 et seq.³⁵⁹

Portugal passed a similar but less comprehensive law pursuant to the CBD that same year. It provides for the registration of traditional knowledge for a fifty-year period and renewable for another fifty, and gives registrants the right to license or assign the knowledge, and exclude it from protections granted by other industrial registration. If certain knowledge has not been used outside the traditional community, registrants may object to its reproduction and other unauthorized use.³⁶⁰ The law also provides for benefits sharing with registrants when access to resources is granted.³⁶¹

³⁵⁵ art. 6.

³⁵⁶ art. 7-8.

³⁵⁷ art. 9-12; Shim, *supra* note 17, at 216-17.

³⁵⁸ Law No. 27811, art. 15-24 (2002) (Peru).

³⁵⁹ art. 13.

³⁶⁰ Decree-Law No. 118/2002, art. 3 (Port.).

³⁶¹ art. 7.

F. TRADE SECRET MODEL

Beyond Professor Ghosh's four models, other authors have sought to apply other regimes more doctrinally distant from TRIPS. Foremost among these is the trade secret model, which is loosely covered by TRIPS in a rule against unfair competition:

1. In the course of ensuring effective protection against unfair competition as provided in article 10 of the Paris Convention (1967), Members shall protect undisclosed information in accordance with paragraph 2 and data submitted to governments or governmental agencies in accordance with paragraph 3.

2. Natural and legal persons shall have the possibility of preventing information lawfully within their control from being disclosed to, acquired by, or used by others without their consent in a manner contrary to honest commercial practices so long as such information:

(a) is secret in the sense that it is not, as a body or in the precise configuration and assembly of its components, generally known among or readily accessible to persons within the circles that normally deal with the kind of information in question;

(b) has commercial value because it is secret; and

(c) has been subject to reasonable steps under the circumstances, by the person lawfully in control of the information, to keep it secret.

3. Members, when requiring, as a condition of approving the marketing of pharmaceutical or of agricultural chemical products which utilize new chemical entities, the submission of undisclosed test or other data, the origination of which involves a considerable effort, shall protect such data against unfair commercial use. In addition, Members shall protect such data against disclosure, except where necessary to protect the public, or unless steps are taken to ensure that the data are protected against unfair commercial use.³⁶²

The underlying logic of trade secret protection, however, is for a completely different purpose compared to various traditional knowledge protections already discussed. Patent law, one recalls, is designed not to keep knowledge secret, but to regulate its use so that it may be distributed while ensuring that the inventor is properly rewarded for its development. Similarly, traditional communities have never sought to keep their knowledge secret from the rest of mankind, and some are held by a large

³⁶² TRIPS, art. 39.

enough number that they cannot be deemed as confidential as trade secret protections would demand. At best, such protection would apply only to a very limited class of knowledge, such as that most closely held among shamans, elders or a similarly restricted group.³⁶³ Outside this narrow category, the proposed trade secret protections would cease once the knowledge is sufficiently disclosed outside the community.³⁶⁴

From a practical perspective, a proposed trade secret regime does not solve a number of the problems under TRIPS. Most importantly, it still does not provide a practical remedy to traditional communities. By nature, trade secret protections can only be enforced once the information has been stolen and confidentiality is breached. The communities or even States concerned might not have the resources to monitor possible breaches, however, and may not learn of them until much later, in which case they would have to go through long and expensive litigation to address it.³⁶⁵ Moreover, unlike patents, there is no harmonized global regime for trade secrets. Not only do domestic protections vary, some countries do not have them.³⁶⁶

G. DATABASE OR REGISTRY MODEL

This paper has discussed the two distinct goals of blocking patents over biodiversity resources and traditional knowledge under TRIPS, and granting their holders equitable shares of profits from their exploitation under the CBD. Thus far, however, the strategies discussed reveal flaws not only in terms of doctrinal protection, but in practical application. First and foremost, strategies must recognize that traditional communities cannot be expected to muster the resources to engage in protracted litigation overseas. The database model is thus not a doctrinal framework in itself, but a preliminary strategy to facilitate these.

Simply, countries or NGOs in cooperation with the traditional communities must take the initiative to document their traditional

³⁶³ Paul Kuruk, *Protecting Folklore Under Modern Intellectual Property Regimes: A Reappraisal of Tensions Between Individual and Communal Rights in Africa and the United States*, 48 AM. U. L. REV. 769, 833 (1999).

³⁶⁴ Gelvina Rodriguez Stevenson, Note, *Trade Secrets: The Secret to Protecting Indigenous Ethnobiological (Medicinal) Knowledge*, 32 N.Y.U. J. INT'L L. & POL. 1119, 1155-56 (2000). See, however, *id.* at 1162. Stevenson argues that traditional communities satisfy the secrecy requirement in many cases.

³⁶⁵ Oguamanam, *supra* note 16, at 144.

³⁶⁶ Stevenson, *supra* note 364, at 1152; Longacre, *supra* note 77, at 998.

knowledge. Most importantly, this would facilitate checks by foreign examiners, and an entry in such a database meets the requirements of even American patent law. As discussed, databases and registries have also been used as part of *sui generis* domestic regimes to facilitate the grant special protections. Ideally, once such databases clearly establish the attribution of particular knowledge to traditional communities, they should also facilitate the negotiation of licenses for such knowledge, though some may by nature require some confidentiality to reserve some commercial applications.³⁶⁷

Nevertheless, the database model itself suffers from the reality that implementing such systems involves a challenging amount of resources, both in terms of finances and manpower. The INBio model, where parataxonomists are supported by contractually-granted royalties from a pharmaceutical corporation, is one successful example, but not all countries have been able to follow it. Further, it remains unrealistic to expect a country to be able to document all its traditional knowledge, given its inherent breadth, and documentation may not be sufficient in many cases, especially for knowledge preserved in oral tradition.³⁶⁸

India represents one ambitious example. Following the basmati, neem and turmeric controversies, the government recorded the country's traditional medicinal knowledge, including classical texts of Ayurveda and other traditional systems as well as records of folk uses, into compact discs for distribution to foreign patent offices.³⁶⁹ More broadly, the Science and Human Rights Program of the American Association for the Advancement of Science established an international database, and drew upon over 40,000 references to plants and their traditional uses already in the public domain. The database has links to the American and European patent databases, and the organization has offered to include any traditional knowledge holders who wish to "defensively" place their knowledge in the public domain.³⁷⁰

H. MANDATORY DISCLOSURE MODEL

The Brazilian proposal of mandatory disclosure is a simple alternative to the database model, though it has received scant attention in

³⁶⁷ Rosemary Coombe, *The Recognition of Indigenous Peoples' and Community Traditional Knowledge in International Law*, 14 ST. THOMAS L. REV. 275, 283 (2001).

³⁶⁸ WTO Doc. IP/C/W/403, at 5 (Jun. 24, 2003).

³⁶⁹ Bodeker, *supra* note 24, at 802.

³⁷⁰ *Id.*, at 802-03.

academic literature.³⁷¹ While the database model in theory provides an excellent beginning for methods of safeguarding traditional knowledge, it may not be implemented immediately because of the resources that have to be mustered. The problem is again returns to the very real unavailability of resources, and the mandatory disclosure model addresses this by shifting the economic burden onto patent applicants, requiring them instead of origin States or holder communities to bear the efforts of clarifying any component's status as prior art.

Again, TRIPS' article 27 provides the following requisites for patentability:

- (1) Novelty
- (2) Inventive step or non-obviousness
- (3) Usefulness or industrial application

The Brazilian proposal would simply add three further requisites for applications dealing with biological or traditional knowledge:

- (4) disclosure of the source and country of the biological resource and of the traditional knowledge used in the invention;
- (5) evidence of prior informed consent through approval of authorities under the relevant national regimes; and
- (6) evidence of fair and equitable benefit sharing under the national regime of the country of origin.³⁷²

³⁷¹ Of several hundred academic sources reviewed by this author for this article, only two pieces discussed it, with the second citing the first. Nuno Pires de Carvalho, *International and Comparative Law Issues: Requiring Disclosure of the Origin of Genetic Resources and Prior Informed Consent in Patent Applications Without Infringing the TRIPS: The Problem and the Solution*, 2 WASH. U. J.L. & POL'Y 371, 374 (2000); Longacre, *supra* note 77, at 999.

A third devoted two paragraphs to a similar proposal without citations, but the author e-mailed that these arose from discussions with Brazilian colleagues. Bodeker, *supra* note 24, at 800. The proposal is mainly articulated in documents circulated by TRIPS delegations themselves.

³⁷² WTO Doc. IP/C/W/356, at 1 (Jun. 24, 2002). This document reproduces a communication from the Permanent Mission of Brazil on behalf of Brazil, China, Cuba, Dominican Republic, Ecuador, India, Pakistan, Thailand, Venezuela, Zambia and Zimbabwe. The framework was reiterated in WTO Doc. IP/C/W/403, at 1 (Jun. 24, 2003). This was a submission by Bolivia, Brazil, Cuba, Dominican Republic, Ecuador, India, Peru, Thailand, and Venezuela.

The proposal begins from the premise that TRIPS and the CBD must be mutually self-supporting,³⁷³ and that the TRIPS regime must be modified in order to give effect to the CBD. The prior informed consent and benefits sharing requirements are taken directly from the Convention:

Access to genetic resources shall be subject to prior informed consent of the Contracting Party providing such resources, unless otherwise determined by that Party.³⁷⁴

Each Contracting Party shall, as far as possible and as appropriate:

...
(j) Subject to its national legislation, respect, preserve and maintain knowledge, innovations and practices of indigenous and local communities embodying traditional lifestyles relevant for the conservation and sustainable use of biological diversity and promote their wider application with the approval and involvement of the holders of such knowledge, innovations and practices and encourage the equitable sharing of the benefits arising from the utilization of such knowledge, innovations and practices;³⁷⁵

Each Contracting Party shall take legislative, administrative or policy measures, as appropriate, and in accordance with articles 16 and 19 and, where necessary, through the financial mechanism established by articles 20 and 21 with the aim of sharing in a fair and equitable way the results of research and development and the benefits arising from the commercial and other utilization of genetic resources with the Contracting Party providing such resources. Such sharing shall be upon mutually agreed terms.³⁷⁶

To present an alternate formulation, Colombia presented the following to the World Intellectual Property Organization in 1999:

"1. All industrial property protection shall guarantee the protection of the country's biological and genetic heritage. Consequently, the grant of patents or registrations that relate to elements of that heritage shall be subject to their having been acquired legally.

"2. Every document shall specify the registration number of the contract affording access to genetic resources and a copy thereof where the goods or services for which protection is sought have been manufactured or developed from genetic resources, or products thereof, of which one of the member countries is the country of origin." Nuno Pires de Carvalho, *supra* note 371, at 377.

India also proposed some of these points before the WTO in the late 90's. *See, e.g.*, WTO Doc. IP/C/M/24 (Aug. 17, 1999). This document details a proposal for mandatory disclosure.

³⁷³ *Id.*

³⁷⁴ CBD, art. 15.5.

³⁷⁵ art. 8(j).

³⁷⁶ art. 15.7.

The disclosure requirement is a practical prerequisite that helps establish the other two.

The Brazilian proposal would add the above as substantive requirements for patentability. The result would be to punish failure to comply with these with the patent application's cancellation. Establishing a lack of disclosure or compliance with consent or benefits sharing under the source government's procedures is more straightforward than establishing a lack of novelty or nonobviousness. Concededly, the prior informed consent and benefits sharing requirements are controversial in that they go well beyond TRIPS requirements, and the CBD itself leaves benefits sharing to be "encouraged" in domestic legislation. As for prior informed consent, the CBD has no specific provision for using rejection of patent applications as a penalty,³⁷⁷ even though it mandates such consent as a precondition to access.

Focusing only on the mandatory disclosure requirement and leaving the other two to a resolution of TRIPS and the CBD, the requirement has clear practical benefits. India, for example, precisely noted that forcing patent offices in biodiversity-rich countries to continually monitor publications from counterparts in other countries was too onerous.³⁷⁸ This is maintained by Brazil:

[I]t would be more cost-effective to establish an internationally accepted solution as suggested above to prevent biopiracy than to divert national resources to expensive judicial processes for the revocation of patents that include illegal genetic resources (as experienced, for example, by the Government of India and Amazonian countries in challenging patents abroad over its genetic resources). Developing countries, in particular, do not have the

³⁷⁷ The CBD contains a sentence regarding existing intellectual property protection: "The Contracting Parties, recognizing that patents and other intellectual property rights may have an influence on the implementation of this Convention, shall cooperate in this regard subject to national legislation and international law in order to ensure that such rights are supportive of and do not run counter to its objectives." Even this mild statement was opposed by the United States. CBD, art. 16(5); Laurence Helfer, *Regime Shifting: The TRIPS Agreement and New Dynamics of International Intellectual Property Lawmaking*, 29 YALE J. INT'L L. 1, 32 (2004).

³⁷⁸ Nuno Pires de Carvalho, *supra* note 371, at 393, citing WTO Doc. IP/C/W/162, at 5-6 (Oct. 29, 1999). See, however, Mgbeoji, *supra* note 256, at 186. "[A] public officer with the status of a public defender of Community patents should be created with competence to track down, on a global scale, cases of appropriation of indigenous knowledge and to make necessary international representations."

resources to follow each and every patent issued outside their territories on the use of their resources.³⁷⁹

This is only exacerbated by the relative ease of obtaining patents in the United States,³⁸⁰ which aggressively grants biodiversity-derived patents.

However, aside from article 27's prerequisites, the proposal is initially criticized as exceeding the TRIPS disclosure requirement in article 29:

Members shall require that an applicant for a patent shall disclose the invention in a manner sufficiently clear and complete for the invention to be carried out by a person skilled in the art and may require the applicant to indicate the best mode for carrying out the invention known to the inventor at the filing date or, where priority is claimed, at the priority date of the application.³⁸¹

Generally, the location of a biological component is unnecessary for the above description. There are exceptions, however, and the United States proposed that this must be part of the disclosure when the biological component's source is unique.³⁸² However, in other cases, not only may it be irrelevant, but the particular source used may constitute a trade secret.³⁸³

The additional requirement is arguably justified, however, under other provisions governing implementation. First, article 62 provides:

Members may require, as a condition of the acquisition or maintenance of the intellectual property rights provided for under sections 2 through 6 of Part II, compliance with reasonable procedures and formalities. Such procedures and formalities shall be consistent with the provisions of this Agreement.³⁸⁴

Presumably, the "reasonable procedures" are those that would aid patent examiners in verifying the requisites of novelty, nonobviousness and usefulness. Nuno Pires de Carvalho examined the history of TRIPS negotiations, where no party contested the premise that these were the only

³⁷⁹ IP/C/W/356, *supra* note 372, at 6. See Donovan, *supra* note 10, at 143.

"[E]nvironmentalists argue Mexico should not have to use scarce financial resources defending a (Enola bean) patent that should not have been granted to Proctor in the first place."

³⁸⁰ Ghosh, *supra* note 10, at 911.

³⁸¹ TRIPS, art. 29.

³⁸² Nuno Pires de Carvalho, *supra* note 371, at 381, citing WTO Doc. IP/C/W/162 (Oct. 29, 1999).

³⁸³ Nuno Pires de Carvalho, *supra* note 371, at 381.

³⁸⁴ TRIPS, art. 62.1.

three substantive requisites allowed, and the discretion TRIPS itself grants is purely procedural.³⁸⁵ In other words, a patent's invalidation would arguably be possible only when one of these three requisites is absent, or the same grounds for initially denying an application.

He argues that this mindset was revealed in the negotiations surrounding article 32, which mandated an opportunity for domestic judicial review of any decision revoking a patent. India proposed that article 32 should allow a country to revoke a patent pursuant to societal goals. This was opposed by the United States, which was joined by other developed countries, while no other member supported India.³⁸⁶

First assuming that de Carvalho's argument is correct, however, one argues, nevertheless, that prior art is a key aspect of novelty, and that failure to make such a disclosure may well conceal a lack of novelty.³⁸⁷ The disclosure requirement in part arose from an expressed difficulty on the part of patent examiners in checking for the existence of prior art.³⁸⁸ This is further seen in how developing countries refuted the American position that adopting the Brazilian proposal would discriminate between fields of technology.³⁸⁹ They countered that prior art must be examined using different methods given categories whose diversity ranges from biodiversity resources to deposited micro-organisms, and that treating different fields differently is not a violation of the non-discrimination principle.³⁹⁰

The subsequent subsection provides that procedures must "permit the granting or registration of the right within a reasonable period of time so as to avoid unwarranted curtailment of the period of protection,"³⁹¹ and one argues that the mandatory disclosure requirement achieves precisely this. How directly a patent may be revoked because of failure to comply with such a disclosure rule involves a calibration of details; for example, a domestic rule might refuse to entertain an application in the first place should it not contain the disclosure.

³⁸⁵ Nuno Pires de Carvalho, *supra* note 371, at 388.

³⁸⁶ *Id.*, at 388-89.

³⁸⁷ See, however, *id.* at 385; Longacre, *supra* note 77, at 1000. These authors disagree.

³⁸⁸ WTO, Elements of the Obligation to Disclose the Source and Country of Origin of Biological Resource and/or Traditional Knowledge Used in an Invention, WTO Doc. IP/C/W/429, at 2, ¶ 3 (Sep. 21, 2004). This was a submission from Brazil, India, Pakistan, Peru, Thailand, and Venezuela.

³⁸⁹ WTO Doc. IP/C/W/257.

³⁹⁰ WTO Doc. IP/C/W/403, at 3-4 (Jun. 24, 2003).

³⁹¹ TRIPS, art. 62.2.

In addition to article 62, de Carvalho points to article 8, which provides:

1. Members may, in formulating or amending their laws and regulations, adopt measures necessary to protect public health and nutrition, and to promote the public interest in sectors of vital importance to their socio-economic and technological development, provided that such measures are consistent with the provisions of this Agreement.

2. Appropriate measures, provided that they are consistent with the provisions of this Agreement, may be needed to prevent the abuse of intellectual property rights by right holders or the resort to practices which unreasonably restrain trade or adversely affect the international transfer of technology.³⁹²

Article 8 creates two possible contexts for a mandatory disclosure requirement. First, especially considering the CBD's declarations, biodiversity protections are of clear public interest, and when linked to prior art and novelty, and mandatory disclosure requirement is argued as consistent with article 62. Second, de Carvalho points out that American jurisprudence itself sanctions patents obtained through fraud, which would include a gross lack of candor. Even assuming a patent may not be invalidated for not failure to comply with such a requirement, a domestic system may nevertheless refuse to enforce the patent, and one justification is that the holder would be turning to a court with unclean hands.³⁹³ Note that article 8 is supposedly one of the flexible provisions geared to give developing countries room to legislate for national needs.³⁹⁴

Thus, assuming that de Carvalho is correct and that the mandatory disclosure requirement is, at best, a procedural and not a substantive remedy, it is nevertheless permissible under TRIPS under articles 8 and 62. One must critically consider, however, the premise that TRIPS restricts the revocation of a patent to *only* the three in article 27.

It must be noted that previous discussion in this article would question such a narrow premise. In fact, American and European interpretations of TRIPS do not uphold this. Discarding the premise, it is submitted that there are four avenues through which mandatory disclosure

³⁹² TRIPS, art. 8.1-8.2.

³⁹³ Nuno Pires de Carvalho, *supra* note 371, at 395-98.

³⁹⁴ Michael Taylor & Jerry Cayford, *American Patent Policy, Biotechnology, and African Agriculture: The Case for Policy Change*, 17 HARV. J.L. & TECH. 321, 367-68 (2004).

as the Third World's TRIPS riposte might begin. First and most superficial, one returns to article 62, which would cast the requirement as a procedural one closely tied to article 27's substantive novelty requirement. Second, one may also return to article 8 and turn to, as de Carvalho already pointed out, public policy or fraud justifications.

In addition, however, one may turn to article 27(2), or the clear public order and morality exception. As discussed, the United States and Europe have applied this to block patents, although those with related to human cloning. Clearly, the Third World outrage over biopiracy parallels such expressed fears regarding genetic engineering, and they must be entitled to the same remedy claimed. Arguably, the heightened cultural value unique to traditional knowledge precludes an argument of discrimination. Finally, article 27(3) provides the ready *sui generis* exception. Even assuming that article 27 restricts the grounds for revoking patents, the mandatory disclosure requirement can be incorporated into a regime arising from that article's own exception. Again, developing countries have used this exception to create very detailed *sui generis* regimes.

It must be noted that past negotiations have not made headway in pushing the set of proposals now adopted by Brazil.³⁹⁵ Ideally, a mandatory disclosure requirement would be pushed along with other measures aimed at reconciling TRIPS and the CBD, a position still explicitly maintained by developing countries through Brazil.³⁹⁶ On its own, however, it can already be implemented in domestic legislation, though recognizing the inherent limitations of such measures if developed countries representing key consumer markets do not adopt them. The mandatory disclosure requirement has, for example, been incorporated into the Andean Common Regime on Access to Genetic Resources³⁹⁷ and Costa Rica's Biodiversity Law.³⁹⁸

Again, the mandatory disclosure proposal highlights that most developing countries face not doctrinal but practical difficulties with respect to traditional knowledge,³⁹⁹ and as a number reiterated in a 2003 WTO position:

³⁹⁵ Nuno Pires de Carvalho, *supra* note 371, at 394.

³⁹⁶ IP/C/W/356, *supra* note 372, at 1.

³⁹⁷ Andean Decision No. 391 (Andean Community of Nations) (Jul. 2, 1996).

³⁹⁸ Law No. 7788, art. 81 (1998) (Costa Rica).

³⁹⁹ See also Srividya Ragavan, *Can't We All Get Along? The Case for a Workable Patent Model*, 35 ARIZ. ST. L.J. 117, 179-80 (2003).

It is not our submission that patent law should fill in where other national laws prove ineffective. It is not our submission that patent laws should facilitate "benefit sharing" with country/community of origin of the biological resource and knowledge. What is being sought is a simple mechanism whereby patent laws in different countries through the world make an effective determination of "inventorship" and "prior art," and further, do not reward a patent applicant for violating the source countries [sic] laws on access and benefit sharing.⁴⁰⁰

Again, however, it must be pointed out that domestic legislation fails to address the patent regimes in key consumer markets such as the United States, and the ideal result is realized only when developed countries are convinced to accept the proposal. Taking the Peruvian law, one argues that developing countries are using whatever breathing room they have found under TRIPS to erect detailed protections that focus on prior informed consent and establishing prior art through registries and databases. Not only does this require significant resources from developing countries, meeting new domestic requirements would eventually require more from developed countries as well. The mandatory disclosure model, however, is based on a logic of practical cost-shifting, and presents a ready safeguard that is again less costly compared to consent- and registry-based protections, and is one developing countries already accept. Incorporating this safeguard into the TRIPS regime, it is argued, will eventually save all parties added costs as domestic protections and international pressure from developing countries mount.

One notes that the CBD's ultimate goal is not the assertion of sovereign rights over biodiversity and not even benefits sharing, but equitable access to biological resources in a global sense. A practical means of guarding against abuse of access, beyond a preliminary step for a more comprehensive doctrinal solution, is an important step to solving the tragedy of the commons, and encouraging developing countries to grant easier access to these resources for mutual benefit.

This result, finally, would be in line with the emerging international emphasis on sustainable development alongside international environmental concerns.⁴⁰¹

⁴⁰⁰ WTO Doc. IP/C/W/403, at 6 (Jun. 24, 2003).

⁴⁰¹ See PATRICIA BIRNIE & ALAN BOYLE, *INTERNATIONAL LAW AND THE ENVIRONMENT* 84-87 (2nd Ed., 2002).

I. GEOGRAPHIC INDICATORS MODEL

Outside patent law, one final strategy arose from the aftermath of the Basmati controversy, and seeks to enforce protections for developing country agricultural products parallel to the special geographic indicator protections in TRIPS. Geographical indications are protected:

1. Geographical indications are, for the purposes of this Agreement, indications which identify a good as originating in the territory of a Member, or a region or locality in that territory, where a given quality, reputation or other characteristic of the good is essentially attributable to its geographical origin.

2. In respect of geographical indications, Members shall provide the legal means for interested parties to prevent:

(a) the use of any means in the designation or presentation of a good that indicates or suggests that the good in question originates in a geographical area other than the true place of origin in a manner which misleads the public as to the geographical origin of the good;

(b) any use which constitutes an act of unfair competition within the meaning of article 10 of the Paris Convention (1967).⁴⁰²

Wines, however, enjoy a special, expanded regime with respect to geographical indications:

1. Each Member shall provide the legal means for interested parties to prevent use of a geographical indication identifying wines for wines not originating in the place indicated by the geographical indication in question or identifying spirits for spirits not originating in the place indicated by the geographical indication in question, even where the true origin of the goods is indicated or the geographical indication is used in translation or accompanied by expressions such as "kind," "type," "style," "imitation," or the like.

2. The registration of a trademark for wines which contains or consists of a geographical indication identifying wines or for spirits which contains or consists of a geographical indication identifying spirits shall be refused or invalidated, *ex officio* if a Member's legislation so permits or at the request of an interested party, with respect to such wines or spirits not having this origin.⁴⁰³

⁴⁰² TRIPS, art. 22.1-22.2.

⁴⁰³ TRIPS, art. 23.1-23.2.

Reasoning that basmati is as culturally indicative as terms such as champagne and burgundy, India amended its trademark law to give agricultural products similar domestic protections.⁴⁰⁴ There is, however, no basis under TRIPS for such an expansion, though a number of countries proposed similar expansions at the 2001 Doha Ministerial Conference, citing products such as Indian Darjeeling tea, Turkish rugs, and Italian Parmagiano Reggiano cheese.⁴⁰⁵ Nevertheless, this is at best a long-term strategy, with the eventual goal of pressuring the global community to amend TRIPS if enough countries adopt such expanded domestic legislation.⁴⁰⁶ One attractive feature of such a protection, however, is the less pronounced demarcation between public domain and private ownership, and its ability to convey a sense of collective ownership.⁴⁰⁷

As seen in even the CBD, domestic legislation tailored to specific national concerns will be crucial in addressing the international issues discussed in this paper. Parenthetically, it is hoped that the Philippines will not be lacking in this area. It must be noted that the Supreme Court, for example, rendered a comprehensive and powerful articulation of support for the recognition of communal ownership and indigenous rights in *Cruz v. Secretary of Environment and Natural Resources*.⁴⁰⁸

CONCLUSION

One is left to conclude that the immensity of biodiversity is matched only by the paucity of solutions to safeguard it under TRIPS as presently applied. Again, assuming doctrinal clarifications are made such as a more equitable treatment of foreign prior art by the United States, the TRIPS regime as it exists today, in the language of the Brazilian mandatory disclosure proposal, is capable only of defensive protection for traditional knowledge.⁴⁰⁹ It is able to prevent a so-called tragedy of the anti-commons by disallowing a single party from excluding the rest of mankind from an item of traditional knowledge, but fails to address the tragedy of the commons, a tragedy of uncontrolled use by foreign bioprospectors with no benefits returned to the knowledge's original wardens. This follows from the inherent limitations of the commerce-focused TRIPS. One must apply

⁴⁰⁴ Ghosh, *supra* note 10, at 908-09.

⁴⁰⁵ Subbiah, *supra* note 9, at 548.

⁴⁰⁶ Gana, *supra* note 116, at 744.

⁴⁰⁷ Subbiah, *supra* note 9, at 557.

⁴⁰⁸ G.R. No. 135385, 347 SCRA 128, Dec. 6, 2000. *See* Rep. Act No. 8371 (1997); Eliana de Carvalho, *supra* note 12, at 64.

⁴⁰⁹ IP/C/W/356, *supra* note 372, at 6.

openings provided in its regime with other instruments to create positive protections, namely the Convention on Biological Diversity, which goes beyond patents and mandates benefits sharing for traditional communities and their countries following a global sense of social justice.

Examining the various theoretical frameworks for safeguarding traditional knowledge, one realizes that all have flaws. The public domain model represents the status quo and the tragedy of the commons. The contract model is not a binding regulatory regime at all. The trust model fails to guarantee that communities themselves will receive benefits, and the CBD is precisely criticized for focusing on States without a corresponding focus on the actual communities. Even a preliminary step such as the database model requires an outlay of resources many developing countries cannot immediately muster. Thus, one shifts the economic burden onto patent applicants and turns to the Brazilian mandatory disclosure model as the simplest, most practical preliminary safeguard for traditional knowledge, the initial defensive measure to lay a foundation for future positive protections. Moreover, incorporating it into the global patent regime will have effects far beyond the immediate effect of simplifying prior art checks, as the ready safeguard should encourage developing countries to grant freer access to their biodiversity resources, a result that benefits even developed countries as domestic-level safeguards grow more elaborate.

Arguably, the first ten years have seen developing countries as slow to learn the rules of the new global game. Ideally, the next ten years will see them further up the learning curve, and perhaps see the mandatory disclosure requirement implemented in various domestic laws until the international pressure can be brought to transform it beyond a domestic option under TRIPS. The requirement arises from the CBD's article 15, and is presented as the inception of an overdue link between the two instruments, and eventually, a more equitable intellectual property regime.

If the lesson from traditional knowledge is that ancient wisdom remains potent, then the more sophisticated intellectual property practitioner argues that John Locke's natural law conception of property remains an ideal until today. The goal of a global patent regime remains to reward individuals for their labor and allow them to enjoy the fullness of the God-given global commons. However, one recalls the caveats presented in this paper. From Proudhon, one recalls that equality of access to the commons remains the key premise, without which the promised global prosperity becomes an illusion dispelled. And from Hegel, one recalls that property is an integral part of the human personality, and none more so than traditional knowledge and its inherent cultural value. These, beyond trade

and economics, remind countries both North and South why it is imperative to overlay the CBD's ideals onto the world patent regime, and strive to use property for holistic development.

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APPENDIX A: EXCERPTS FROM LAW NO. 27811 (2002) (PERU)**LAW INTRODUCING A PROTECTION REGIME FOR THE
COLLECTIVE KNOWLEDGE OF INDIGENOUS PEOPLES
DERIVED FROM BIOLOGICAL RESOURCES****TITLE I: RECOGNITION OF THE RIGHTS OF INDIGENOUS
PEOPLES IN THEIR COLLECTIVE KNOWLEDGE**

Article 1. - Recognition of rights. The Peruvian State recognizes the rights and power of indigenous peoples and communities to dispose of their collective knowledge as they see fit.

TITLE III: SCOPE OF PROTECTION

Article 3.- Scope of protection afforded by this legislation. This legislation establishes a special protection regime for the collective knowledge of indigenous peoples that is connected with biological resources.

Article 4.- Exceptions to the regime. This regime shall not affect the traditional exchange between indigenous peoples of the collective knowledge protected under this regime.

TITLE V: GENERAL PRINCIPLES

Article 6.- Conditions of access to collective knowledge. Those interested in having access to collective knowledge for the purposes of scientific, commercial and industrial application shall apply for the prior informed consent of the representative organizations of the indigenous peoples possessing collective knowledge. The organization of the indigenous peoples whose prior informed consent has been applied for shall inform the greatest possible number of indigenous peoples possessing the knowledge that it is engaging in negotiations and shall take due account of their interests and concerns, in particular those connected with their spiritual values or religious beliefs. The information supplied shall be confined to the biological resource to which the collective knowledge under negotiation relates in order to safeguard the other party's interest in keeping the details of the negotiation secret.

Article 7.- Access for the purposes of commercial or industrial application. In the event of access for the purposes of commercial or industrial application, a license agreement shall be signed in which terms are provided that ensure due reward for the said access and in which the equitable distribution of the benefits deriving therefrom is guaranteed.

Article 8.- Percentage accruing to the Fund for the Development of Indigenous Peoples. A percentage which shall not be less than ten per cent of the value, before tax, of the gross sales resulting from the marketing of goods developed on the basis of collective knowledge shall be set aside for the Fund of the Development of Indigenous Peoples provided for in Articles 37 et seq. The parties may agree on a greater percentage according to the degree of direct use or incorporation of the said knowledge in the resulting end product and the degree to which the said knowledge contributed to the reduction of the cost of research and development work on derived products, among other things.

Article 9.- Role of present generations. The present generations of the indigenous peoples shall preserve, develop and administer their collective knowledge for the benefit of future generations as well as for their own benefit.

Article 10.- Collective nature of the knowledge. The protective knowledge protected under this regime shall be that which belongs to an indigenous people and not to particular individuals forming part of that people. It may belong to two or more indigenous peoples. The rights shall be independent of those that may come into being within the indigenous peoples, which may have recourse to their traditional systems for the purposes of the distribution of benefits.

Article 11.- Collective knowledge and cultural heritage. Collective knowledge forms part of the cultural heritage of indigenous peoples.

Article 12.- Inalienability and indefeasibility of rights. Because they form part of the cultural heritage, the rights of indigenous peoples in their collective knowledge shall be inalienable and indefeasible.

Article 13.- Collective knowledge in the public domain. For the purposes of this regime, it shall be understood that collective knowledge is in the public domain when it has been made accessible to persons other than the indigenous peoples by mass communication media such as publication or, when the properties, uses or characteristics of a biological resource are concerned, where it has become extensively known outside the confines of the indigenous peoples and communities. In cases where the collective knowledge has passed into the public domain within the previous 20 years, a percentage of the value, before tax, of the gross sales resulting from the marketing of the goods developed on the basis of that knowledge shall be set aside for the Fund for the Development of Indigenous Peoples provided for in Articles 37 et seq.

Article 14.- Representatives of indigenous peoples. For the purposes of this regime, indigenous peoples shall be represented by their representative organizations, due regard being had to the traditional forms of organization of the indigenous peoples.