Santa Clara University School of Law

Santa Clara High Technology Law Journal

Volume 21 | Issue 2 Article 4

2005

Half-Human Creatures, Plants & Indigenous Peoples: Musings on Ramifications of Western Notions of Intellectual Property and the Newman-Rifkin Attempt to Patent a Theoretical Half-Human Creature

Valerie J. Phillips

HALF-HUMAN CREATURES, PLANTS & INDIGENOUS PEOPLES: MUSINGS ON RAMIFICATIONS OF WESTERN NOTIONS OF INTELLECTUAL PROPERTY AND THE NEWMAN-RIFKIN ATTEMPT TO PATENT A THEORETICAL HALF-HUMAN CREATURE

Valerie J. Phillips†

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† Assistant Professor of Law and Co-Director of Native American Law Center at the University of Tulsa College of Law, J.D. at University of California, Berkeley (Boalt), and B.A. in Political Science, with honors, at Wellesley College. I would like to thank Jeanette Wolfley of the Tribal Attorneys Office of the Shoshone-Bannock tribes on the Fort Hall Indian Reservation in Idaho for providing me with my first hands-on introduction to legal issues confronting American Indians. While in Idaho, I decided to move from practice into academia, prompted by my concern over the implications of this topic after reading a 1994 book written by Tom Greaves, *Intellectual Property Rights for Indigenous Peoples: A Source Book.* I would also like to thank Gloria Valencia-Weber for her continuing encouragement as well as the Native Law faculty at the University of Tulsa. I first presented the ideas in this paper as a speaker on biotech patents, genomic research, and indigenous resources at the Symposium on Traditional Knowledge, Intellectual Property and Indigenous Culture in New York City in February of 2002 at the Benjamin N. Cardozo School of Law. Other sources of inspiration include Keith Aoki, a co-presenter at that conference, who told me about Kloppenburg's book, presentations given at the International Society of Ethnobiology at the 7th Congress on Ethnobiology, Biocultural Diversity and Benefits Sharing at the University of Georgia in 2000, the Protecting Knowledge: Traditional Resource Rights in the New Millennium Conference at the University of British Columbia also in 2000, and the United Nations Working Group on Indigenous Populations. Thanks are also due to Tamara Piety, Johnny Parker, and G. William Rice for critiquing my paper and to Rodney Nixon for his research assistance.

INTRODUCTION

On December 18, 1997, Stuart A. Newman, a professor of cell biology and anatomy at New York Medical College, and Jeremy Rifkin,[1] long-time biotechnology critic and President of the Washington, D.C.-based Foundation on Economic Trends, filed a patent application with the United States Patent and Trademark Office ("PTO"). The Newman-Rifkin patent application covered the first-time ever production of an animal-human "chimera" that could contain up to 50% human genetic material. Among those who heard of the application, a storm of controversy followed. Many in the media dismissed the application as yet another bizarre and irrelevant ploy of Jeremy Rifkin, whom some have characterized as being something of a gadfly.[2] Seemingly lost in all the brouhaha over Jeremy Rifkin being involved in the patent application was the background of Mr. Rifkin's co-applicant, Stuart Newman, who was on the Board of Directors of the Council for Responsible Genetics ("CRG")[3], and did not share Rifkin's previous notoriety.

Just what is a chimera? According to ancient Greek mythology,[4] a chimera was a fire-breathing female monster with a lion's head, a goat's body, and a serpent's tail. In more modern times, the word is most often used to refer to something that is illusory or does not exist. However, with changes in technology, the term *chimera* has also returned closer to its original mythological meaning, describing a monster that may actually exist. In this context, a chimera has been likened to a hybrid.

In a hybrid, the male of one species is genetically crossed with a female of another species to produce the hybrid. A mule is an example of an animal hybrid. Hybrid corn is an example of a hybrid plant. It is produced by in-breeding corn, rather than using open pollination.[5] Hybrid mules are biologically sterile while hybrid corn

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1. Author of *The Biotech Century, The End Of Work*, and numerous other books, Jeremy Rifkin holds degrees in economics from the Wharton School of Finance and Commerce of the University of Pennsylvania, and a degree in international affairs from the Fletcher School of Law and Diplomacy at Tufts University.

2. Margo A. Bagley, *Patent First, Ask Questions Later: Morality and Biotechnology in Patent Law*, 45 WM. & MARY L. REV. 469, 504 (2003).

3. Other CRG Board members are described in its website, *at* http://www.gene-watch.org/org/directors.html, which includes a laundry list of reputable names from an impressive variety of fields.

4. Thomas A. Magnani, *The Patentability of Human-Animal Chimeras*, 14 BERKELEY TECH. L.J. 433 (1999).

5. Open pollination is the term used to describe pollination that occurs as a result of natural causes without any human intervention. Examples would include wind and insects.

is "economically sterile." That is, the yield on hybrid corn progressively deteriorates past the first generation such that farmers must go back each year to the first generation of the hybrid,[6] *if they decide to grow hybrid corn in the first place.*

Because of its economic sterility, hybrid corn is valued for its ability to be produced in the massive quantities that are prized in industrialized agriculture. The very sterility of hybrid corn also makes it valuable to agribusiness because farmers must return again and again to buy seed to grow each crop. Significantly, hybrid corn also requires massive inputs (such as synthetic fertilizers damaging to the environment) to grow, further increasing the dependence of the farmer on industrial agribusiness. Hybrid plants, like industrial agribusiness, are relative newcomers to America, not becoming popular in the U.S. until the 1930s. This trend represents a significant change from the pre-1930s, when it was still common for American farmers to save their seed and produce crops without having to purchase many additional inputs such as chemical fertilizers and pesticides not produced already on the farm itself. In other words, most American farming used to be more self-sufficient than it is today.

A mule is an example of an animal hybrid.[7] Mules can only be produced artificially, by breeding a naturally occurring donkey with a naturally occurring horse. As a result of sexual breeding between these two species, fertilization occurs and a mule embryo results within the mother's womb. Every cell in the resulting hybrid mule embryo contains one set of chromosomes from the donkey and one set of chromosomes from the horse.[8] However, if one mule mates with another, a baby mule cannot result, making the mule a biologically sterile animal.[9]

Many animals and plants cannot be hybridized at all. However, this is not the case with fish. Hybrid fish may occur naturally, as well as artificially, and are raised in hatcheries. However, hybrid fish do tend to have lower fertility than non-hybrid fish,[10] yet similar to plants, they exhibit better growth rates (hybrid vigor) than their

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6. A hybrid is the offspring of two plants or animals of different species or varieties. OXFORD DESK DICTIONARY & THESAURUS 1285 (1997).

7. *Mule*, *at* http://www.imh.org/imh/bw/mule.html#hist (last visisted Oct. 31, 2004).

8. *Id.*

9. *Id.*

10. *See* Pennsylvania Fish and Boat Commission website, *at* http://www.sites.state.pa.us/PA_Exec/Fish_Boat/images/pages/qa/fish/hybrid_breeding.htm (last visited Oct. 31, 2004).

parents. Hybrid fish are also easier to catch than their parent species, making them appealing to the present-day commercial sector.[11]

Naturally-occurring hybrid fish share at least one fundamental characteristic with the mule, and even inbred plants. The laws of Nature essentially slow down or even eliminate altogether the introduction of each hybrid into existing ecosystems. For example, hybrid fish have a propensity for being caught.[12] This limits their life-span as well as their ability to reproduce themselves. Similarly, the inbred plant's progeny diminishes from one generation to the next, if left to its own devices. The mule has not been able to reproduce itself even after hundreds of years of existence due to continued human intervention.

In contrast to hybrids, a modern chimera, such as the one proposed in the Newman-Rifkin patent application, is an organism whose component cells do not originate from both originating species in the way that a mule's or hybrid plant or fish do. Scientists may produce a modern-day chimera by manipulating two different species of the same or even different genera at the cellular level.[13] For example, a human-chimpanzee chimera would have some human brain cells and some chimpanzee brain cells.[14]

The actual physical appearance of such a chimera is currently not known. For all we know, half-human chimeras may at times be almost impossible to distinguish by appearance, just as some hybrid fish are.[15] On the other hand, their origins might be physically obvious. We do know that, at the cellular level, none of the chimera brain cells would contain both human and chimp brain cells.[16]

Unlike naturally occurring hybrid fish, inbred plants, and mules, the forms of artificially produced hybrid plants favored in industrial agribusiness have put an unprecedented amount of pressure on the global ecosystem, effectively "upping the ante" for environmental devastation on regional and global levels; they have been introduced

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11. *Id.*

12. *Id.*

13. A genus is a biological grouping of several species that share common structural characteristics. For example, the parent species of hybrid corn are different species of corn, but the same genus. The parent species of hybrid fish are all fish. Donkeys, zebras, and horses are both members of the same genus, the horse, but different species. Chimeras, in contrast, may cross genera, such that a cross between a fish and corn may result in two different species as well as genera.

14. Magnani, *supra* note 4, at 446.

15. Dr. Ronald M. Coleman et al., *Who Needs Another Hybrid Fish?*, *available at* http://www.malawicichlids.com/mw01013.htm (last visited Oct. 31, 2004).

16. Magnani, *supra* note 4, at 445.

into ecosystems without being constrained by the pre-existing limitations that Nature has in place for every other living thing on this planet. Similarly, a human-nonhuman chimera raises the genetic and moral stakes exponentially. For example, it is not even known whether a modern chimera could reproduce independently, or whether reproduction would require scientific intervention. Either possibility raises deeply troubling questions.

Human-nonhuman chimeras are still theoretical at this point. So why did Newman and Rifkin attempt to patent something that is still only theoretical? Patents applications are usually submitted for existing things. Newman and Rifkin made public statements about their reasons for applying for a patent on a human-nonhuman chimera. Among the reasons given: (1) mammal-mammal chimeras with no human components have already been produced, and (2) patents already exist on animals into which some human genes have been inserted, such as the Harvard Onco-mouse. Both of these have put half-human chimeras dangerously close at hand.[17]

But the rationale given by Newman and Rifkin that is most striking is that the purpose of their patent application was to force public debate on the directions in which genetic engineering and patenting have been going. Their theory was that the patent application would obstruct the future production of human-animal chimeras in either of two ways.[18] First, if the PTO actually granted their patent, they could then prevent others from receiving one and using it while the public takes a more active role in monitoring genetic engineering and patenting.[19] Or, second, the controversy surrounding the patent application itself would generate enough public debate with the same results.[20]

Indeed, much thought was put into the application.[21] It was carefully crafted to avoid being summarily rejected on the grounds that it was outside the novelty and non-obviousness requirements that

17. Bagley, *supra* note 2, at 505.

18. Cynthia Ho, *Splicing Morality and Patent Law: Issues Arising from Mixing Mice and Men*, 2 WASH. U. J.L. & POL'Y 247, 248 (2000).

19. *Id.*

20. *Id.*

21. The application is itself confidential in accordance with 35 U.S.C. § 122 (1994). This provision has been amended since the Newman-Rifkin patent application, but is not retroactive. However, Rifkin has made several statements to the media concerning the contents of the application.

all patents are supposed to meet.[22] They described different techniques than those used to produce previous nonhuman mammal-mammal chimeras, which were already patented.[23] Furthermore, they drafted their patent application to cover only those chimeras with less than 50% genetic material from humans in an attempt to force the PTO to consider the question of how much human genetic material it takes to make a living thing human.[24] For example, would a chimera with 49% human material and 51% chimpanzee material still be considered a human? Finally, the co-applicants identified several arguably non-immoral uses for the chimeras. This too would force a deeper debate on the moral utility requirement in patent law.

At first glance, the Newman-Rifkin patent application may seem to have little to do with indigenous law or indigenous peoples. As this article will demonstrate however, the Newman-Rifkin patent application is actually part of a broader debate on the direction in which this country's socioeconomic and technological development is going and the proper role of patent law in driving that development in certain directions. Simultaneously, debate has grown over indigenous claims that their cultural property and traditional knowledge have been misused and misappropriated through the use of the same Western intellectual property laws that were the subject of the Newman-Rifkin patent application and its predecessors.

The purpose of this article is to demonstrate that important issues and legal developments leading up to and surrounding the Newman-Rifkin patent application parallel those within the present debate surrounding misuse and misappropriation of indigenous cultural property and traditional knowledge.[25] It raises the question of whether these two parallel tracks in patent law are converging in any useful way and what effect such convergence, or lack thereof, might have on the traditional knowledge of indigenous peoples.

Part I surveys some of the arguments, including those emanating from indigenous peoples, advanced in the debate over animal, plant,

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22. Magnani, *supra* note 4; *see also* Margaret Graham Tebo, *The Big Gene Profit Machine,* 87 A.B.A. J. 46, 52 (Apr. 2001).

23. Magnani, *supra* note 4.

24. *Id.*; *see also* Rick Weiss, *Patent Sought on Making of Part-Human Creatures: Scientist Seeks to Touch Off Ethics Debate,* WASH. POST, Apr. 2, 1998, at A12.

25. There has been some debate surrounding which is the correct terminology to use when referring to such knowledge. Other terms have been indigenous intellectual property rights and traditional resource rights. The terms cultural property and traditional knowledge are used within this paper without debating the relative merits of the terms for the sake of convenience.

micro-organism, and human genetic material patenting. Because the Newman-Rifkin chimera was preceded by pertinent changes in the patenting of plants, it begins with an analysis of the origins of the Plant Patent Act of 1930[26] and the Plant Variety Protection Act of 1970,[27] particularly in relation to the later developments in an intimately related case, *Diamond v. Chakrabarty*.[28] The analysis highlights the pivotal role played by the growth of industrialized agriculture, and the response of the courts to that growth, in the gradual evisceration of the "product of nature" doctrine. As will be demonstrated, this evisceration was a necessary intellectual and moral prerequisite for the decision in *Chakrabarty* and its aftermath. It also resulted in legally unfettered opportunities for biopiracy controversies to arise internationally, such as that surrounding the patents within the U.S. on the ayahuasca plant and on naturally colored cotton, both of which originated among the indigenous peoples of Latin America.

Part II analyzes how a specific area of patent law, "the moral utility requirement," connects the Newman-Rifkin patent application, *Diamond v. Chakrabarty*, and the latter's legal progeny to indigenous concerns. It begins by analyzing *Diamond v. Chakrabarty*, the Supreme Court decision most frequently hailed as that Court's first judicial stamp of approval on genetically modified organisms. It questions that conclusion, asserting instead that *Diamond v. Chakrabarty* is really the Court's first ambivalent "punt" of the issue back to a society that has left the burgeoning biotechnology industry largely unregulated. Part II then traces the origin, development, and decline of the moral utility requirement, which, together with the evisceration of the product of nature doctrine, have taken the heart, mind, and integrity out of patent law.

Part III discusses Western views of the socioeconomic, safety, and ethical concerns implicated during the development of patent law. It also examines some recent potential legal solutions to indigenous concerns over misuse and misappropriation, which range from proposed changes to recognized prior art within U.S. patent law to the development of a *sui generis* system recognizing indigenous laws. These proposals suffer from a failure to analyze the problem in light of the pivotal Marshall Trilogy, a series of federal Indian law cases that came out of the same era as the geographical limitation on prior art. I will analyze these proposals as well as speculate on whether

26. 35 U.S.C. §§ 161–164.
27. 7 U.S.C. §§ 2321–2583.
28. 447 U.S. 303 (1980).

they could, in turn, address some of the unanswered questions raised by the Newman-Rifkin patent application.

Part IV then looks at the critical institutional and attitudinal obstacles to reforming patent law, including my proposed solutions to indigenous concerns over misappropriation of their cultural property and traditional knowledge. Specifically, this article argues that Western socioeconomic and technological development should parallel and complement, rather than exploit and suppress, indigenous socioeconomic and technological development. This would be for the good of the West as well as indigenous peoples and requires a congressional ban, or at least a moratorium, on patenting of life forms. Discussion on the advisability of such patents should include, in a meaningful way, both indigenous peoples and the general public.

Congress should pass legislation that gives the Patent and Trademark Office clear direction on the legality of patents on life forms, as well as legislatively discourage the commercial use of this technology. Congress should also pass legislation rescinding Title 25 U.S.C. § 17, which declared in 1871 that Indian tribes were not sovereign nations with whom the U.S. could make any additional treaties. While this may seem radical to some due to its far-reaching implications, this article will demonstrate why its adoption is long overdue within the U.S. Rescinding § 17 could be an important symbol, as well as a practical tool, in a badly needed and fundamentally revamped U.S. policy towards Indian tribes within, as well as outside the U.S.

I. ORIGINS OF HALF-HUMAN CREATURES IN THE PLANT PATENT AND PLANT VARIETY PROTECTION ACTS AND IN THE CORRESPONDING EVISCERATION OF THE "PRODUCT OF NATURE" DOCTRINE

Patents have long been a part of the legal system in the U.S. Indeed, the United States Constitution reserves to the federal government the power to grant exclusive patents. Specifically, "the Congress shall have Power . . . To promote the Progress of Science and useful Arts, by securing for limited Times to Authors and Inventors the exclusive Right to their respective Writings and Discoveries."[29] A patent is essentially a monopoly since it gives the patent-owner the legal right to exclude others from making, using or selling whatever invention is patented, unless the owner chooses to accept payment in the form of royalties. In recognition of the

29. U.S. CONST. art. I, § 8, cl. 8.

inherent danger of a government-sanctioned monopoly, the Constitution, and codifications of patent law, limit the duration of the legal monopoly granted through patents.

Congress passed the original Patent Act[30] in 1793 with subsequent modifications over the years. The Patent Act has long identified three basic elements necessary to obtain a patent on an invention. The invention must be "useful" or have utility,[31] it must have "novelty,"[32] and it must consist of non-obvious subject matter.[33] Prior to the early 20th century, patents were largely confined to mechanical innovations.[34] Many contend that it was not until the 1980 Supreme Court case of *Diamond v. Chakrabarty* that patent law experienced a fundamental shift. *Chakrabarty* purportedly paved the legal way for the advent of patenting of genetically modified organisms, the rise of the biotechnology industry, and eventually the theoretical half-human creatures such as those described in the Newman-Rifkin patent application.

A. The Plant Patent Act of 1930 and the Plant Variety Protection Act of 1970

Diamond v. Chakrabarty is not where the fundamental shift in patent law has its roots. Rather, *Chakrabarty* was the culmination of a fundamental shift in patent law that actually occurred back in the 1930s with the passage of the Plant Patent Act[35] ("PPA"). The passage of the PPA allowed for patents on newly discovered or invented, distinct, asexually-reproduced plants.

As a practical matter, this meant patents were allowed for fruits and some flowers.[36] However, sexually-reproducing plants, such as grains and vegetables, were omitted, as were two asexually-reproducing plants, potatoes, and Jerusalem artichokes.[37] The deliberate omission of these plants was apparently the result of a Congressional concern at the time that "food," or staple food plants,

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30. 35 U.S.C. §§ 1–376 (1994).

31. *Id.* §101.

32. *Id.* §102.

33. *Id.* §103 (1994 & Supp. III 1997).

34. Patents on chemical innovations comprised the bulk of the rest of patent law during earlier centuries. Chemical innovations, however, did not require any major shift in existing patent laws.

35. 35 U.S.C. §§ 161–164 (1994).

36. Cary Fowler, *The Plant Patent Act of 1930: A Sociological History of Its Creation*, 82 J. PAT. & TRADEMARK OFF. SOC'Y 621, 636 (2000).

37. *Id.*

should not be patented.[38] It was also a reflection of the fact that commercial agribusiness was still in the beginning stages of commodifying the omitted plants through an increasing, but far from required, dependence on hybridization.

Cary Fowler, an Associate Professor at the Norwegian Center for International Environment and Development Studies at the Agricultural University of Norway and Senior Advisor to the Director General of the International Plant Genetic Resources Institute in Rome, has written a pivotal piece that appeared in the *Journal of the Patent and Trademark Office Society*. In his article, Fowler asserts that the 1930 Plant Patent Act did not result from the expressed needs of then-existing plant breeders.[39] Small farmers, "leftovers" from a largely agrarian society that was experiencing rapid industrialization, were almost invariably the actual plant breeders, innovating without the impetus of patent law.[40] For example, Fowler describes an Iowa farmer who discovered the Delicious apple purely by chance.[41] Most "breeding" that was being done at this time was actually the result of an alert farmer "discovering" some desirable seedling purely by chance (a "chance seedling"), simple mass selection, and/or farmer experimentation. Mendel's rediscovered theory of genetics, the basis of today's formal or "scientific" plant breeding, was not popularly accepted and applied until many years after passage of the PPA.[42] It was the seed companies and nurserymen of the day, *i.e.*, the *sellers* not the "breeders,"[43] to whom Congressional members gave credit for development of the Delicious apple during debate on the PPA.[44]

Indeed, Stark Brothers Nurseries was the main proponent for passage of the bill. While Stark Brothers was the country's leading nursery at that time, it was not significantly involved in actual plant breeding.[45] In fact, in 1992, Clay Stark Logan, President of Stark

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38. *Id.*

39. Fowler, *supra* note 36, at 643–44 ("Nursery companies are not breeding new varieties. They are taking newly discovered varieties and commercializing them .... These groups and individuals, in other words, are not constructing laws to facilitate their use of the technology or help make its use more profitable.").

40. *Id.* at 625–26.

41. *Id.* at 629.

42. *Id.* at 624–25.

43. The Delicious apple breeder would more properly be called a "discoverer" since he happened upon the chance seedling on his Iowa farm. In other words, this alert farmer discovered that this particular apple, already produced by Nature completely on its own, tasted better than some of the other apples on his farm.

44. Fowler, *supra* note 36 at 630, 639–40.

45. *Id.* at 630.

Brothers, stated that the company had "never" done any breeding work.[46] The company's main concern in getting the PPA passed was to place a legal fence around uncooperative fruit trees[47] that, in total disregard of legal constraints, freely grow in whatever soil is most hospitable.

Unfortunately for those interested in being a dominant actor in the business of selling fruit trees, the trees can be easily reproduced by grafting. Prior to passage of the PPA, Stark Brothers had purchased another Delicious apple tree growing in New Jersey for $6,000 and erected a tall fence around it to try to prevent others from grafting wood from it. Stark Brothers (along with other fruit merchants) was particularly vulnerable to competitors who could "steal" a variety from a customer to whom Stark had sold a fruit tree by grafting from the original fruit tree.[48] Prior to passage of the PPA, Stark had no legal remedy against that competition. Stark could, however, greatly increase his sales if he could wield the kind of legal control over and protection of varieties that the PPA afforded.[49]

Jack R. Kloppenburg, a Professor in the Department of Rural Sociology as well as the Gaylord Nelson Institute of Environmental Studies at the University of Wisconsin-Madison, has written a comprehensive book on the development of plant biotechnology and its socioeconomic significance called *First the Seed: The Political Economy of Plant Biotechnology, 1492–2000.* Kloppenburg, as well as Fowler, describe major shifts in the definition of what constituted an invention as well as the law to accommodate certain interests that became entrenched in the American economy. The sellers of fruits and flowers were referred to as "plant breeders," a major conceptual shift since it was contrary to reality. The plant breeders in turn were referred to as "inventors," although genuine breeders of that time were seldom even deliberately engaged in breeding work; their subject matter's "inventiveness" was therefore very questionable. Stark Brothers simply wanted to obtain better control over the profits to be had from the *varieties* it was selling and was not actually in the business of plant breeding.[50]

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46. *Id.*
47. *Id.*
48. *Id.* at 631.
49. *Id.* at 630–31.
50. Fowler, *supra* note 36, at 642.

To accommodate this fact, the core requirements of the Patent Act had to be watered down significantly for plant patents. The PPA therefore allowed a patent to anyone who "has invented or *discovered* and asexually reproduced any distinct and new *variety* of plant, other than a tuber-propagated plant. . . ."[51] It was here that discovery became equated with invention, although the two words are hardly synonymous, and mere varieties first became treated in law as though they were as significant as a new breed of plant.

The PPA further weakened the Patent Act by eliminating the requirement that an invention be useful, and instead requiring only that a new plant variety be new and distinct. Additionally, a new plant variety no longer had to be superior in quality to existing varieties to be patentable under the PPA.[52] Distinctiveness was left undefined, another key feature of the PPA that weakened the thrust of the Patent Act. Nature itself is notorious for exhibiting big as well as small differences between every living thing on this planet. Identical twins are not really identical. And how many of us remember the phrase, "no two snowflakes are alike"? Furthermore, although the Patent Act requires that a putative invention be described sufficiently well to enable another to reproduce it, this requirement was eliminated in the case of plant patents, revealing again the primary motive behind passage of the PPA—to protect sellers of asexually-reproduced plants from too much competition.

The PPA not only handed patentability over plants to seed companies and nurseries, while leaving out the farmer, its watering down of core patent law requirements virtually guaranteed increasing economic profits, and therefore power, for the former. Paul C. Stark of Stark Brothers Nurseries was one highly influential actor in this change in the law. According to Fowler, the Stark family had large landholdings, was politically very powerful, and had business relationships with the growing railroad industry at a critical juncture in the development of the PPA.[53] It was Paul C. Stark who, in 1930, urged the American Seed Trade Association ("ASTA") that

> [i]t seemed to be the wise thing to get established the principle that Congress recognized the rights of the plant breeder and originator.

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51. *Id.* at 641 (second emphasis added); *see also* JACK R. KLOPPENBURG, JR., FIRST THE SEED: THE POLITICAL ECONOMY OF PLANT BIOTECHNOLOGY, 1492–2000 (Cambridge University Press 1988). Fowler and Kloppenburg also point out that the protection and promotion of research was not one of the goals in passing the PPA.

52. Fowler, *supra* note 36, at 641; KLOPPENBURG, *supra* note 51, at 133.

53. Fowler, *supra* note 36, at 629 (describing additional details on the political influence of the Stark family at the state and national level).

> Then, in the light of experience, effort could be made to get protection also for seed propagated plants, which would be much easier after this fundamental principle was established.[54]

By 1970, the seed industry was well-entrenched in the research and development of private plant varieties as a direct result of a systematic effort in the 1950s to displace agricultural science that had historically been in the public sector. Hybrid plants, which required the farmer to return again and again to the seed company to plant a new crop, were by then "king" of the U.S. agricultural sector. Also during the 1950s, the seed industry successfully made the argument that certification of seed should be based solely on varietal purity and that the consumer should be left to determine quality, unaided by the historical association of government certification with quality seed.[55] The seed industry thus continued its efforts, enunciated back in the 1930s by the ASTA, to expand the fundamental shifts in patent law that the PPA represented to sexually-reproduced plants. In 1969, the ASTA drafted the bill that would, in the following year, become known as the Plant Variety Protection Act.[56]

> The seedsmen of today are the Monsantos, Pfizers, Upjohns, Ciba-Geigys, Shells, and ARCOs of the world. In addition, the last decade has seen the founding of over one hundred genetic engineering firms sporting such evocative names as Agrigenetics, Advanced Genetic Sciences, DNA Plant Technology Corp., Hybritech, Molecular Genetics, and Repligen.... Both transnationals and the "genetic research boutiques" are gearing up to enter a market for seed that is projected to be worth some $7 billion in the United States alone by the year 2000.[57]

It was within this already-existing business environment then, with patent law already fundamentally weakened through the PPA of

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54. KLOPPENBURG, *supra* note 51, at 133. Stark made this prescient statement to the American Seed Trade Association, which was lobbying to have sexually reproduced plants included in the PPA, to discourage them from pressing Congress too hard. Even in 1930, the seed and nursery industries had their eyes on further jettisoning core patent law requirements, by including sexually-reproduced plants under the same kind of watered-down patent requirements as the asexually-reproduced plants covered under the PPA. Stark's prediction came true in 1970, when Congress passed the Plant Variety Protection Act ("PVPA"). The PVPA extends patent protection to those who develop new varieties of sexually-reproduced plants.

55. KLOPPENBURG, *supra* note 51, at 135.

56. *Id.* at 139. It is worth noting here that Kloppenburg also demonstrates that the proponents of the bill explicitly recognized that the approach taken in the PVPA to varietals protection would reduce the free exchange of germplasm.

57. *Id.* at 16 (citations omitted). Since 1970, virtually every American seed company of any importance has merged in one way or another with multinational corporations with strong ties to the biotechnology industry and pharmaceuticals.

1930 and expanded to sexually-reproducing plants in the PVPA of 1970, that the *Diamond v. Chakrabarty* decision was made.

B. The "Product of Nature" Doctrine

The 1980 Supreme Court case of *Diamond v. Chakrabarty* is widely considered to be the first "living patent" case that ushered in the subsequent flood of patents on genetically engineered organisms. Any discussion of the Newman-Rifkin patent application usually refers to *Chakrabarty* in one way or another. However, as already discussed, it is more instructive to look back to the statutory precedents set in the PPA of 1930, the PVPA of 1970, and the socioeconomic forces driving both. It is there that one finds strong ties between seed companies and biotechnology, plants, and micro-organisms.

When one starts to look at case law developments involving micro-organisms (which exist somewhere in between the plant and animal kingdoms and are visible to the naked eye), pressures similar to those brought to bear in the passage of the PPA and the PVPA, emerge within the rest of the Patent Act. However, the pressures are brought to bear against the PTO[58] and in the case law, rather than in fundamental changes in the statutory language of the Patent Act itself. The subject of dispute for the case law was the "product of nature" doctrine, which essentially states that "products of nature," or things that are the work of Nature rather than of humans, are not patentable since they do not meet the novelty requirement of the Patent Act. Under this doctrine, putative inventors were *not* rewarded with a patent for discovering a living organism, even if it was previously unknown, because it already existed in nature.

Funk Brothers Seed Co. v. Kalo Inoculant Co.,[59] a 1948 Supreme Court decision, is often cited as being representative of the "product of nature" doctrine.[60] In *Funk Bros.*, Kalo Inoculant Company filed a

58. Aspiring patent-owners initially file their applications with the PTO, an administrative agency, whereupon a patent examiner determines whether the PTO should grant the patent or not. If the patent application is denied, the applicant may appeal the decision to an administrative review board and the Board of Patent Appeals or "Board." If the application is denied at the Board level, a federal district court may then review it. Historically, the PTO has seen its decisions disallowing patents on microorganisms reversed either by the Board or a federal court. Prior to the organization of the Federal Circuit, unfavorable patent decisions were appealed to the Court of Customs and Patent Appeals ("C.C.P.A.").

59. 333 U.S. 127 (1948).

60. James P. Daniel, *Of Mice and 'Manimal': The Patent & Trademark Office's Latest Stance Against Patent Protection for Human-Based Inventions*, 7 J. INTELL. PROP. L. 99, 106 (1999).

patent infringement suit against Funk Brothers Seed, claiming that it had a valid patent for a mixture of bacterial strains used to infect plant roots, an inoculant, which thereby aided the plant in fixing nitrogen.[61] In that case, the Supreme Court invalidated Kalo Inoculant's patent, citing that the mixture was merely the *combined effect* that the individual strains of bacteria already had on their own[62]; the patent-owner had only used a property that bacteria themselves naturally possessed.

> Each of the species of root-nodule bacteria contained in the package infects the same group of leguminous plants which it always infected. No species acquires a different use. The combination of species produces no new bacteria, no change in the six species of bacteria, and no enlargement of the range of their utility. Each species has the same effect it always had. The bacteria perform in their natural way. Their use in combination does not improve in any way their natural functioning. They serve the ends nature originally provided and act quite independently of any effort of the patentee.[63]

In other words, the mere combination of individual bacteria already possessing these properties, while convenient for the purchaser and an important commercial advance, was insufficient to meet the requirements for patentability.

However, as early as 1873, a patent was issued to Louis Pasteur. Pasteur's patent was on a purified yeast that was free from organic germs of diseases.[64] He successfully claimed that the purified yeast was an article of manufacture under the Patent Act.[65] However, this seemed to be a fluke, since the PTO consistently denied patents on living organisms themselves from 1873 to the time of Chakrabarty's patent application.[66] Patents for compositions that contained living organisms, such as waste-disposal systems containing bacteria,[67] were routinely granted.[68] The holding in *Funk Brothers Seed Company*

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61. *Id.*

62. *Id.* at 106–07.

63. *Funk Bros. Seed Co.*, 333 U.S. at 133.

64. Daniel, *supra* note 60, at 104.

65. *Id.*

66. *Id.* at 105.

67. *Id.* (citing City of Milwaukee v. Activated Sludge, Inc., 69 F.2d 577 (7th Cir. 1934) (recognizing patent for septic tank utilizing bacteria); Union Solvents Corp. v. Guaranty Trust Co., 61 F.2d 1041 (3rd Cir. 1932) (recognizing infringement of patent for a bacterial process utilized in the synthesis of alcohol); Cameron Septic Tank Co. v. Village of Saratoga Springs, 159 F.453 (2d Cir. 1908) (holding valid a patent for a septic tank utilizing bacteria)).

68. *See* Fowler, *supra* note 36.

was in line with this longstanding trend since it involved a patent on the living organism itself, albeit several strains of bacteria.

Ironically, Kalo Inoculant Company was a precursor to today's biotechnology company and the by-then more developed seed industry, represented by Funk Brothers Seed, was the patent infringer. Funk Brothers Seed Company eventually won the case at the Supreme Court level.[69] Pre-biotech companies were thus facing the same conundrum that seed companies had faced back in the 1930s. Namely, how were they going to capture more profit on something that already existed in nature (this time micro-organisms instead of asexually-reproduced plants) and over which they had less control they than would like?

By 1948, the seed companies had solved their problem by fundamentally weakening patent law in the form of the PPA. These businesses were then able to expand much more than they normally would have had they been left alone. Seed companies had accomplished the passage of the PPA at a time when they had the luxury of relative obscurity and therefore little opposition. Seed companies were also well on their way to adding sexually-reproduced plants to their arsenal as a direct result of their coup back in 1930. They could afford to infringe a patent on bacteria, knowing full well that their own industry was fully protected since they essentially had a statutory exemption in the form of the PPA that allowed them to get the same kind of patent Kalo Inoculant had claimed, but on asexually-reproduced plants. It was only a matter of time before they would be strong enough to take on any opposition[70] to patenting sexually-reproduced plants as well.

Upon close examination, like the seed companies of the 1930s, biotechnicians such as Kalo Inoculant were not really inventors because "[b]iotechnicians alter, modify, assist, or manipulate nature. Biotechnicians are not inventors of organisms or genes . . . ."[71] This was true when use patents were granted on waste septic systems that contained micro-organisms performing functions that came naturally and often proved useful to humans as well. This is true even today when one closely examines all of the so-called advances being made in cloning, gene sequencing, and the like; these are simply the actions of biotechnicians altering, modifying, assisting, or manipulating what

69. Funk Bros. Seed Co. v. Kalo Inoculant Co., 333 U.S. 127 (1948).

70. Opposition from smaller farmers, publicly-funded researchers, and environmentalists.

71. Daniel, *supra* note 60, at 106 (quoting Ned Hettinger, *Patenting Life: Biotechnology, Intellectual Property, and Environmental Ethics*, 22 B.C. ENVTL. AFF. L. REV. 267, 289 (1995)).

already exists in Nature. Therefore, in the absence of their own personalized PPA-like statutory exemption to the Patent Act, biotechnicians could not patent micro-organisms in 1948.

This remained true until 1979 and 1980, when *In re Bergy*[72] and *Diamond v. Chakrabarty* were decided. In *Bergy*, three microbiologists developed a new method for cultivating an old antibiotic *lincomycin B*.[73] During this new process, they noticed a previously-unknown micro-organism, *Streptomyces vellosus*, that proved to be useful in producing a purified form of *lincomycin*. The purer form was advantageous because using this "new" form of *Streptomyces vellosus* in the production process resulted in increased efficiency in the recovery of *lincomycin*.[74] The three successfully applied for patents on the process used in producing the antibiotic. However, the PTO patent examiner initially rejected their application to also patent the micro-organism *Streptomyces vellosus* itself[75] as a product of nature, relying on *Funk Brothers Seed Company*.[76] The Board agreed.[77] The Court of Customs and Patent Appeals ("C.C.P.A.") initially reversed the decision of the Board.[78] However, the Supreme Court vacated the C.C.P.A.'s initial ruling and ordered reconsideration in light of its ruling in *Parker v. Flook*,[79] a case in which the Court decided that a computerized method of updating alarm limits by application of a mathematical formula was not patentable, essentially on the "product of nature" grounds, *i.e.*, mathematical formulae are generally laws of nature or abstract ideas.

However, the Court did not elaborate on how *Flook* was applicable in *Bergy* and in the meantime, its decision in *Chakrabarty*, came down. Upon reconsideration, then, the C.C.P.A. combined its reconsideration of *Bergy* with a reconsideration of *Chakrabarty* and reaffirmed its previous decision that *Streptomyces vellosus* itself was patentable, emphasizing that the purified form of the organism-organism took it out of the "product of nature" doctrine. The C.C.P.A. took additional pains to underscore that it would not have

72. 596 F.2d 952 (C.C.P.A. 1979).
73. KLOPPENBURG, *supra* note 51, at 108.
74. *In re* Bergy, 596 F.2d at 967.
75. *Id.*
76. *Ex parte* Bergy, 197 U.S.P.Q. (BNA) 78, 82 (Bd. of Appeals 1976).
77. *Id.*
78. *In re Bergy*, 596 F.2d at 956.
79. 437 U.S. 584 (1978).

upheld and reaffirmed the patent on the organism-organism itself if it had remained in its impure form.[80]

> It seems illogical to us to insist that the existence of life in a manufacture or composition of matter in the form of a biologically pure culture of a microorganism removes it from the category of subject matter which can be patented while the functioning of a living organism and the utilization of its life functions in processes does not affect their status under § 101.[81]

The C.C.P.A. seemed to view the entire question of patenting living organisms rather frivolously. In effect, it decided that because use patents are allowed on processes involving living organisms (*e.g.*, a patent on a septic tank), then a patent on the living organism itself ought to be allowed as well.

Why did the C.C.P.A. blithely blur the distinctions between what is and is not patentable subject matter in an area that they themselves described as having a "difficult path to patentability?"[82] The C.C.P.A. took additional pains to point out that "being an *inventor* and having made an *invention* is not changed by the fact that one or more or all of the conditions for *patentability* cannot be met,"[83] which meant that the C.C.P.A. certainly understood that being a patent-holder and being an inventor are not necessarily synonymous. Yet, the C.C.P.A. allowed the patent in spite of this fact.

Part of the answer to the C.C.P.A.'s findings, and the significance of *Bergy,* lies in a closer examination of the parties involved in the case. The real party in interest in *Bergy* was the assignee of the patent application, the Upjohn Company, not the three microbiologists. Genentech, Inc. (then a "tiny San Francisco company, just two years old"[84]), the American Patent Law Association, the Regents of the University of California, and a patent attorney filed *amicus curiae* briefs. This array of advocates in favor of the patenting of the microorganism itself serves as a concrete example of the frequent collaboration between business and academia to privatize and commodify research. The similarities of the protagonists in *Bergy* to those responsible for the passage of the PPA in 1930 are startling. Some of the basic similarities found in the

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80. *In re Bergy*, 596 F.2d at 976–77.

81. *Id.* at 977.

82. *Id.* at 960.

83. *Id.* at 962 (emphasis added).

84. *Id.* at 974 (quoting *A Commercial Debut For DNA Technology*, BUSINESS WEEK, Dec. 12, 1977, at 128).

protagonists in *Bergy* would continue in *Chakrabarty* with some significant, but generally ignored, differences.

C. The Ayahuasca Patent Case

In March of 1999, a coalition of Amazonian indigenous peoples and The Center for International Environmental Law ("CIEL") came before the PTO to request the cancellation of the ayahuasca patent.[85] Ayahuasca is a woody vine native to the Amazon, which has been ingested in a medicinal drink sometimes called *yagé*,[86] used as a religious symbol, and to contact spirits, treat sickness, and foresee the future by indigenous peoples of that region for hundreds of years.[87] This case is illuminating for several reasons.

First, the patent was originally granted based on the watered-down patentability requirements of the PVPA. Second, Loren Miller of the U.S., the putative "inventor" of the ayahuasca plant, was issued the patent back in 1986[88] for a plant that he admitted, *within the patent application itself,* that he had found in someone else's garden in the Amazon.[89] Third, in his patent, Miller claimed protection based on the plant's medicinal properties,[90] although those same properties were already well known to indigenous peoples of the Amazon.[91] This fact alone should have made Miller's patent fail, even under the PVPA,[92] because it fails the novelty and non-obviousness tests. However, the PTO ultimately avoided deciding whether indigenous

85. *The Ayahuasca Patent Case*, Center for International Environmental Law, *at* http://www.ciel.org/Biodiversity/ayahuascapatentcase.html (last visited Nov. 26, 2004).

86. *Ayahuasca, Yagé, Caapi, Natema, at* http://www.biopark.org/ayahuasca.html (last visited Nov. 26, 2004).

87. Glenn M. Wiser, *PTO Rejection of the "Ayahyasca" Patent Claim: Background and Analysis*, Center for International Environmental Law, Nov. 1999, *available at* http://www.ciel.org/Biodiversity/ptorejection.html (last visited Nov. 2, 2004).

88. *Id.*; U.S. Plant Patent No. 5,751 (issued June 17, 1986). Application No. 669,745 filed on November 7, 1984 was a continuation application of No. 266,114, which was filed on May 21, 1981 and later abandoned.

89. *The Ayahuasca Patent Case*, Center for International Environmental Law, *at* http://www.ciel.org/Biodiversity/ayahuascapatentcase.html (last visited Nov. 26, 2004).

90. U.S. Plant Patent No. 5,751 (issued June 17, 1986), at 7–9, 15 (describing a Detailed Statement in support of request for reexamination), *available at* http://www.ciel.org/Publications/ReexaminationofUSPlantPatent5751.pdf (last visited Nov. 26, 2004).

91. *Id.* at 15–16.

92. *Id.*

traditional knowledge *per se* should be recognized as "prior art"[93] under patent law.[94] The PTO thus implicitly rejected CIEL's argument that *indigenous* study and consequent use of this knowledge should have been sufficient to revoke the patent because it failed the novelty prong, as such use had been well documented in Western scientific literature.[95]

Fortunately, in its argument before the PTO, CIEL also pointed out that the species was by then widely known in the Western scientific literature, as well as having been studied and used by Western scientists.[96] The PTO ultimately accepted this argument when it decided to revoke the patent on the basis of evidence of "scientific" prior art in the form of mounted herbarium specimen sheets.[97] The ayahuasca patent case was apparently the first one in which mounted herbarium specimen sheets were themselves accepted as prior art in the form of a "printed publication," although there was precedent for this interpretation.[98]

Fourth, Amazonian indigenous peoples did not find out about the patent until years after it had been granted,[99] just as indigenous

93. Prior art is any relevant knowledge, acts, descriptions and patents which pertain to and predate the invention in question, upon which a court may rely to hold a patent claim invalid. BLACK'S LAW DICTIONARY 1193 (7th ed. 1999).

94. Press Release, Center for International Environmental Law, U.S. Patent Office Admits Error, Rejects Patent Claim on Sacred "Ayahuasca" Plant (Nov. 4, 1999), *at* http://www.ciel.org/Biodiversity/AyahuascaRejectionPR.html (last visited Nov. 26, 2004).

95. *Id.* The PTO deliberately rejected the validity of indigenous methodology, research and development, a position that is symptomatic of what is fundamentally wrong with the Western approach to indigenous intellectual property issues.

96. *Id.*

97. *Id.* See also 35 U.S.C. §102 (b), which prohibits the patenting of an invention that was described or patented in a printed publication more than one year prior to the date of the patent application.

98. Press Release, Center for International Environmental Law, U.S. Patent Office Admits Error, Rejects Patent Claim on Sacred "Ayahuasca" Plant (Nov. 4, 1999), *at* http://www.ciel.org/Biodiversity/AyahuascaRejectionPR.html (last visited on Nov. 26, 2004). One wonders if the PTO would have been willing to extend its ruling to the acceptance of indigenous "printed publications," such as if a wampum belt existed as tangible evidence of indigenous use of ayahuasca. Logic dictates that it should, but it is possible that the PTO would work very hard to find an exception that would justify not recognizing an indigenous form of printed publication.

99. Wiser, *supra* note 87 (explaining in the background paper analyzing CIEL's work on the ayahuasca patent reexamination that one of its co-filers, the Coordinating Body of Indigenous Organizations of the Amazon Basic ("COICA") (which represented over 400 indigenous Amazonian tribes) did not find out about Miller's patent until 1994. They were incredulous that Miller was able to obtain a patent on a plant so well-known and used "since time immemorial" by them. Miller also apparently had plans to install a pharmaceutical laboratory in Ecuador at a time when the U.S. and Ecuador were on the verge of approving a bilateral intellectual property reciprocity agreement. The lab was supposed to process

peoples around the globe did not find out that their genes had been patented by various Western interests until after those patents had already been granted.[100] In the case of ayahuasca, the plant had been sacred for centuries to many indigenous Amazonian cultures and, from their viewpoint, should not have been patented at all[101] because plants, like people, are life forms in their value system, therefore sacred, and not to be owned by human beings. One can use such a plant, in a respectful manner, but claiming that one "invented" uses that indigenous peoples have been employing for hundreds of years made no sense to them. Nor can a human being claim to have invented something that already existed prior to the advent of patent law itself. Essentially, the same argument—against the ownership of life—has been advanced by indigenous peoples in several position statements, declarations and resolutions that have been made in the international arena over the past several years.[102] As these documents make abundantly clear, the patenting of life forms is contrary to the

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ayahuasca and other plants. If Miller's plans came to fruition, then they could be forced to recognize Miller's proprietary rights over ayahuasca within the Amazon region itself).

100. Illustrative is the patent obtained by a federal agency of the U.S. government in 1994 on cells in the DNA of the Hagahai of Papua New Guinea. After an international outcry, the patent was withdrawn. Oren Lyons, and other indigenous activists, point out that the focus of Western science continues to be preserving rather than changing conditions under which indigenous peoples are forced to live.

101. U.S. Plant Patent No. 5,751 (issued June 17, 1986), at 24–27, *available at* http://www.ciel.org/Publications/ReexaminationofUSPlantPatent5751.pdf (last visited Nov. 26, 2004).

102. *See, e.g., The 1993 Mataatua Declaration on Cultural and Intellectual Property Rights of Indigenous Peoples*, *available at* http://aotearora.wellington.net.nez/imp/mata.htm (last visited Nov. 26, 2004); *The 1994 COICA Coordinating Body of Indigenous Organizations of the Amazon Basin Statement*, *available at* http://users.ox.ac.uk/~wgtrr/coica.htm (last visited Nov. 26, 2004); *The February 1995 Sabah Statement from the United Nations Development Programme (UNDP) Consultation on the Protection and Conservation of Indigenous Knowledge*, *available at* http://users.ox.ac.uk/~wgtrr/sabah.htm; *The April 1995 Suva Final Statement from the UNDP Consultation on Indigenous Peoples' Knowledge and Intellectual Property Rights*, *available at* http://users.ox.ac.uk/~wgtrr/suva.htm (last visited Nov. 26, 2004); *The 1995 Declaration of Indigenous Peoples of the Western Hemisphere Regarding the Human Genome Diversity Project*, *available at* http://www.ankn.uaf.edu/declaration.html (last visited Nov. 26, 2004); *The 1997 Resolution on Patenting of Life adopted by the Third International conference of the International Alliance of Indigenous-Tribal Peoples of the Tropical Forests*, *available at* http://iaip.gn.apc.org/third/png-eng.htm (last visited Nov. 26, 2004); *The July 1999 Indigenous Peoples' Statement on the Trade-Related Aspects of Intellectual Property Rights (TRIPS) of the WTO Agreement*, *available at* http://www.wcc-coe.org/wcc/what/jpc/no-patent.html (last visited Nov. 26, 2004); *The December 1999 Indigenous Peoples' Seattle Declaration*, *available at* http://www.tebtebba.org/tebtebba_files/finance/seattle.htm (last visited Nov. 26, 2004).

laws of indigenous peoples from every continent on this planet.[103] Therefore, one could not patent a half-human creature either, regardless of the percentage of human genes in it, because it is a life form.

One of the more recent efforts of indigenous peoples for recognition, or at least respect, for their laws includes joining in an international treaty initiative ("Porto Alegre Treaty") along with over 250 organizations—including non-governmental organizations and biotech activists such as Jeremy Rifkin—to convince national governments around the world to adopt a treaty to establish the gene pool as a global commons, not subject to patenting.[104] In addition, at the most recent session of the Permanent Forum on Indigenous Peoples, indigenous peoples issued a collective statement on and recommendations for the protection of indigenous knowledge.[105]

It is worth noting here that considerable effort is required for indigenous peoples to find out, let alone challenge, such patents because, unlike Western mega-businesses, they do not have the resources to spend the millions of dollars that it can take to play the patenting game today. In fact, even in developing countries,[106] smaller Western businesses generally do not have the resources to spend the millions of dollars that it takes to play the patenting game today either, particularly if the opposing side is a Western mega-business. Therefore, smaller Western businesses can be squeezed out of the economy because of their limited resources, rather than because of any superior competitive edge that others, such as a mega-business, possess.[107]

However, smaller entrepreneurs like Miller, and even individual businesspeople, can easily "trump" the needs and concerns of entire indigenous communities in the area of patent law given the current state of affairs. CIEL was initially "successful" in having Miller's

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103. Wiser, *supra* note 87 (explaining that if one views each of the Declarations in the note, one finds that signatories come from each continent on the globe).

104. Press Release, UKabc, Hundreds of NGOs from More than 50 Nations Announce Support of a Treaty to Establish the Gene Pool as a Global Commons (Feb.1, 2002), *available at* http://www.ukabc.org/genetic_commons_treaty.htm.

105. Collective Statement of Indigenous Peoples on the Protection of Indigenous Knowledge, Agenda to the UN Permanent Forum on Indigenous Issues (New York) (May 10–21, 2004), *available at* http://ww.ipcb.org/resolutions/htmls/pf2004.html.

106. COMMISSION ON INTELLECTUAL PROPERTY RIGHTS, INTEGRATING INTELLECTUAL PROPERTY RIGHTS AND DEVELOPMENT POLICY (Sept. 2002), *available at* http://www.iprcommission.org/papers/pdfs/final_report/CIPRfullfinal.pdf [hereinafter CIPR].

107. John R. Allison & Mark A. Lemley, *Who's Patenting What? An Empirical Exploration of Patent Prosecution*, 53 VAND. L. REV. 2099 (2000).

patent cancelled but the PTO avoided the question raised by indigenous peoples as to whether patents should be issued at all on living organisms.[108] Miller later quietly applied for reconsideration of his patent and was successful on the grounds that he had reproduced an ayahuasca variety that came under the provisions of the PVPA, a Congressionally gutting of the previously well-established "product of nature" doctrine.[109]

A report by the Commission on Intellectual Proeprty Rights ("CIPR") stated that CIEL was unable to comment on Miller's arguments at this point since it was not covered by the new rules on *inter parte* reexamination.[110] However, on its website in 2002, CIEL charged that the PTO vigorously enforced this procedural restriction against it while repeatedly allowing Miller to present new evidence and arguments during his appeal, disregarding its own appellate procedures,[111] and demonstrating blatant favoritism towards Miller.[112] In addition, CIEL posted on its website a transcription of the PTO's Statement of Reasons for Patentability and/or Confirmation.[113] Glenn Wiser, Staff Attorney for CIEL, stated that the PTO's reversal was wrong as a matter of law because, among other things, the PTO decided to apply plant patent infringement as the legal test on appeal when the proper test, applied below, was whether the plant was patentable.[114]

Nation-states continue to act as facilitators for effectuating the desires of multinational corporations. Monsanto and China have gotten into the act; together, they are trying to produce the same kind of naturally colored cotton, but through genetic engineering.[115]

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108. Press Release, Center for International Environmental Law, U.S. Patent Office Admits Error, Rejects Patent Claim on Sacred "Ayahuasca" Plant (Nov. 4, 1999), *at* http://www.ciel.org/Biodiversity/AyahuascaRejectionPR.html.

109. *See supra* Part I.B.

110. CIPR, *supra* note 106, at 77.

111. Glenn Wiser, *U.S. Patent and Trademark Office Reinstates Ayahuasca Patent: Flawed Decision Declares Open Season on Resources of Indigenous Peoples*, Center for International Environmental Law, June 25, 2001, *at* http://www.ciel.org/Biodiversity/BiodiversityIntellectualProperty.html.

112. Wiser, *supra* note 87.

113. Notice of Intent to Issue Reexamination Certificate, *available at* http://www.ciel.org/Publications/PTO_Examiner_Transcript.pdf (last visited Nov. 26, 2004); *see supra* note 111, at 2.

114. Wiser, *supra* note 111, at 1. Wiser, *supra* note 87.

115. China has produced at least the green and brown "naturally" colored cotton. *See China Leads The World In Colored Cotton Development*, SHANGHAI DAILY, July 22, 2003, *available at* http://www.seedquest.com/News/releases/2003/july/6258.htm (last visited Nov. 26,

However, genetic engineering is only being used because Monsanto and China want to take out a patent on naturally colored cotton and the mere insertion of another gene, no matter what that gene is, will guarantee them a patent. Again, this is all done without regard to all of the unknowns about the effects of such genetic engineering and in spite of an ancient, fully-developed, viable alternative of a dazzling array of colors that indigenous peoples produce with naturally colored and naturally cultivated cotton. Naturally colored cotton, even more so than the ayahuasca patent, illustrates how the current state of Western patent law is spurring more and more genetic engineering purely to make profit for multinational companies and their allies, rather than to help the world, the poor, or the environment.

D. Naturally Colored Cotton

Naturally colored cotton provides a good example of how the eviscerated product of nature doctrine within the U.S. has intersected with indigenous intellectual property issues. Thus far, this intersection has most commonly occurred between individual businesspeople, government agencies, or corporations based in the U.S. and one or more indigenous groups outside the U.S.[116] The example of naturally colored cotton further illustrates how Western patent laws, and the economic policies that support them, often work against indigenous economic systems and agriculture. Finally, the example of naturally colored cotton illustrates how much indigenous peoples and their traditional knowledge are often at the mercy of Western business interests, which are supported by a dense network of still-extant colonial laws and policies that have marginalized the indigenous peoples within the nation-state.

This failure to decolonize law and policy with respect to indigenous peoples is generally true even within developing countries of the Americas where, potentially, the interests of those countries and the indigenous groups within them might otherwise converge. In this article, it will become readily apparent that the U.S. is an extreme example of failure to decolonize internal law and policy while Peru

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2004). China and Monsanto together have produced genetically modified insect-resistant cotton. *See* Corrie Dosh, *Planting Seeds of Profit, available at* http://www.adhitech.com/logan/menu_48/menu_54/ (last visited Nov. 26, 2004).

116. This can largely be explained by the fact that Euro-Americans within the U.S. have wrung the indigenous peoples within their borders dry, as well as environmentally devastated that country.

will serve as an example of the very beginning of decolonization[117] of internal law and policy with respect to indigenous peoples.

For example, governments and social agencies routinely fail to see the problems of indigenous peoples as related to any sort of history and therefore, prefer to handle such problems in a cynical and paternalistic way that has hardened into a pattern.[118] Linda Smith, a decolonization theorist, Associate Professor in Education and Director of the International Research Institute for Maori and Indigenous Education at the University of Auckland, suggests that indigenous researchers in particular take greater control over the ways in which problems related to indigenous peoples are discussed and handled.[119] This involves a reframing of issues related to indigenous peoples by making more conscious decisions in various aspects of one's research, such as, the parameters of the problem, what is in the foreground and background of the problem, and what shadings or complexities exist within the frame.[120] Implementing this reframing process is related to how the problem is defined as well as the determination of how best to solve that problem.[121] It may include, but is not limited to, resistance to being boxed and labeled according to categories that do not fit.[122]

This failure of the U.S. to decolonize its internal laws and policies vis-à-vis indigenous peoples within its own borders encourages the privileging of individual and corporate Western business interests over even the religious beliefs of entire groups of indigenous peoples. As a result, many of the worldwide patent controversies involving indigenous peoples have been conflicts over the application of U.S. intellectual property laws.

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117. LINDA TUHIWAI SMITH, DECOLONIZING METHODOLOGIES: RESEARCH AND INDIGENOUS PEOPLES 153 (Zed Books, 2001). The term "decolonization" is used here in the same general sense that Linda Tuhiwai Smith does in her pivotal work on the relationship of decolonization to research entitled, *Decolonizing Methodologies: Research and Indigenous Peoples.* In this article, Smith's broad use of the term in reference to research in general is applied specifically to analysis of specific U.S. patent law. Smith identifies several methodologies related to the decolonization of one's research. One of these, called "reframing," is described in her book. Smith describes the process of "reframing" as an essential part of the decolonization of research in general. She asserts that one of the reasons that many of the social problems plaguing indigenous communities are not solved is because the issues are always framed from a certain viewpoint, that of the colonizer.

118. *Id.*

119. *Id.*

120. *Id.*

121. *Id.*

122. *Id.*

The controversy surrounding naturally colored cotton first came to the attention of activists within the context of the international debate over bio-piracy. Bio-piracy has been called a form "modern-day imperialism"[123] in which westernized researchers, often from the U.S., travel to biologically diverse regions of the world for the purpose of gleaning scientific knowledge from indigenous peoples on their varied uses of local plants and animals.[124] These researchers then return to their home countries with plant and animal samples and obtain a patent on their "invention" by isolating a chemical compound.[125] The temporary monopoly of the patent enables them to reap profits from their "inventions" without sharing any monetary benefits with indigenous peoples,[126] while the privileging that such researchers enjoy enables them to forego even informally acknowledging that indigenous peoples contributed to that "invention." Bio-piracy is one of the typical issues facing the biotechnology industry.[127]

In the case of naturally colored cotton, it was an individual businesswoman within the U.S. interested in organic agriculture, not a biotech business, who obtained a plant patent for two varieties of colored cotton, "coyote" (a brown color) and "green," neither of which she invented.[128] Rather than traveling to another country, Ms. Fox simply obtained her seeds from a United States Department of Agriculture ("USDA") collection that in turn was obtained from Mexico or some other part of Central America.[129] Indigenous cultivators had already improved these seeds before the USDA obtained them.[130] Ms. Fox merely continued planting and replanting from amongst these already improved seeds to obtain the two *shades* of brown and green that she wanted, a process also known as simple plant breeding.[131] In that sense, Sally Fox's "invention" was not

123. Leanne M. Fecteau, *The Ayahuasca Patent Revocation: Raising Questions About Current U.S. Patent Policy*, 21 B.C. THIRD WORLD L.J. 69, 81 (2001) (arguing that TRIPS, and the bio-piracy it encourages, have effectively resulted in the continued exploitation of indigenous knowledge).

124. *Id.* at 70–71.

125. *Id.*

126. *Id.*

127. *Id.*

128. *Bio-piracy: The Story of Natural Coloured Cottons of the Americas*, ETC Group, *available at* http://www.etcgroup.org/article.asp?newsid=219 (last visited Nov. 26, 2004) [hereinafter *Bio-piracy*].

129. *Id.*

130. *Id.*

131. *Id.*

unlike the "invention" of the Stark Brothers. In addition, Fox's strategy of getting a plant patent is something she shares in common with Loren Miller, who obtained his plant patent for ayahuasca just four years prior to Fox in 1986.

It is not clear how, or even if, the shades that Fox obtained were different from the shades of brown and green that indigenous peoples developed. Apparently, three years after Fox was awarded the plant patent, and eleven years after she first began selectively breeding seeds[132] obtained from the USDA, the National Cotton Council was unimpressed by the results of her efforts.[133] These efforts included replanting the seeds and selecting the subsequent generations of seeds for lint color and fiber quality, with the primary intended purpose of obtaining a staple size suitable for contemporary mechanized spinning.[134] Arguably, Fox might have been entitled at that time to a regular process patent for her self-proclaimed method of breeding naturally colored cotton that was suitable for the large-scale commercial clothing industry, if she had been successful.

Indeed, Fox claimed that the colored cotton that she bred would be long enough for use in the contemporary machine spinning used in the large-scale, Western commercial clothing industry.[135] However, as will be discussed later, even almost fifteen years later, two things remain unclear: (1) did Fox ever perfect such a method, or did she get the longer length of cotton by obtaining the right cotton seeds[136] that indigenous peoples have been cultivating for five thousand years and growing them within the U.S. and (2) if she did indeed improve that seed, was the method of improvement patentable?

The answer may be no to both questions. To date, Fox has not taken out a process patent for her claimed method of producing

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132. *Sally Fox: Innovation in the Field*, *in* DAVID BROWN, INVENTING MODERN AMERICA: FROM THE MICROWAVE TO THE MOUSE (MIT Press 2001), *available at* http://www.foxfibre.com/sally_fox_story.htm (last visited Nov. 1, 2004).

133. "What I've seen of her varieties has a long way to go, it doesn't look any different from the USDA collections I saw 25-30 years ago. All she really shows is flower changes .... It makes one wonder how much change she has really made." *Bio-priacy*, *supra* note 128 (quoting Dr. Philip Wakelyn, National Cotton Council, Washington, D.C., August 1993).

134: *Id.* (re-stating information provided in U.S. Plant Variety Protection Certificate Numbers 8900170 and 8900169, Exhibit A, Section 14a, Breeding History, issued September 28, 1990).

135. *Id.*; *see also* Mary Bellis, *Sally Fox and Natural Cotton*, *at* http://inventors.about.com/library/inventors/blfox.htm (last visited Oct. 31, 2004).

136. The two species of naturally colored cotton found in South and Central America, *G. barbadense* and *G. hirsutum*, have medium to long lint lengths, while the species from Africa and Asia have only short to medium lint lengths.

naturally colored cotton suitable for machine spinning. This alone raises questions about whether she ever succeeded in developing such a method herself, but there are other questions that are even more troubling. There are four species of cotton with different lint lengths.[137] The two species found in Africa and Asia are *Gossypium arobreum* and *G. herbaceum*; they have short to medium lint lengths.[138] The two species found in South and Central America, *G. barbadense* and *G. hirsutum*, have medium to long lint lengths.[139] Accordingly, it appears that Fox may have simply stumbled upon, rather than bred, the long lint length naturally colored cotton that indigenous peoples had cultivated thousands of years ago.

In the meantime, the indigenous peoples of Peru succeeded in developing their colored cotton for commercial markets where Sally Fox did not. James M. Vreeland, an archaeologist working in Peru with pre-Colombian textiles, created and co-directed the Native Cotton Project ("Project") in 1982 with support from the Peruvian ministries of labor and tourism,[140] the Inter-American Indian Institute of the Organization of American States, and the Institute of Latin American Studies of the University of Texas at Austin.[141] A Peruvian non-governmental organization ("NGO")[142] called Sociedad de Investigación de la Ciencia, Cultura y Arte Norteo ("SICAN")

137. James M. Vreeland, Jr., *The Revival of Colored Cotton*, 280 SCI. AM. 112, 116 (Apr. 1999), *available at* http://www.perunaturetex.com/scientif.htm.

138. *Id.*

139. *Id.*

140. *Id.* at 117.

141. James M. Vreeland, Jr., *Ancient Alternative to Peru's Commercial Cotton Pesticide Crisis*, GLOBAL PESTICIDE CAMPAIGNER (Pesticide Action Network North America Regional Center), May 1992, *available at* http://www.panna.org/resources/pestis/PESTIS.burst.17.html.

142. An NGO is

> a not-for-profit, voluntary citizens' group, which is organized on a local, national or international level to address issues in support of the public good. Task-oriented and made up of people with a common interest, NGOs perform a variety of services and humanitarian functions, bring citizens' concerns to Governments, monitor policy and programme implementation, and encourage participation of civil society stakeholders at the community level. They provide analysis and expertise, serve as early warning mechanisms and help monitor and implement international agreements. Some are organized around specific issues, such as human rights, the environment or health. Their relationship with offices and agencies of the United Nations (UN) system differs depending on their goals, their venue and their mandate.

NGOs and the United Nations Department of Public Information: Some Questions and Answers, United Nations Department of Public Information, *available at* http://www.un.org/dpi/ngosection/brochure.htm (last visited Nov. 26, 2004).

became a sponsor in 1984.[143] SICAN's goal was to use naturally colored cotton as a rural development project for indigenous farmers and traditional artisans.[144] The Project estimated that as many as 15,000 traditional farmers still cultivated colored cotton varieties, while over 50,000 women still spun and wove with it.[145]

The Project began marketing commercially viable organic, naturally colored cotton clothes, textiles, and other products in 1993,[146] the same year that Ms. Fox was developing "new" cotton colors, which included mocha-brown and yellow-green.[147] Ms. Fox accomplished this by planting and replanting germplasm, or seed, samples that she obtained, this time from Texas A & M University.[148] Texas A & M, in turn, originally collected those seeds in Peru.[149] By 1999, efforts similar to those of the Native Cotton Project in Peru were being made in Columbia, Guatemala, and Bolivia.[150] However, no such efforts were occurring within the U.S. Rather, Fox was very busy in building her organic naturally colored cotton business.

Today, Fox and her colleagues market various organic cotton products under the tradename Fox Fibre,[151] including Fox Fibre yarns through Vreseis, Ltd.,[152] Fox Fibre mattresses and sheets through Athena Mills,[153] and Fox Fibre clothing through various other outlets. Fox Fibre cotton is grown in several colors—including Buffalo (mocha brown), Coyote (reddish brown), and Natural (white)—while variations on these colors (such as beige, khaki, brown, red brown, dark brown, and greens) are obtained by blending them with each other or white.[154] Fox has apparently not developed the original seeds that she obtained from the USDA and Texas A & M beyond the colors extensively reported to have already existed as the result of the thousands of years of effort of indigenous peoples.

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143. *Bio-piracy*, *supra* note 128.

144. *Id.*

145. *Id.*

146. *Id.*

147. *Id.*

148. *Id.*

149. *Bio-piracy*, *supra* note 128.

150. *Id.*

151. *Fox Fibre and Colour by Nature*, Athena Mills, *at* http://www.athenamills.com/fox_fibre.htm (last visited Nov. 26, 2004).

152. *Fox Fibre Yarns*, Vreseis, *at* http://www.vreseis.com/yarns.html (last visited Nov. 26, 2004).

153. *Fox Fibre and Colour by Nature*, *supra* note 151.

154. *Id.*

The relevance of Fox's plant patent to this article lies in what it reveals about the current state of patent law within the U.S. This state of affairs in patent law may be traced back to the efforts of the Stark Brothers, then back up to the more recent Newman-Rifkin patent application for a half-human creature. Fox's plant patent also reveals the legal strategies that businesspeople within the U.S. consciously use to lay claim to indigenous inventions and traditional knowledge.

Fox acknowledges that naturally colored cotton "has its roots in the ancient Americas. Weavers have cultivated and spun native white, green, pink, lavender, yellow, red, and brown colored cottons for thousands of years."[155] Fox, via the Athena Mills website, however, also implies that "the ancients" did not make much progress in cultivating naturally colored cotton, as

> [t]he entire palette of beautiful colors was not initially suited to modern textile processing, mainly because of fiber characteristics in wild-grown colorful cotton.... [Fox] has spent decades carefully breeding and developing new lines of longer staple naturally colored cotton, a stronger fiber than its ancient ancestor. These cottons are bred with the fiber quality, spin-ability, and color intensity necessary to suit today's industrial textile machinery.[156]

This discourse reveals a sensibility in which it is acceptable to appropriate and then negate the accomplishments of indigenous peoples as long as one is from a superior race that is somehow "improving" indigenous products.

However, since the indigenous peoples of Peru began marketing commercially viable organic naturally colored cotton clothes, textiles, and other products back in 1993, it is questionable whether Fox was the first to "invent" colored cotton with either the necessary longer staples for modern machinery or the fiber quality, spin-ability, or color intensity preferred today. In fact, in 1993, her green cotton was too short and weak to be spun alone, so it was blended with the longest staple white cotton available.[157] In addition, Fox had a competitor within the U.S., BC Cotton, as early as 1991. BC Cotton developed its colored cotton line in the same way Fox did—by obtaining seed samples from germplasm collected and held in places like Texas A & M, the USDA, and University of California at Berkeley.[158] BC Cotton claimed to have developed red, brown, ivory,

155. *Id.*
156. *Id.*
157. *Bio-piracy*, *supra* note 128.
158. *Id.*

and green colored varieties, all of which would presumably be an infringement on Fox's plant patent.[159] Yet, as discussed below, Fox initiated and then voluntarily dismissed her lawsuit against BC Cotton.

Fox then continued with her own efforts in building her business, which eventually became quite successful.[160] Fox Fibre is also naturally pest-resistant and produced without synthetic pesticides or fertilizers.[161] However, resistance to pests is yet another quality that naturally colored cotton possessed long before Fox began her work.[162] In addition, virtually all naturally colored cotton produced by indigenous peoples for thousands of years is still produced without fertilizers or pesticides[163] even when they were faced with enormous pressures to not do so anymore. For at least a century, the government of Peru maintained a policy of oppressing indigenous production of naturally colored cotton through various means, including laws specifically aimed at destroying naturally-colored cotton and quarantine measures designed to eliminate possible plant "hosts" (*i.e.*, naturally colored cotton) for cotton pests[164] and possible cross-pollination between white and colored cottons.[165]

These laws and policies were supposed to protect the all-white variety of cotton that was deemed to be more commercially viable.[166] In addition to using naturally pest-resistant varieties, indigenous farmers used traditional, pre-Colombian systems of pest control and a long-standing, successful tradition of crop rotation.[167] Both were

159. *Id.*

160. Over the years, in addition to monetary profits, Ms. Fox has received numerous international accolades and awards for her efforts, including the United National Environmental Programme Award for the Environment, the Edison Award for Most Innovative Company from the American Marketing Association, the Green Housekeeping Award for Environmental Leadership from the Good Housekeeping Association, the Organic Cotton Recognition Award from the International Federation of Organic Agriculture Movements ("IFOAM"), the Discover Award for Technological Innovation in the Environment, induction into the Massachusetts Institute of Technology Inventor's Circle, and coverage in print media, mainstream news, worldwide documentary, and educational broadcasts. *Fox Fibre and Colour by Nature*, *supra* note 151. Her awards for environmental stewardship resulted from the fact that her naturally colored cotton is organically-grown, like that of indigenous peoples, but unlike BC Cotton, which did not emphasize organic cotton production. *Bio-piracy*, *supra* note 128.

161. *Sally Fox: Innovation in the Field*, *supra* note 132.

162. Vreeland, *supra* note 137.

163. *Bio-piracy*, *supra* note 128 ("It is remarkably pest and disease resistant, and thrives in marginal soils with little or no rainfall.").

164. Vreeland, *supra* note 137, at 117–18.

165. *Bio-piracy*, *supra* note 128.

166. Vreeland, *supra* note 137, at 117; *Bio-piracy*, *supra* note 128.

167. Vreeland, *supra* note 137, at 117–18.

abandoned in the wake of the intense pressure created by Peruvian laws and policies[168] that required farmers to cut down and destroy perennial, and especially colored cotton at the end of each growing season.[169]

By 1931, the all-white variety favored in the U.S., which required heavy inputs of synthetic pesticides and fertilizers,[170] had become entrenched in Western commercial circles, and the Peruvian government began issuing a series of laws aimed at destroying naturally colored cotton.[171] "White"[172] cotton was "cheaper" to produce for several reasons: (1) it had a longer staple more suitable to mechanized spinning, as previously discussed; (2) it required no "specialized"[173] [*i.e.*, indigenous] harvesting techniques or facilities; (3) environmentally toxic, heavy metal dyes could be used to dye white cotton an unlimited number of other colors[174]; and (4) using Western infrastructure, dyes, and pesticides for production of cotton ensured that industrial agriculture reigned supreme and that its proponents, Western capitalists inside and outside of Peru, would be enriched rather than indigenous peoples.

The pest-control program implemented in the 1930's was expensive, irreversibly eroded much of the genetic variation still present earlier in the 20th century, and was an ill-conceived failure that eventually severely threatened the survival of even the all-white cotton as insects became resistant to the liberal amounts of pesticides being applied.[175] By the 1990's, when Peru finally made the eradication practice illegal, pesticide use remained extensive, although insect pests had by then become so resistant to the pesticides that experts estimated only one per cent of insect damage could be controlled by them.[176] However, indigenous farmers in isolated areas of Peru had continued growing "illicit" naturally colored cotton in

168. *Id.* at 117.

169. *Bio-piracy*, *supra* note 128.

170. Vreeland, *supra* note 137, at 116. Cotton farmers worldwide use approximately 23% of the world's insecticides and 10% of the world's pesticides. Cotton farmers within the U.S. alone use 35% of the total, making them the largest consumers of cotton pesticides, followed by India at 11%. These insecticides and pesticides are among the longest-lived and most disruptive to hormonal and reproductive systems.

171. *Id.* at 117.

172. *Id.* at 116. White cotton is usually bleached, using chlorine based processes that result in production of dioxins.

173. *Id.* at 115.

174. *Id.* at 116.

175. Vreeland, *supra* note 137, at 117–18.

176. *Id.* at 118.

spite of these pressures,[177] which enabled the Native Cotton Project to rebuild stocks over the course of a decade or so of work.[178]

By 1993, some noted the irony in the fact that Sally Fox's patent on naturally colored cotton would enable her to prevent Peruvian or Central American farmers from obtaining samples of her seeds from even a public seed bank, as she herself had done originally.[179] Yet, there was never any lawsuit between Fox and indigenous peoples. Instead, Fox herself filed a lawsuit in 1991 against Raymond Bird, whose company, BC Cotton, was producing colored cotton in three states by 1993.[180]

BC Cotton's colored cottons were developed from seed samples from various universities and government gene banks, as were Fox's. In her lawsuit, Fox claimed that BC Cotton infringed on her patent, but she voluntarily dismissed the suit before 1994,[181] perhaps because she did not want the weakness of her claim exposed either in court or to an international audience that has since showered her with numerous awards and accolades for her efforts. After all, a company spokesperson for BC Cotton had already bluntly declared, "[t]here is colored cotton available in all the gene banks, it has been around for years."[182] Perhaps she did not want to risk any further exposure of how little she had actually accomplished; or, perhaps, she felt that she was successful enough with her particular product, which unlike BC Cotton's, was organic.[183] Or perhaps she simply did not want to incur the expense of litigation regardless of the outcome.

Today, indigenous peoples of Peru continue to cultivate their naturally colored cotton and bring it to a worldwide market under several tradenames—Pakucho, Morrope, Native Cotton, and Vicuna Cotton—as well as branching out into the production of organically-produced alpaca.[184] Patents such as Miller's on ayuhuasca and Fox's on "her" varieties of naturally colored cotton, are examples of the worst kind of protectionism, where power continually trumps need, either directly, as in the case of Miller, or more indirectly, as in Fox's case, where she and her business remain a strong force in the

177. *Bio-piracy*, *supra* note 128; Vreeland, *supra* note 137.

178. Vreeland, *supra* note 137, at 118.

179. *Bio-piracy*, *supra* note 128.

180. *Id.*

181. *Id.*

182. *Id.*

183. *Id.*

184. *See* Peru Naturtex Partners, *at* www.perunaturtex.com/our.htm (last visited Nov. 26, 2004).

naturally colored cotton industry within the U.S. In that sense, patent law within the U.S. has morphed into a powerful instrument of colonialism and American-style protectionism.

II. THE MORAL UTILITY REQUIREMENT—THE FRAYED CONNECTIVE TISSUE OF PATENT LAW

As previously mentioned, the stage was being set for the approval of Chakrabarty's patent application on a genetically-engineered "oil-eating" bacterium well before *Bergy*. The biotechnology industry was merely emulating an approach to weakening patent law that had been successful back in 1930 with the PPA. However, the times had indeed changed since then. Unlike Spark Brothers Nursery and the ASTA, biotechnology proponents were meeting organized resistance from a variety of quarters comparatively early in the process. They therefore did not take the direct approach of weakening the rest of the Patent Act through explicit statutory law. Instead, biotechnology proponents took a very effective back door route using the case law, which promised a much quieter road to victory, largely outside the scrutiny of the public.

A. Playing Dodge Ball—Chakrabarty

Once again, an examination of the protagonists in this case is useful. The real party in interest in *Chakrabarty* was General Electric Company, to whom Ananda M. Chakrabarty's application was assigned.[185] The application was to patent a "human-made, genetically engineered bacterium . . . capable of breaking down multiple components of crude oil."[186] Patents were requested on three things: (1) the method of producing the bacterium in the first place; (2) "an inoculum comprised of a carrier material floating on water, such as straw, and the new bacteria;"[187] and (3) "the bacteria themselves."[188] The patent examiner accepted the first two, but rejected the attempt to patent the bacteria themselves as a "product of nature" and therefore not patentable under the Patent Act.[189] The examiner also rejected the claim on the ground that living things are not patentable subject matter.[190] Bacteria are not classified as asexually or sexually

185. Diamond v. Chakrabarty, 447 U.S. 303, 305 (1980).
186. *Id.*
187. *Id.* at 306.
188. *Id.*
189. *Id.*
190. *Id.*

reproducing plants so neither the then-existing PPA nor the PVPA were applicable.

In *Chakrabarty*, the PTO returned to the well-established "product of nature" doctrine to initially reject the attempt to patent the genetically engineered bacteria itself.[191] The Patent Office Board of Appeals affirmed on the same rationale that living matter is not patentable subject matter but rejected the other ground, that the micro-organisms were "products of nature."[192] However, the C.C.P.A. reversed by a divided vote, relying on its rationale in *In re Bergy*.[193] In doing so, the C.C.P.A. paved the way for *Chakrabarty* and its progeny on the slimmest of reasons, ignoring the enormous implications of treating a living organism, no matter how tiny, as if it were identical to a nonliving chemical or mineral.[194]

As in *Bergy*, several amicus briefs were filed in *Chakrabarty*. This time, however, there were opposing briefs from several noteworthy quarters. The amicus briefs included the statements of "[s]cientists, among them Nobel laureates,"[195] who predicted that a parade of horrors would result from granting the patent application, including "that genetic research may pose a serious threat to the human race, . . . spread pollution and disease, . . . [and] result in a loss of genetic diversity."[196] These significant concerns were expressly noted in the Court's decision, yet the Court specifically rejected the challenge of addressing those concerns in its ruling. Rather, Chief Justice Berger wrote, "It is argued that this Court should weigh these potential hazards in considering whether respondent's invention is patentable subject matter under § 101. We disagree."[197] The Court, however, declined to say why it disagreed. Thus, the Court did *not* examine whether genetically engineered living organism *ought* to be patentable.

In spite of declining to weigh the significant concerns expressed in the amicus briefs and by the PTO surrounding competing economic, social, and scientific considerations, the majority only

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191. *Chakrabarty*, 447 U.S. at 306.

192. *Id.*

193. *Id.*

194. *See* Daniel, *supra* note 60. As Daniel observes, at least one commentator has criticized the C.C.P.A. for consolidating *Bergy* and *Chakrabarty* for reconsideration since a case involving the purification of a micro-organism can be distinguished from one involving a genetically-modified organism-organism.

195. *Chakrabarty*, 447 U.S. at 316.

196. *Id.*

197. *Id.* at 316–17.

upheld Chakrabarty's patent on the genetically-engineered bacterium itself in a 5 to 4 plurality decision. The decision to decline to weigh those concerns is striking. In writing for the Court, Justice Burger clearly recognized that allowing patentability would at the very least accelerate genetic engineering research efforts in that direction.[198] This acceleration of research in one direction, *i.e.*, only the most profitable one where patents can be obtained most readily, is precisely what Kloppenburg, Professor of Rural Sociology at University of Wisconsin-Madison, later observed in his book, *First the Seed*, as being neither desirable (particularly for the Third World, but also in the directions in which it forced U.S. agriculture) nor inevitable.[199]

As Burger correctly observes, the legislative process is generally better equipped to investigate, examine, study, and promulgate "a matter of high policy" into law.[200] However, this should not have stopped the Court from exercising caution, as Justice Brennan noted in his dissent, when the "patent laws attempt to reconcile this Nation's deep-seated antipathy to monopolies with the need to encourage progress," particularly if that monopoly is going to be on the living organism itself.[201] Indeed, the mere existence of a plurality decision, particularly one in which the Court winds up urging Congress to take action, reveals a deep ambivalence among those writing for the Court about the holding.

Justice Burger's comment that, "we are without competence to entertain these arguments—either to brush them aside as fantasies generated by fear of the unknown, or to act on them"[202] seems beside the point, and perhaps more of an attempt to absolve the Court from responsibility. Vacating *Bergy* in light of a case like *Flook*, which did not involve any living micro-organisms, and without any guidance to the lower court on *Flook's* possible applicability to a case involving a purified micro-organism, buttresses the Court's conclusion. The Court recognized the dangers of allowing patentability in *Chakrabarty*, and felt deep ambivalence about it, as reflected in the plurality decision, but decided to deflect all responsibility to Congress and the Executive branch.[203]

198. *Id.* at 317.
199. KLOPPENBURG, *supra* note 51, at xi–xv.
200. *Chakrabarty*, 447 U.S. at 317.
201. *Id.* at 318–19 (Brennan, J., dissenting).
202. *Id.* at 317.
203. *Id.* at 318.

One might argue that the mere existence of a plurality decision was the Court's exercise of caution. However, subsequent events have proven otherwise. Biotechnology proponents have had a field day with *Diamond v. Chakrabarty*. They repeatedly point to a quotation from P.J. Federico, a principal draftsman of a 1952 recodification of the Patent Act, that Burger uses in his opinion as evidence of what they characterize as the Court's strong support of the patentability of genetically-engineered organisms:

> The Committee Reports accompanying the [recodification] of the 1952 Act inform us that Congress intended statutory subject matter to "include anything under the sun that is made by man."[204]

More consistently ignored are the deep misgivings expressed in the majority as well as the minority opinion about patentability of microorganisms in this context as commentators, both legal[205] and lay, have overwhelmingly and repeatedly hailed *Chakrabarty* as a definitive Supreme Court stamp of approval on genetic engineering and biotechnology.[206]

Justice Burger even went so far as to emphasize that the Court was not judging whether genetically-engineered animals *should* be patented but merely whether the language of the Patent Act included allowing the patentability of living organisms.[207] He specifically invited Congress to amend Section 101 accordingly.[208] Furthermore, Burger highlighted the fact that the public good can and should be a part of patent law. He included one example of this in his opinion, 42 U.S.C. § 2181(a), which denies patent protection to inventions that are "useful solely in the utilization of special nuclear material or atomic energy in an atomic weapon."[209] Today, another example exists in 35 U.S.C. § 287(c), which exempts from liability for patent infringement any "medical practitioner" who performs a "medical activity," a provision that attempts to free medical practices from the

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204. *Id.* at 309 (quoting S. REP. NO. 82-1979, at 5 (1952); H.R. REP. NO. 82-1923, at 6 (1952)).

205. As recently as 1999, one such commentator, James P. Daniel, cited *supra* note 60, characterizes *Chakrabarty's* language as "strong" as he argues that the moral utility requirement in patent law is "dead doctrine" and that only Congress should address concerns about the consequences of granting patents for human-based inventions.

206. However, one legal commentator has recognized the fact that *Chakrabarty* was a plurality decision. *See, e.g.*, Barry S. Edwards, *". . . and on his farm he had a geep": Patenting Transgenic Animals*, 2 MINN. INTELL. PROP. REV. 89 (2001) (analyzing the impact of the case on the proliferation of transgenic animal patents).

207. *Chakrabarty*, 447 U.S. at 318.

208. *Id.*

209. 42 U.S.C. § 2181(a) (2000); *Chakrabarty*, 447 U.S. at 318.

vagaries of patent law for the benefit of society.[210] Years before the promulgation of § 287(c), Burger made his observations, even as he tried to deflect attention away from the Court's own failure to exercise more caution in its decision.

Since 1980, the PTO has relied on the *Chakrabarty* plurality decision to grant patents on non-naturally occurring man-made multicellular plants and other non-human multicellular organisms, many of them genetically engineered plants and animals, such as the famous genetically engineered Harvard Onco-mouse patent. The Harvard onco-mouse became a patentable invention by virtue of genetic engineering in which foreign genes were inserted into a naturally-occurring mouse. The litigation strategy surrounding such genetically engineered organisms has proven to be very effective, as biotechnology opponents find themselves unable to marshal the vast quantities of money that are needed to sustain protracted litigation, particularly before a decidedly pro-business judiciary.[211] In the meantime, patenting of life forms, and the focus of genetic-engineering research, has moved inexorably up the food chain, from micro-organisms to transgenic animal patents, and finally to the very real possibility of half-human chimeras.

Biotechnology apologists seek to ignore the broader contexts into which commentators such as Kloppenburg, Barry Edwards, indigenous peoples, and even Justice Burger in the *Chakrabarty* decision, have clearly placed it. The present Supreme Court, as currently constituted, claims ignorance of these broader contexts as well. The Court cites Kloppenburg and Cary Fowler's work on the PPA and the PVPA in *J.E.M. Ag Supply, Inc. v. Pioneer Hi-Bred International, Inc.*,[212] a more recent decision expressly holding that newly developed plant breeds are patentable subject matter under §101 of the Patent Act.[213] Importantly, as pointed out in the *J.E.M. Ag Supply* dissent, there are no seed-saving or research exemptions at all outside of the PPA and PVPA under the utility patent provisions of

210. 35 U.S.C. § 287(c) (1999).

211. Edwards traces this path from *Chakrabarty* to *Animal Legal Defense Fund v. Quigg*, 932 F.2d 920 (Fed. Cir. 1991) and on through to the Newman-Rifkin patent application. He concludes that growing public concern over transgenic animal patents may result in a reemergence of the moral utility requirement in patent law as well as definitive Congressional action on the issue. Edwards, *supra* note 206.

212. 534 U.S. 124, 137 (2001).

213. *Id.* at 145.

§101, making the negative impact of *JEM Ag Supply* on seed-saving and research potentially enormous.[214]

Ironically, in *Chakrabarty*, Justice Burger's punt of the significant concerns expressed by the PTO and in *amicus* briefs out of the hands of the Court was unjustified at an even deeper level in the area of patents.[215] Patent law has long had a moral utility requirement that dates from shortly after the Patent Act was first passed in 1793. As noted by Edwards, the moral utility requirement is a common law doctrine that can be traced to the 1817 decision of *Lowell v. Lewis*.[216]

B. Origins & Development of the Moral Utility Requirement

In *Lowell,* Justice Story declared that, "[a]ll 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."[217] "The word 'useful,' therefore, is incorporated into the act in contradistinction to mischievous or immoral."[218] Story gave several examples of such an invention, such as, "a new invention to poison people, or to promote debauchery, or to facilitate private assassination."[219] At one time, it was fairly common for the word "moral" to be read into the "utility" element of the Patent Act, resulting in the denial of patents on gambling devices and other inventions historically frowned upon by society at large.[220]

Thus, Justice Story was and still is considered to be the father of the moral utility requirement.[221] He was also one of the principal architects of pivotal federal Indian case law, including the infamous[222] Marshall Trilogy[223] of cases. This factor shall be discussed in more detail later in relation to the contemporaneous development of the geographical limitation in U.S. patent law.

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214. *Id.* at 154–55.

215. Moral utility concerns also inform other areas of intellectual property, such as the recent Redskins trademark case. Pro-Football, Inc. v. Harjo, 284 F. Supp. 2d 96 (D.D.C. 2003).

216. 15 F. Cas. 1018 (D. Mass. 1817) (No. 8,568).

217. *Id.* at 1019.

218. *Id.*

219. *Id.*

220. Edwards, *supra* note 206, at 112.

221. Benjamin D. Enerson, *Protecting Society from Patently Offensive Inventions: The Risk of Reviving the Moral Utility Doctrine*, 89 CORNELL L. REV. 685, 691 (2004).

222. Infamous at least within the discipline of federal Indian law.

223. The Marshall Trilogy is a set of three Supreme Court cases considered to be pivotal in the development of federal Indian law. They are *Worcester v. Georgia*, 31 U.S. 515 (1832), *Cherokee Nation v. Georgia*, 30 U.S. 1 (1831) and *Johnson v. McIntosh*, 21 U.S. 543 (1823).

While Justice Story's interpretation of the moral utility requirement has been largely abandoned in the U.S.,[224] European patent law during the same time retained similar requirements in its patent law. Edwards posits the possible re-emergence of the moral utility requirement within U.S. patent law in the area of transgenic animal patents.[225] However, such re-emergence should not be confined to transgenic animal patents. Kloppenburg has already identified in detail the same kinds of concerns in the PPA of 1930 and the PVPA of 1970 that Justice Burger invited Congress to address in the rest of the Patent Act.[226] Therefore, any re-emergence of the moral utility in patent law should include concerns expressed about patenting of all life forms, from the PPA of 1930 through the PVPA of 1970 to the patenting of micro-organisms.

Such interpretations of the moral utility requirement have been largely abandoned in the 20th century within the U.S., prompting commentators to argue that the doctrine is archaic and unreasonable to apply to genetically-engineered organisms, including the chimera proposed in the Newman-Rifkin patent application.[227] However, the moral utility requirement never completely disappeared from patent law within the U.S. and has been more explicitly evoked in the patent law of the European community in recent years. A modern model of the doctrine has long existed in the European Patent Convention ("EPC").[228]

Furthermore, as recently as 1991, the Federal Circuit quoted Justice Story's "sound morals" language to define "utility" in the case, *Tol-o-Matic, Inc. v. Proma Produkt-Und Marketing Gesellschaft*.[229] Even more significantly, in 1998, the PTO cited both *Lowell* and *Tol-o-Matic* in a "Media Advisory" that specifically addressed the possibility that the PTO would reject transgenic patents on moral grounds in the case of the Newman-Rifkin patent application on a human/nonhuman chimera.[230]

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224. Magnani, *supra* note 4, at 451–54 (citing DONALD S. CHISUM, CHISUM ON PATENTS § 4.03 (1998)).

225. *See* Edwards, *supra* note 206.

226. Diamond v. Chakrabarty, 447 U.S. 303, 304 (1980).

227. *See, e.g.*, Magnani, *supra* note 4.

228. Enerson, *supra* note 221 (explaining that the Convention specifically prohibits patenting of "ethically questionable practices," touching off a lively public debate on the advisability of allowing patent protection on genetically engineered plants and animals. Such a public debate has been noticeably absent in the United States.).

229. 945 F.2d 1546, 1553 (Fed. Cir. 1991), *abrogated on other grounds by* Markman v. Westview Instruments, Inc., 52 F.3d 967 (Fed. Cir. 1995)).

230. Edwards, *supra* note 206, at 113.

III. CONVERGING SOCIOECONOMIC, SAFETY, AND ETHICAL CONCERNS?

A. A Trilogy of Western Concerns

Edwards effectively summarizes the many socioeconomic, safety, and ethical concerns that legal commentators have been raising about other implications of plant and animal patenting, including:

1. Previously Unknown Allergic Reactions: In 1999, "Pioneer Hi-Bred, International asked a University of Nebraska scientist to test a variety of soybean seed into which a Brazil nut gene had been introduced (to increase the bean's protein level). The scientist discovered that the soybean caused an allergic reaction in people with Brazil nut allergies"[231];
2. Unexpected Results: "[S]cientists at Cornell University discovered that corn that had been genetically altered to produce an insecticide released pollen on nearby plants with the unexpected result of killing monarch butterfly larvae, potentially threatening the entire monarch butterfly population as well as threatening the plants and animals that rely on the monarchs"[232];
3. Unintended Side Effects (animals): "Some of the transgenic animals being produced have exhibited horrible side effects, such as the pig with a human growth gene that unexpectedly grew to be 'excessively hairy, riddled with arthritis, and cross-eyed,' seldom even standing up"[233];
4. Should Animals be Patentable "Things" and Are Transgenic Animals Safe?: Could they pollute gene pools, biodiversity, and ecosystems?[234]

Kloppenburg makes parallel arguments about allowing plant patenting with respect to the socioeconomic ramifications within and outside the U.S.[235] The PPA of 1930 and the PVPA of 1970 were

231. *Id.* at 91.
232. *Id.*
233. *Id.* at 92.
234. *Id.* at 103–07.
235. *See* KLOPPENBURG, *supra* note 51.

essentially Congressional stamps of approval on agribusiness and its dependence on indistinguishable plant varieties, and hybridized plants, which are sterile and require heavy inputs of Western-produced chemicals and fertilizers for their production. It is worth noting that, although the PVPA and the PPA were directed at certain kinds of plants that were artificially increasing the profitability of mechanized, hybridized agriculture, farmers unconnected to mega-agribusiness were up in arms over the extension of PPA-like patent protection to sexually-reproduced plants under the PVPA. A farmer's exemption to the PVPA was enacted in recognition of the serious detrimental impact of the PVPA on the nation's medium to small-sized, or family, farms.[236] However, its beneficial effect for small, family farms has been minimal given the massive socioeconomic machinations that Kloppenburg describes.

B. Proposed Legal Changes

It is important to note here that indigenous peoples were not a part of the process of either passage of the PPA, the PVPA, nor the debate surrounding the farmer's exemption to the PVPA. These were all directed at the non-Indian farmers who had displaced and occupied the lands of the indigenous peoples within the U.S., direct beneficiaries of overt genocidal Manifest Destiny policies[237] that were just concluding as the forces that led to the passage of the PPA were gathering momentum. Before the "American" farmer was largely displaced by mega-agribusiness, the extensive displacement and intentional destruction of American Indian agriculture occurred on the same lands. The displacement and destruction of American Indian agriculture, as well as their other achievements within the U.S., are routinely ignored at both academic and lay levels:

> This hostile attitude of stubbornly determined ignorance, it should be noted, is not confined to textbook writers. Recently, three highly praised books of scholarship on early American history by eminent Harvard historians Oscar Handlin and Bernard Bailyn have referred to thoroughly populated and agriculturally cultivated Indian territories as "empty space," "wilderness," "vast chaos," "unopened lands," and the ubiquitous "virgin land" that blissfully was awaiting European "exploitation" . . . . The Eurocentric racial contempt for the indigenous peoples of North and South America,

236. 7 U.S.C. § 2543 (1982); Mark W. Lauroesch, *Genetic Engineering: Innovation and Risk Minimization*, 57 GEO. WASH. L. REV. 100, 113 (1988).

237. *See generally* DAVID E. STANNARD, THE AMERICAN HOLOCAUST: COLUMBUS AND THE CONQUEST OF THE NEW WORLD (Oxford University Press 1992).

> as well as Africa, that is reflected in scholarly writings of this sort is now so complete and second nature to most Americans that it has passed into popular lore and common knowledge of the "every schoolboy knows" variety. No intent to distort the truth is any longer necessary. All that is required is the recitation of rote learning as it passes from one uncritical generation to the next.[238]

"Stubbornly determined ignorance" characterizes the debate on Western intellectual property law and the traditional knowledge of indigenous peoples. This kind of ignorance pervades scholarly discourse in this topic area to such an extent that even proposed legal changes that are perceived to be friendly toward the interests of indigenous peoples completely miss important linkages between U.S. law and policy toward Indians within its borders and the development of U.S. patent law. Instead, intellectual property issues in relation to indigenous peoples outside the U.S. are discussed as if the U.S. itself did not have indigenous peoples either in its past or present.

1. The Marshall Trilogy Connection

Like the moral utility requirement, the yawning gap in intellectual property discourse and legal scholarship may be traced back to Justice Story and his colleagues on the U.S. Supreme Court. Justice Story was on the bench when the first case in the Marshall Trilogy, *Johnson v. McIntosh*,[239] was decided. The task before the Supreme Court in that case was to determine whether pre-Revolutionary War land transfers involving European powers, private individuals, and Indian tribes were still valid given sales of the same lands by the newly-formed United States. Out of *Johnson v. McIntosh,* which pre-Revolutionary War landowners lost, came American legal recognition of the discovery doctrine, under which the Court decided that European "discovery" of America justified all land title under U.S. law.[240] The Court did this without any consideration of whether it was morally legitimate to apply the doctrine centuries later, and without definitively declaring that the Indians had no title at all as a result.[241] Instead, the Court decided that the discovery doctrine gave the federal government the exclusive right to extinguish aboriginal title "by purchase or conquest."[242]

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238. *Id.* at 12–13.

239. 21 U.S. 543 (1823).

240. DAVID H. GETCHES ET AL., CASES AND MATERIALS ON FEDERAL INDIAN LAW 69 (4th ed. 1998).

241. *Id.*

242. *Id.*

In 1947, Felix Cohen, an early, prominent Indian law scholar, referred to this result as a "a cruel dilemma: either Indians had no title and no rights or the Federal land grants on which much of our economy rested were void."[243] More recent commentary asserts that this result supposedly avoided "two logical extremes," namely that the discovery doctrine somehow extinguished all Indian title versus Euro-American acceptance that Indians held fee title to all their lands, completely unaffected by European discovery.[244]

Both views are analytically too shallow, particularly in light of the evolution of U.S. patent law during that same era. The decision reveals far more about the Euro-American need to rationalize greed, theft, and genocide than any "logical extremes" or "cruel dilemma(s)." As such, it provides important clues about the legal tenor of the country at that time, when American recognition of global prior art was about to morph into a geographical limitation.

The "globe" in "global prior art" was from a bygone era when Euro-Americans were not sure that they would be able to overcome the Indian tribes. Respect for and recognition of global prior art at that time was in this context. As Euro-Americans came to the realization that they were winning more wars against Indians and had the potential to sweep even further across this continent, they did not feel that they needed to respect the entire globe's prior art, only Europe's—the most recent rival for colonial spoils—and any other nation-state that might have the power to object and/or retaliate in a way that Euro-Americans could understand.

Given this pivotal change in the Euro-American relationship to the indigenous peoples within what is now the United States, the Patent Act was modified accordingly. There was no need to articulate the reasons for the change in writing because the entire country was already agog by that time with the economic ramifications of the Marshall Trilogy. Instead of legal recognition of global prior art, a geographical limitation language was now more economically expedient. Of course, Euro-Americans were ever mindful of their erstwhile colonial rivals, so the definition of prior art was crafted to encompass them while leaving open the possibility that even more colonial booty might fall into the hands of Euro-American "inventors."

If one keeps in mind the state of colonization of the Americas at the time global prior art still existed in the Patent Act and examines

243. *Id.*

244. *Id.*

the changes in the statutory language from global prior art to a geographical limitation during the time of the Marshall Trilogy and Manifest Destiny, this becomes more apparent. The geographical limitation language of the Patent Act arose at a time when conquest was so nearly complete that Euro-Americans could taste it. A geographical limitation crafted in precisely the language that came to be used in the Patent Act was a logical outgrowth of *Johnson v. McIntosh*, a jurisprudence that "ensured that future acts of genocide would proceed on a rationalized, legal basis."[245]

Justice Story assumed what initially seemed to be a more iconoclastic position in the second of the Marshall Trilogy cases, *Cherokee Nation v. Georgia*.[246] This 1831 decision is frequently relied upon today in federal Indian law despite the fact that the decision was a 2-2-2 split, as one of the justices was absent.[247] Courts, and often legal commentators as well, simply take dicta from one of the minority decisions,[248] a.k.a. "Marshall's opinion,"[249] that is most unfavorable to the tribes, largely ignoring the fact and implications of the 2-2-2 split. *Cherokee Nation* thus inaugurates into psuedo-legal precedent the-we'll-just-ignore-Indian-issues-and-they'll-go-away syndrome (hereinafter "syndrome") that has continued to prevail in federal Indian jurisprudence into the 21st century.

In contrast to Chief Justice Marshall's opinion in the case, Justice Story, along with Justice Thompson, concluded that the Cherokee Nation was indeed a foreign nation that therefore possessed sovereignty in the international sense.[250] Yet it is Marshall's opinion that is most frequently relied upon as the actual decision of *Cherokee Nation v. Georgia*.[251] Analysis of the prevailing discussion and proposals today surrounding indigenous peoples and intellectual property issues demonstrate how deeply this syndrome insidiously permeates the rest of American jurisprudence in a way that legal scholars have ignored for too long. Further analysis of the impact of the tenor and effect of the Marshall Trilogy cases in shaping pivotal contemporaneous changes in the Patent Act is critical.

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245. *Id.* at 71 (internal citations and quotations omitted).
246. 30 U.S. 1 (1831).
247. GETCHES, *supra* note 240, at 111.
248. *Id.* at 104.
249. Marshall's Plan, named after Chief Justice Marshall.
250. GETCHES, *supra* note 240, at 110.
251. *Id.*

For example, the conventional wisdom is that *Cherokee Nation v. Georgia* establishes a very important foundation of the federal-tribal relationship[252]—that Indian tribes "may, more correctly, perhaps, be denominated domestic dependent nations"[253] rather than "foreign nations" within the meaning of Article III, Section 2 of the United States Constitution.[254] The case, in which the Cherokee Nation petitioned the Supreme Court to decide that the laws of the state of Georgia had no force within their treaty-guaranteed reservation,[255] was actually dismissed as not being within the Supreme Court's jurisdiction.[256] Nevertheless, in keeping with the continuation of the syndrome, Marshall's hedging language in dicta on domestic dependent nations has calcified into legal precedent and the contrary decision of Justice Story remains largely ignored outside federal Indian law. Inside federal Indian law, Story's decision is viewed as revealing deep ideological divisions within the Court and Euro-American society itself at that time.[257]

Since Marshall's position on Indians as domestic dependent nations was only expressed in dicta, and in hesitant language at that, it is questionable whether the ideological divisions over tribal sovereignty and self-determination were so deep at that time. Rather, it seems more likely that Marshall's hesitant dicta merely reflected lingering Euro-American doubt about whether their imperialistic endeavor would "stick" even among the more assimilated Cherokees, whose movement "from the hunter state to a more fixed state of society"[258] was viewed by Justice Johnson, nevertheless, as an intolerable threat to the sovereignty of the United States and Georgia.[259] I would suggest that the only significant ideological division was how best to nail down Euro-American hegemony. Also overlooked is the fact that Justice Story was an important figure in the development of U.S. patent law, particularly in the development of the moral utility requirement. Story's views of the indigenous

252. *Id.* at 104.

253. Cherokee Nation v. Georgia, 30 U.S. 1, 17 (1831).

254. GETCHES, *supra* note 240, at 104.

255. *Id.*

256. *Id.* at 69.

257. *Id.*

258. *Id.* at 111. This statement was already a gross distortion of the nature of Cherokee society, which depended heavily on the agricultural pursuits of the women as much, if not more than the hunting ability of the men prior to European arrival. In addition, Cherokees were not nomadic as Justice Johnson implies, as they resided in fixed towns. *Id.* at 111.

259. GETCHES, *supra* note 240, AT 111.

peoples within the U.S. have not been examined, although the Marshall Trilogy "was, by all accounts, one of the greatest constitutional crises in the history of the nation,"[260] despite being contemporaneous with Story's construction of the moral utility requirement as well as the first appearance of the geographical limitation in patent law.

An address that Justice Story gave in 1828 during the commemoration of the first European settlement of Salem, Massachusetts is revealing. They were "incapable of assimilation" with Western culture, their "ferocious passions, their independent spirit, [and] their wandering life" were a challenge to white society by their mere presence, raising the question "whether the country itself shall be abandoned by civilized man, or maintained by his sword as the right of the strongest."[261]

While it is clear what Story thought of the future of the American Indian was within the U.S., there is no indication that Justice Story's position on the status of American Indians as foreign nations had changed by 1832, when the Supreme Court decided *Worcester v. Georgia*.[262] In that case, the Court, with the exception of Justice Baldwin, decided that Georgia's law had no effect within Cherokee territory.[263] The majority decision in *Worcester v. Georgia* was therefore in complete harmony with Story's previous decision in *Cherokee Nation v. Georgia* that the Cherokees were a foreign nation within the meaning of the U.S. Constitution.[264]

Ordinarily, the decision would have had the effect of accomplishing the release of Samuel A. Worcester and several other missionaries who were arrested by the state of Georgia for violating a state law that required any non-Indian resident of the Cherokee territory to get a license from the governor.[265] However, a presidential and state nullification controversy was brewing[266] in the aftermath of the discovery of gold[267] on Cherokee land.[268] The fact

260. *Id.* at 102.

261. *Id.* at 103.

262. 31 U.S. 515 (1832).

263. *Id.* at 561.

264. *Id.* at 552 (stating that Justice Story concurs with Justice Thompson's opinion).

265. GETCHES, *supra* note 240, at 113.

266. *See id.* at 122.

267. *Id.* at 126. Indeed, the first U.S. Mint was situated in Cherokee territory, and the origin of the name of the Georgia town of Dahlonega, site of the largest (and purest) gold deposit in the United States east of the Mississippi, is in a Cherokee word that refers to the yellow color of gold of that region. *See Dahlonega, at*

that the case was widely reported and debated in the press[269] underscores how interested the lay Euro-American public was in the outcome.

Ultimately, the Court decided that Georgia laws had no effect in Cherokee territory, to which Horace Greeley reported that President Jackson responded, "John Marshall has made his decision; now let him enforce it."[270] While some authorities doubt whether Jackson actually said those precise words, it is clear that the prospect of Presidential nullification of a Supreme Court decision precipitated a constitutional clash of the highest order, and that Jackson actively fueled the Cherokee-Georgia conflict, supported Georgia's claimed sovereignty over Cherokee territory, and enthusiastically implemented the removal of the Cherokees westward to Indian Territory, now known as the state of Oklahoma.[271] In the aftermath of *Worcester v. Georgia* the missionaries agreed to accept pardons that were offered by the Georgia governor at Jackson's behest, Story and Marshall kissed and made up with President Jackson,[272] and the Cherokees were removed, along with the other so-called Five Civilized Tribes.[273] The decision in *Worcester* became the most cited pre-Civil War Supreme Court case besides *Marbury v. Madison*,[274] *McCulloch v. Maryland*,[275] and *United States v. Perez*,[276] yet the modern "trend has been away from the idea of inherent Indian sovereignty as a bar to state jurisdiction and toward a reliance on

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http://roadsidegeorgia.com/city/dahlonega.html (last visited Sept. 1, 2004).

268. GETCHES, *supra* note 240, at 126.

269. *See id.* at 123.

270. *Id.*

271. *Id.*

272. Story reported that,

> Notwithstanding [that] I am "the most dangerous man in America," the President specially invited me to drink a glass of wine with him. But what is more remarkable, since his last Proclamation and Message, the Chief Justice and myself have become his warmest supporters and shall continue so just as long as he maintains the principles contained in them. Who would have dreamed of such an occurrence?

Id.

273. The Five Civilized Tribes were the Cherokees, Creeks, Choctaws, Chickasaws, and Seminoles of the southeastern United States, so named because of their own efforts to assimilate to the satisfaction of white society, even to the point of adopting plantation-style slavery among a predominant and heavily mixed-white minority that had arisen within each tribe.

274. 5 U.S. (1 Cranch) 137 (1803).

275. 17 U.S. (4 Wheat.) 316 (1819).

276. 22 U.S. (9 Wheat.) 579 (1824); GETCHES, *supra* note 240, at 125.

federal preemption."[277] This trend is concurrent with a strong tendency of legal scholars to completely ignore all of the Marshall Trilogy outside of the field of federal Indian law.

Ignorance and neglect of basic federal Indian law among legal scholars within the U.S. outside of that esoteric field metamorphoses into outright animosity in the rest of the Americas. The ayahuasca patent case provides a unique illustration of how continuing displacement and marginalization of indigenous peoples in the rest of the Americas, and appropriation of the consequent spoils has played out within a patent law system that currently refuses to examine itself critically within the context of the moral utility requirement. Furthermore, in spite of the seeming obscurity of these issues to most of the legal academy within the U.S., there have been concerted efforts toward final and universally accepted solutions for the protection and promotion of traditional knowledge spanning two decades, but with no result.[278]

Why? To answer this question, we must first examine some of the proposed, but not accepted, solutions that have emerged within that time frame. Proposals for change within U.S. patent law have included reviving the arguably defunct moral utility requirement[279] and expanding what is recognized within U.S. patent law as prior art.[280] Other proposals have been made with regard to international law, but have required the not-forthcoming approval of the U.S., such as expanding the use of geographic indications in TRIPS,[281] signing off on the Convention on Biological Diversity,[282] and/or recognizing the whole area of traditional knowledge as *sui generis*.[283]

2. Possibilities Within the Moral Utility Requirement

Commentary surrounding the pros and cons of reviving the moral utility requirement in U.S. patent law has included and excluded consideration of possible effects on traditional knowledge. Nevertheless, both forms of commentary—excluding and including indigenous peoples—have great significance on the ultimate resolution of questions surrounding western use of indigenous

277. *Id.* (quoting *McClanahan v. State Tax Comm'n of Arizona*, 411 U.S. 164, 172 (1973)).

278. CIPR, *supra* note 106, at 73.

279. Fecteau, *supra* note 123, at 92.

280. *See* Bagley, *supra* note 2.

281. CIPR, *supra* note 106, at 87–90.

282. *Id.* at 84–85.

283. *Id.* at 79–80.

traditional knowledge. Leanne Fecteau, CIEL, and even the media at one point[284] have noted the seeming convergence of Western debate about the significance of the moral utility requirement in the attempted patenting of an animal-human chimera and the religious issues raised by CIEL before the PTO in the ayahuasca patent controversy.[285]

This seeming convergence raised hope in some quarters that a newly-revived moral utility requirement in patent law would spark public debate about the significance of patenting half-human "inventions" as well as the morality of allowing a patent to stand that of itself violates the religious beliefs of indigenous peoples of the Amazon. This sort of "convergence theory" is not unique to biotechnology critics or advocates for indigenous peoples. Derrick Bell has noted that blacks within the U.S. have been able to achieve success in civil rights only when their interests have managed to converge with those of whites.[286] At any other time, *i.e.*, when their interests do not somehow converge with those of whites, blacks can forget about recognition of their civil rights within the U.S.

The vagaries and overall ineffectiveness of using convergence theory to effectuate goals that are not shared by the majority is even more pronounced for indigenous peoples of the Americas. They are a much smaller minority within the U.S. than blacks, thanks to a genocidal reduction in their numbers and wave after wave of carefully orchestrated European immigration in its wake, as documented by David E. Stannard, Professor of American Studies at the University of Hawaii. Stannard chose to go straight to the point by titling the book, *American Holocaust: Columbus and the Conquest of the New World.*[287] As a direct result of the American Holocaust described in that book, American Indians still have comparatively less political clout than American blacks[288] and therefore, even less possibility of fortuitous convergence with white interests in the legal arena. Outside the U.S. and Canada, where the numbers of survivors of the American Holocaust remain higher, indigenous peoples of the Americas often

284. Fecteau, *supra* note 123, at 89–92; Wiser, *supra* note 87; Weiss, *supra* note 24.

285. *See, e.g.*, Fecteau, *supra* note 123, at 92.

286. Derrick Bell, Silent Covenants: *Brown v. Board of Education* and the Unfulfilled Hopes for Racial Reform, Remarks at the 8th Annual Hager Distinguished Lecture/Oklahoma Lecture in the Humanities, University of Tulsa College of Law (March 5, 2004).

287. STANNARD, *supra* note 237.

288. This is true in spite of recent evidence that the "Indian vote" within the U.S. might have some regional political clout in states such as New Mexico and the Dakotas, and the possibility of deciding a very, very close Presidential election, such as Bush/Gore in 2000.

consider themselves lucky when they are not the subject of genocide today when there are "too many" survivors.

Given these realities, it was fairly predictable that the interests of indigenous peoples and that of the dominant society either would not converge, or the specific concerns of indigenous peoples would be ignored, in spite of any convergence. As it turned out, the potential convergence was effectively cut off by subsequent events. As previously noted, while the PTO rejected the Newman-Rifkin half-human patent application in June of 1999, it carefully avoided considering the religious implications of the ayahuasca patent on the moral utility requirement in the following year.

The moral utility requirement has not been definitively revived in general. Despite the PTO's rejection of the Newman-Rifkin patent application on a half-human creature as unpatentable because it "embrace[d]" a human being,[289] the consequent revival of the moral utility requirement has not materialized.[290] In fact, as one commentator points out, the PTO's revised 2001 patent examiner guidelines on utility did not even mention morality or public policy issues.[291] However, this failure could also be attributed to the PTO's aversion to calling further attention to the controversy and its own contradictory holding that declared the chimera unpatentable because of longstanding PTO policy that human beings are not patentable, while also not addressing earlier federal court decisions that upheld patents on transgenic animals that contained human genes or organs,[292] rather than a definitive death knell for the moral utility requirement itself.

It seems more accurate to say that it is unclear whether the belief of most patent attorneys within the U.S. that the "American view" is that "morality should . . . have nothing to do with patents"[293] is indeed shared by the PTO and the federal courts[294] in a legal sense. Indeed, the fact that the PTO granted a patent in the same year to the University of Missouri for an invention involving a method of producing a cloned mammal—which opponents claim amounts to human cloning—simply highlights further the contradictions that

289. Fecteau, *supra* note 123, at 91.

290. *Id.* at 90–91; Enerson, *supra* note 221, at 693.

291. Enerson, *supra* note 221, at 693.

292. Fecteau, *supra* note 123, at 91–92.

293. Enerson, *supra* note 221, at 691 (quoting Ronald Schapira, *Biotechnology Patents in the United States*, *in* BIOTECHNOLOGY, PATENTS AND MORALITY 171–72 (Sigrid Sterckx ed., 1997).

294. *Id.* at 694.

characterize an administrative agency like the PTO's actions in the absence of clear Congressional and judicial direction on these issues. Ironically, Enerson is quite correct in stating that the "American view"—if one takes this term to mean the business interests that hold enormous sway within the dominant society rather than an actual statement of the law—is that morality should have nothing to do with patents.[295]

3. Possibilities Within Prior Art—Three Illustrative Problems

The issue that CIEL raised in the ayahuasca patent case about the recognition of indigenous traditional knowledge as prior art in U.S. patent law has subsequently been a subject of discussion by legal commentators. The pertinent language of 35 U.S.C. § 102 is:

> 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 to the date of the application for patent in the United States.[296]

This language presents several problems for indigenous peoples who may be seeking control over and/or compensation for the use of their traditional knowledge. First, Section 102 only provides for individual ownership of a patent on an invention.[297] More than one person may certainly hold a patent, for example, a group of scientists may jointly own a particular patent, but the law only recognizes that ownership as fundamentally individual. In contrast, traditional knowledge is often held collectively,[298] for example by a particular

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295. *Id.* at 691.

296. 35 U.S.C. § 102(b) (1994).

297. Fecteau, *supra* note 123.

298. The most cogent statement about the nature of indigenous knowledge has been made by indigenous peoples themselves, and in the context of explaining why western intellectual property law is inadequate to protect it:

> Indigenous peoples who have participated in the CBD, WIPO, and other UN processes, have consistently asserted our proprietary, inherent, and inalienable rights over our traditional knowledge and biological resources. Those who wish to impose intellectual property rights over our traditional knowledge and resources, if successful, will transform our knowledge and resources into individually owned, alienable commodities, subject to IPR protection for a short period of time. For instance, patents typically are granted for 20 years. Western property law, and in particular, intellectual property rights, are contradictory to the customary laws of Indigenous peoples to safeguard and protect our traditional knowledge.

clan, sibling-group, or the tribe as a whole. Indigenous peoples have their own, often elaborate, set of customary laws that govern the holding, use, and dissemination of traditional knowledge whether it is held collectively or, in some cases, individually.

The closest parallel in U.S. patent law that allows for "collective" ownership of a patent is its treatment of the corporation as a legal person capable of individual ownership. There are, however, significant differences between the structure and rules governing a corporation and those governing a clan, sibling-group, or tribe. While a deeper analysis of these differences is beyond the scope of this article, a few basic comparisons should convey some sense of the magnitude of these differences. On a superficial level, a corporation is a group of people and a tribe, clan, or sibling-group is also a group of people. However, in U.S. law, a corporation is treated as a legal person, that is, an *individual*, for certain designated purposes.[299] As a legal person, a corporation has constitutional rights under the Due Process Clauses of the Fifth and Fourteenth Amendments,[300] Equal Protection under the Fourteenth Amendment,[301] and a limited First Amendment right of expression in commercial matters.[302]

The corporation is a legal fiction, a nonliving entity created strictly for business purposes. The corporation itself can survive indefinitely, being perpetual, regardless of the death of shareholders, directors, or officers.[303] In contrast, in indigenous societies, if the members of a tribe, clan, or sibling-group die, then so too does the tribe, clan, or sibling-group. Corporations can only conduct business, and must do so within the confines of Western notions of economics, *i.e.*, maximizing shareholder profit, or risk breaking corporate law. For example, while over half of the states have laws that authorize a corporate Board of Directors to consider the interests of non-shareholder groups in some of their corporate decision-making, these statutes are discretionary and typically apply in the limited context of unsolicited tender offers that may have an adverse impact on the

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Collective Statement of Indigenous Peoples on the Protection of Indigenous Knowledge, Agenda to the UN Permanent Forum on Indigenous Issues (New York) (May 10–21, 2004), *available at* http://ww.ipcb.org/resolutions/htmls/pf2004.html.

299. *See, e.g.*, Revised Model Bus. Corp. Act § 1.40(5), (16) (2002).

300. Oklahoma Press Publ'g Co. v. Walling, 327 U.S. 186, 204–08 (1946).

301. Santa Clara County v. S. Pac. R.R. Co., 118 U.S. 394 (1886).

302. Virginia State Bd. of Pharmacy v. Virginia Citizens Consumer Council, Inc., 425 U.S. 748 (1976).

303. Revised Model Bus. Corp. Act § 3.02 (2002).

community in which the merging or merged corporation is located.[304] Even with these limitations, non-shareholder constituency statutes are controversial and to be an unwise departure from traditional corporate law principles in some circles.

Contrast this characteristic of Western corporate law in the U.S. with the fact that tribes, clans, and sibling-groups are simultaneously economic, social, cultural, legal, and religious entities.[305] These entities must holistically consider community, customary law, equity and justice, kinship, personal efficacy, and spirituality, even as they are conducting economic activities.[306]

U.S. law treats this nonliving business entity with so much deference that it allows the entity itself to have some fundamental constitutional rights that are ordinarily only granted to living individuals within American society. In contrast, indigenous peoples do not accord rights to their economic entities that are separate from, and therefore potentially conflicting with, the rights that people themselves hold within the society whether as individuals, members of a clan, sibling-group, warrior society, and so forth.

Embedded in U.S. patent law and those two words in Section 102(b), "a person," are the values and cultural norms that gave rise to the corporate form in American law in the first place, just as embedded within indigenous laws governing traditional knowledge are the values and cultural norms that gave rise to clans, sibling-groups, and tribes. U.S. patent law recognizes this cultural bias in its use of the word "person" in Section 102(b), which only applies to human individuals and legal fictions like the corporate entity. This is a brief analysis of the enormity of the difference between indigenous and Western thought, represented in just two words in Section 102(b). Much more could be said about this topic, but it should be covered in a separate article. Two more important obstacles will be reviewed, both of which have been the subject of legal commentary and are reflected in the language of Section 102(b).

The second important obstacle may be found in the use of the words "printed publication" in Section 102(b). While much traditional knowledge is not written, Section 102(b) allows for the

304. LARRY D. SODERQUIST, ET AL., CORPORATIONS AND OTHER BUSINESS ORGANIZATIONS: CASES, MATERIALS, PROBLEMS 515–16 (5th ed. 2001).

305. REBECCA ADAMSON, INDIGENOUS ECONOMICS: COMMUNITY ECONOMIC DEVELOPMENT PROGRAM (syllabi and course materials) (Additional information may be obtained by contacting First Nations Development Institute, 11917 Main Street, Fredericksburg, Virginia 22407, (540) 371–5615).

306. *Id.*

recognition of prior art from this or a foreign country only if it is in written form, specifically, a printed publication. This creates an obvious obstacle to the recognition within the U.S. of prior art emanating from indigenous peoples whether they reside inside or outside the U.S., as noted by commentators. However, legal commentators have generally not looked very deeply into the broader historical context of and attitudes towards indigenous peoples and their resources that have implicitly, if not explicitly, shaped patent law from its earliest years.

Professor Margo Bagley at Emory University argues that supposed evidentiary problems and assumed inaccessibility to the American public influenced Congress to enact the geographical limitation in the first place.[307] She points out that the initial drafts of the Patent Act of 1790 and 1793 defined prior art without regard to location.[308] During this era of patent law in the U.S., the Supreme Court in 1833 went so far as to declare, "[b]ut it was not the intention of this law, to take from the public, that of which they were fairly in possession."[309] Bagley then notes that Congress introduced the geographical limitation into patent law without articulating a reason for such limitation.[310] She therefore looks for clues for the change in Supreme Court dicta in the 1850 case of *Gayler v. Wilder*:

> 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 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

307. Margo A. Bagley, *Patently Unconstitutional: The Geographical Limitation on Prior Art in a Small World,* 87 MINN. L. REV. 679, 699 (2003).

308. *Id.* at 721.

309. *Id.* at 698 (quoting Shaw v. Cooper, 32 U.S. (7 Pet.) 292, 320 (1833)).

310. *Id.*

> the improvement had in fact been invented before, and used by others.[311]

After declining to speculate herself why global prior art definitions existed in the early Patent Acts,[312] Bagley argues that the above passage comports with speculation by Professor Donald Chisum, an expert on patent law at Santa Clara University, that perceived inaccessibility of foreign uses to the U.S. public was the main justification for the promulgation of a geographical limitation in 1836.[313] Bagley quotes from Chisum as a preeminent patent commentator, but she lets pass without comment the considerable doubt that Chisum himself expressed of the validity of these justifications for the geographical limitation even in the 19th century by repeatedly referring to a "convenient presumption of inaccessibility," a "convenient presumption of accessibility," and "supposed evidentiary problems" in those quotes.[314]

While Bagley's analysis is cogent if one chooses to confine one's scholarship solely to a world where the indigenous are largely ignored, her search for clues does not search deeply enough, especially since she considers the geographical limitation in U.S. patent law in relation to indigenous peoples and bio-piracy. Chisum, who also favored the elimination of the geographical limitation,[315] was probably also dubious about the inception of the geographical limitation even in the 19th century because it smacks of protectionism rather than because of any awareness of or concern for its relationship to indigenous peoples. Indeed, Andrew Jackson, a populist president, was also known for his advocacy of protectionist measures in the American economy as well as the firm institutionalization of a nascent spoils system in the White House. However, as previously

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311. *Id.* at 698–99 (quoting Gayler v. Wilder, 51 U.S. (10 How.) 477, 497 (1850) (emphasis added)).

312. *Id.*

313. Bagley, *supra* note 307, at 699–700.

314. The complete quotes from Chisum are:

> the exclusion of unpublished foreign uses was based on a convenient presumption of inaccessibility just as the inclusion of published foreign sources was based on a convenient presumption of accessibility. . . . There is no clear statement of the reason for excluding unpublished foreign uses either in the report accompanying the 1836 Act or in the subsequent codifications. The supposed evidentiary problems in proving prior foreign uses were undoubtedly influential. Also accessibility to the public in the United States was probably an overriding principle.

Bagley, *supra* note 307, at 699–700.

315. *Id.*

discussed, it is extremely instructive to consider what was going on in the U.S. with indigenous peoples during the same era that the geographical limitation was first promulgated for several reasons.

Bagley herself unknowingly touches on critical junctures in U.S. history that have deep significance for the direction this country took in relation to indigenous peoples within the U.S. as well as in patent law. Specifically, she concludes that, even if the "supposed" evidentiary problems and "convenient" inaccessibility were valid concerns in the bygone era of the 19th century patent law, they certainly are not valid now.[316] She points out that the geographical limitation is a bad rule that should not be retained for any better reason than that it has been around since the time of Andrew Jackson.[317]

The Jackson Administration was one of those critical junctures in the development of U.S. policies towards indigenous peoples, as well as in patent law. This was all accomplished during the era of Manifest Destiny in the U.S. Even without deeper analysis of the bygone era in question in relation to the indigenous peoples of the U.S., Bagley concludes that the geographical limitation may have been constitutional when originally enacted.[318] The Marshall Trilogy reveals important information about a very pertinent constitutional crisis that occurred contemporaneous to the passage of the limitation. There is some doubt whether the geographical limitation would have been passed, even back then, had it not been for two very important factors overlooked today by commentators on intellectual property and indigenous peoples: (1) the Marshall Trilogy and (2) the contempt that the Jackson Administration and white society exhibited for their own laws when dealing with indigenous peoples. Nevertheless, even in this vacuum, Bagley makes a fairly persuasive argument that it is now "patently unconstitutional."[319] However, it is evident from the response of Professor Nard, discussed in further detail below, that a deeper analysis of that era has important ramifications for the contemporary analysis of intellectual property issues involving indigenous peoples.

Examining the rise of the geographical limitation in U.S. patent law sheds critical light on other parts of Bagley's analysis. For example, she points out that the provision's retention was

316. *Id.* at 721–22.
317. *Id.* at 721.
318. *Id.* at 721–22.
319. *Id.* at 679.

controversial in the 20th century—being the subject of a Presidential Commission report in 1966 that recommended its repeal[320]—and traces the source of the failure to repeal the provision then to pressure from the small business lobby and other interest groups.[321]

Bagley then relates the example of Larry Proctor, a Colorado seed company owner, who, in 1994 bought a bag of edible mixed beans in Sonora, Mexico, bringing them back to the U.S. Once in the U.S., he planted the seeds he obtained and allowed them, à la Sally Fox, to self-pollinate until he achieved a uniform population of yellow beans.[322] He then patented that particular shade of yellow bean under U.S. patent law, naming it the "Enola" bean, and sued a company that was importing yellow Mexican beans.[323] Like Fox, Proctor carved out a market for himself within the U.S. as the so-called "inventor" of what was originally an indigenously-developed product, and attacked other businesses within the U.S. by using the patent laws in a similar fashion as Fox did initially against BC Cotton.

However, unlike Fox, who dropped her lawsuit against BC Cotton in the U.S. and has not pursued any further litigation over naturally-colored cotton, Proctor was apparently not content to allow nationals from the originating country to continue with the niche they had already carved out in the bean market. Unlike the Native Cotton Project of Peru, which developed markets primarily outside the U.S., thus avoiding too much competition with Fox, Mexican farmers and exporters had a market within the U.S. prior to Proctor's "discovery."[324] Mexican farmers and exporters experienced a 90% drop in sales[325] as a direct result of Proctor's ability to stop the importation of any beans in "his" particular color range.[326] Bagley refers to the Enola bean patent dispute as a "stunning example of the type of problems that might have been avoided had Congress implemented the changes recommended by the 1966 Presidential Commission's report."[327]

In addition, Bagley states that the "problems identified by the Presidential Commission have only increased in the years since

320. Bagley, *supra* note 307, at 700–01.
321. *Id.* at 701.
322. *Id.* at 701–02.
323. *Id.*
324. *Id.*
325. *Id.* at 702.
326. Bagley, *supra* note 307, at 702.
327. *Id.* at 701.

publication of the report.[328] She maintains that the geographical limitation is obsolete and counterproductive, arguing that consumers in other countries can get these beans at a fair price while consumers within the U.S. must pay higher prices because of Proctor's patent monopoly.[329] However, the Enola bean and the naturally-colored cotton patents are precisely the point, continuing a long-standing, protectionist, and unfair economic advantage to the descendants of settler populations, a consequence that neither Congress nor the courts to this day want to avoid.

Excising the legal and illegal realities that confronted indigenous peoples when the geographical limitation first became law in this country minimizes the contemporary reality of exactly whom the limitation continues to benefit today. For example, Bagley declares that the geographical limitation benefits anyone whose main market is in the U.S.[330] Apparently, half of all U.S. patents are granted to foreign inventors.[331] This simultaneously obscures the racist thread that so clearly connects this statutory provision to indigenous peoples of the past as well as the present. It also overlooks the effects of collaborating Western-educated and Western-aligned elites, who are often from lesser-developed countries themselves with large populations of the indigenous within them, and who serve to rationalize continuing Western hegemony against their own countrymen.

A deeper analysis would not overlook the fact that apparently none of these foreign inventors who are patenting under U.S. law are the indigenous originators of the patented item, but rather Western-aligned groups and individuals who display the same disregard for and/or ignorance about indigenous peoples as so-called inventors originating from within the U.S. do. An analysis that overlooks the effects of and motivations for these kinds of collaboration is incomplete. And, obviously, indigenous peoples have not in the past, and are unlikely in the future, to be impressed by equal opportunity disregard for indigenous law.

The last important illustrative problem to be considered here is the fact that, according to Section 102, prior art from a foreign country is to be recognized.[332] "Foreign country" in Section 102

328. *Id.*
329. *Id.* at 703.
330. *Id.* at 718.
331. *Id.* at 728 n.189.
332. 35 U.S.C. §102(b) (1994).

clearly refers to the nation-state, not the legalized half-life in which indigenous peoples currently find themselves within and outside the Unites States as a result of the Marshall Trilogy and its progeny. Indeed, the lesser-developed nation-states, within which many indigenous peoples find themselves today, have frequently "equalized"[333] their economies with those of more Westernized countries at the expense of their indigenous populations.[334]

This state of affairs naturally has important ramifications for the proposed solutions, including Bagley's, for indigenous peoples via suggested reforms of prior art requirements in U.S. patent law. Indeed, a critic of Professor Bagley's approach, Professor Craig Nard at Case Western Reserve University, who is also a lecturer at the World Intellectual Property Organization's Academy at the University of Torino in Italy, epitomizes what is wrong with nation-states, their representatives, and advocates making such proposals in the absence of meaningful participation by indigenous peoples. Nard defends the geographical limitation, asserts that it facilitates the greatest development and dissemination of products for the majority of potential beneficiaries, profits should be shared with host nation-states and "keepers of the traditional knowledge," and that traditional knowledge is otherwise "underutilized."[335] His response reeks of the kind of recitation of rote learning about indigenous peoples that passes uncritically from one American generation to the next that Stannard criticized in his book *American Holocaust: Columbus and the Conquest of the New World*,[336] and indeed Bagley has criticized.[337] The idea that less developed nation-states would willingly or fairly share the benefits of traditional knowledge with the actual creators of that knowledge is highly implausible. The U.S. has never done that with the indigenous peoples within its borders, so why would lesser-developed countries? Indeed, it is the U.S. that seeks to impose its own style of patent law upon the rest of the world.

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333. "Equalized" simply means that they have adopted laws and/or signed international treaties, such as TRIPS, to jumpstart their economies into looking ostensibly as much like the economy of the United States today as possible without being allowed to adopt the protectionist laws that United States has historically done freely and still continues to do, whenever necessary, to bolster its economic development.

334. Fecteau, *supra* note 123, at 81.

335. Craig Allen Nard, Correspondence, *In Defense Of Geographic Disparity*, 88 MINN. L. REV. 222, 224–29 (2003).

336. STANNARD, *supra* note 237, at 49.

337. *See generally* Margo A. Bagley, Correspondence, *Still Patently Unconstitutional: A Reply to Professor Nard*, 88 MINN. L. REV. 239 (2003).

It begs the question of why indigenous peoples should be sharing the benefits with the enclosing nation-state at all. Of course, Nard never asks this question, although it is an extremely important one that undergirds the entire debate on bio-piracy and the proposed "sharing" of traditional knowledge with Westerners. Another pertinent question arising from Professor Nard's piece is exactly to whose underutilization does he refer when he states that traditional knowledge is "underutilized?" In addition, exactly how is traditional knowledge being underutilized? Nard's statement about the "underutilization" of traditional knowledge implicitly rests on the presumption that traditional knowledge is not *really* being used unless Westerners, mostly whites, are using it, even if that westernized use is basically identical to indigenous use, as it so frequently is.

This is the same kind of presumption upon which the ayahuasca and even the naturally-colored cotton controversies rested. The indigenous peoples of the Amazon were not *really* using ayahuasca; Loren Miller was. The indigenous peoples of Peru were not *really* using naturally-colored cotton; Sally Fox was. The indigenous peoples of Mexico were not *really* using the Enola bean; Hugo Proctor was. The indigenous peoples of the U.S. were not *really* using their land; white settler populations are. The list goes on and on.

Furthermore, Nard doubts Bagley's suggestion that pharmaceutical firms "can still deliver new drugs based on traditional knowledge" as long as the drugs are novel and nonobvious.[338] He states that "[t]hough the assumed rationale for the geographic limitation may be anachronistic, doing away with it (and therefore the prospect of patent rights) would obstruct wealth creation."[339] This begs the question of to whose "wealth creation" are we referring? Nard attempts to conflate indigenous and Western wealth creation by arguing that benefit sharing as well as "private ordering" and the pharmaceutical industry will suffer without a geographical limitation because "traditional knowledge will not be optimally commercialized."[340] Yet, this conveniently assumes that it is only the pharmaceutical industry that can bring traditional knowledge to the non-indigenous world. Why? Is it because indigenous peoples and their economic systems are dead, near-dead, or should be? Of course,

338. Nard, *supra* note 335, at 229 (quoting Margo A. Bagley, *Patently Unconstitutional: The Geographic Limitation on Prior Art in a Small World*, 87 MINN. L. REV. 679, 719 (2003)).

339. *Id.*

340. *Id.* at 230–31.

Professor Nard and most commentators would not openly say this, but their arguments often rest on this assumption.

The Native Cotton Project managed to carve out a niche market outside of the U.S., but this was in the face of enormous odds against it, much of that coming from the developing nation that enclosed the indigenous peoples who developed the cotton in the first place. Nard does not even address the possibility that a developing nation might not have the interests of its indigenous peoples at heart, even as he acknowledges that indigenous peoples should be compensated for commercial exploitation of their knowledge, safeguards against bio-piracy should be developed, and mutual consent procedures developed.[341] Exactly how is that to be accomplished if indigenous peoples are surrounded by and subordinated to a nation-state that is hostile to their interests at worst and frequently indifferent to them at best? This is not to say that benefiting indigenous peoples and the non-indigenous are mutually exclusive. It is to say that the marginalization of indigenous peoples, their laws, and traditional economies is not required, as Nard implicitly assumes, nor the provision of inducements for Western pharmaceutical companies to commercialize the fruits of traditional knowledge, as Nard explicitly states.[342] A jettisoning of the colonial mindset is imperative. Candid discussion of what that might entail is necessary.

> Current proposals that offer Indigenous peoples benefit sharing arrangements simply coerce Indigenous peoples into participation in the economic exploitation of their knowledge and resources without realizing the legal implications in doing so. No nation should be forced to market their cultural patrimony, yet that is precisely what current discussions suggest with regard to Indigenous peoples.[343]

Finally, indigenous peoples should be able to retain their right to *not* commercialize traditional knowledge at all, if they so choose.[344]

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341. *Id.* at 231.

342. *Id.* at 226.

343. Collective Statement of Indigenous Peoples on the Protection of Indigenous Knowledge, Agenda to the UN Permanent Forum on Indigenous Issues (New York) (May 10–21, 2004), *available at* http://ww.ipcb.org/resolutions/htmls/pf2004.html.

344. Nard, *supra* note 335, at 245.

IV. CONVERGING SOLUTIONS?

A. Institutional and Attitudinal Conundrums

The overriding problem here is that neither the PTO, nor any other permanent Western intellectual property organization, has adequately recognized the well-developed and often elaborate customary laws and rules that indigenous peoples have long had in place with regard to their own knowledge. In a recent, pivotal report, the multinational Commission on Intellectual Property Rights ("CIPR") concluded that the customary laws of indigenous peoples relating to indigenous knowledge should be respected and, if possible, recognized more widely.[345] While not elaborating on exactly why such recognition might be impossible, one can infer from the CIPR's accompanying acknowledgement that nation-state recognition of indigenous customary laws would raise issues beyond the scope of its report,[346] that those larger issues are what really are behind nation-state resistance to this most obvious solution to the problem.

The CIPR, although appointed by the British Government, was specifically established as a multinational group of individuals with a variety of viewpoints[347] to conduct its work in as objective a manner as possible and come to practical, balanced solutions.[348] Included among its tasks was the consideration of how international rules and agreements might be improved and developed in the area of traditional knowledge.[349] The eight-chapter Report devoted one chapter to the subject.

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345. CIPR, *supra* note 108, at 80.

346. *Id.*

347. CIPR, *supra* note 108. The Commissioners included Professor John Barton (Commission Chair) and George E. Osborne Professor of Law at Stanford University; Mr. Daniel Alexander, a London barrister specializing in intellectual property law; Professor Carlos Correa, Director of the Masters Programme on Science and Technology Policy and Management at the University of Buenos Aires; Dr. Ramesh Mashelkar FRS, Director General of the Indian Council of Scientific and Industrial Research and Secretary to the department of Scientific and Industrial Research of Delhi, India; Dr. Gill Samuels CBE, Senior Director of Science Policy and Scientific Affairs (Europe) at Pfizer Ltd, in Sandwich, UK; and Dr. Sandy Thomas, Director of Nuffield Council on Bioethics in London.

348. *Id.* at i–ii.

349. The Report's Preface states the Commission's tasks as to consider: how national IPR regimes could best be designed to benefit developing countries within the context of international agreements, including TRIPS; how the international framework of rules and agreements might be improved and developed—for instance in the area of traditional knowledge—and the relationship between IPR rules and regimes covering access to genetic resources; the broader policy framework needed to complement intellectual property regimes

The Report concluded that the customary laws relating to traditional knowledge should be respected, if possible, and recognized more widely.[350] In contrast to the CIPR, other more permanent international organizations concerned with intellectual property issues often exhibit a decided preference, even insistence, that Western intellectual property laws currently provide sufficient protection for indigenous, or traditional knowledge.[351] This is hardly surprising since organizations, such as the World Intellectual Property Organization ("WIPO") and the World Trade Organization ("WTO"), are creations of and legal servants to their nation-state members. However, these same organizations continually portray themselves as being appropriate, neutral arbiters in the entire debate over intellectual property law,[352] including the place of traditional knowledge.

Within the U.S., revival of the moral utility requirement must include indigenous peoples in a meaningful way, together with public discussion on the advisability of allowing the patenting of animals and plants. A Congressional ban, or at least an indefinite moratorium, on such patents during public debates is necessary, even critical.

The history of the biotechnology industry in this country, the industry's dominance of the media, and the resulting mischaracterization of *Diamond v. Chakrabarty*, and biotechnology critics in the literature, while patent after patent on genetically modified living organisms has been granted, demonstrate how dependent the industry is on public ignorance of existing criticisms that emanate from indigenous and Western sources, creating an *appearance* of the inevitability of genetic engineering within the context of patenting life forms. This, in turn, has obscured the fact

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including, for instance, controlling anti-competitive practices through competition policy and law. *Id.* at i.

350. *Id.* at 8.

351. *See, e.g.*, International Chamber of Commerce Discussion Paper, *Protecting Traditional Knowledge*, *at* http://www.iccwbo.org/home/statements_rules/statements/2001/protecting%20traditional%20knowledge.asp (last visited Nov. 26, 2004) ("ICC also believes it essential that any new system for protecting traditional knowledge be compatible with existing intellectual property rights, in particular patents."). See also Carlos M. Correa & Sisule F. Musungu, *The WIPO Patent Agenda: The Risks for Developing Countries* (Nov. 2002), *at* http://www.southcentre.org/publications/wipopatent/toc.htm for a discussion of the effects of enormous pressure brought to bear on developing countries (in which many indigenous peoples reside) to adopt intellectual property regimes that conform to those in developed countries.

352. Bell, *supra* note 286; *see also* Martin Khor, *Indigenous People Criticise WIPO Approach*, Third World Network, *at* http://www.twnside.org.sg/title/wipo2-cn.htm (last visited Nov. 26, 2004). Finally, note that the USPTO and WIPO have recently agreed to work together to develop common policy objectives when it comes to protecting traditional knowledge and folklore.

that we already have working sustainable development models from which to draw viable alternatives in both the indigenous and non-indigenous spheres that we as a country have been actively discouraging, and even oppressing, using outmoded laws.

The argument that biotechnology is the only answer to worldwide poverty, world health problems, and environmental pollution is also an attempt to build a false and misleading bootstrap argument. For example, the overwhelming majority of significant medical breakthroughs in humankind's history have all occurred without either genetic engineering or patents on living organisms. In contrast, in spite of the tremendous impetus of spurious, but lucrative patents there have been no medical breakthroughs emanating from the furious pace of genetic engineering. There have, however, been a lot of public statements about what genetic engineering *might* be able to do and possibly *could* do with no acknowledgement of just how far away and speculative such claims are. A ban on such patents will not end research; it will, however, stimulate a debate on whether such research is best performed by the public sector under strict regulations that do not jeopardize small farms, the environment, and indigenous peoples.

Congressional legislation that discourages the commercial use and patenting of genetically engineered plants and animals would simultaneously give the PTO the clear direction it needs when confronted with such patent applications. A legislative ban on patenting of genetically-engineered and other living organisms would also do a great deal to alleviate the crushing governmental policies that have already been brought to bear on indigenous peoples and their economic systems. Congress should, however, go even further than a mere ban by affirmatively providing the infrastructure and other support that indigenous systems, at least within the U.S., need to thrive. Such affirmative action would simultaneously spill over into non-indigenous sustainable systems, creating a beneficial model in which distinctly different but parallel Western and indigenous systems can co-exist and thrive rather than the former being dependent on exploiting and suppressing the latter.

Patent law, without a viable moral utility requirement that conscientiously includes the voices of indigenous peoples, unnecessarily and counterproductively reflects and facilitates,

> acts of genocide [that] are most easily concealed in a world atmosphere of complicitous silence; [where] a people is extinguished with a whimper, not a bang. An equal voice would certainly not necessarily guarantee the continued protection and

> preservation of the centuries-old visions of tribal peoples. Denying that voice, however, would most assuredly assist the efforts of those in power who seek the silent liquidation of colonized tribal peoples.[353]

B. Proposed Solutions for Indigenous Peoples

The above quotation was made in the context of indigenous peoples struggles at the international level. However, the U.S. has some important, and extensive, unfinished business with respect to the indigenous peoples within its own borders. While, as Lâm notes, settlers within the U.S. continue to cling to their self-conferred legitimacy via the "vast compendium of the laws of dispossession . . . known . . . as 'Federal Indian Law'[354] . . . [which are characterized by] 'the willingness of the Supreme Court to supply whatever justification is needed for the actions of Congress [vis-à-vis Indians],'"[355] there really is no justification for this kind of oppressive relationship to continue into the 21st century.

As a beginning, Congress should pass legislation rescinding Title 25 U.S.C. § 17, which declared in 1871 that Indian tribes were not sovereign nations with whom the U.S. could make any additional treaties. However, rescinding § 17 without a conscious jettisoning of the bullying that has characterized federal and state relations with Indian tribes would be useless and perhaps even counterproductive. With a candid, well-publicized evaluation of its past and present relations with Indian tribes, U.S. policy could be much less tainted by and dependent upon maintaining laws designed to buttress the U.S. as a 21st century colonial power within the Americas.

The federal government should also institute a "Marshall Plan" to provide Indian tribes with the infrastructure and contracts it needs to rebuild their economies in the manner they deem most appropriate. Congress should pass legislation designed to implement such a policy, with an emphasis on indigenous models of economic development, rather than try to impose Western economic models that may be neither welcome nor advisable for Indian tribes. Congress should

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353. MAIVÂN CLECH LÂM, AT THE EDGE OF THE STATE: INDIGENOUS PEOPLES AND SELF-DETERMINATION 201–02 (Transitional Publishers, Inc. 2000) (internal citations and quotations omitted).

354. *Id.* at 15 (quoting DAVID H. GETCHES ET AL., CASES AND MATERIALS ON FEDERAL INDIAN LAW (4th ed. 1998)).

355. *Id.* at 16 (quoting Milner S. Ball, *Constitution, Court, Indian Tribes*, 1987 AM. B. FOUND. RES. J. 1 (1987)).

simultaneously promulgate legislation that encourages existing sustainable development models in the non-Indian sector.

Finally, it should be noted that, at the direction of Congress, the PTO has recently announced a "21st Century Strategic Plan" to improve itself.[356] Indigenous peoples should not be forgotten as the PTO moves forward with these efforts. They should be included in this process at the PTO as well as at higher levels. The rest of the American public needs to be involved in a meaningful way. Yes, this will probably be a messy, difficult process. Democracy and morality tend to be that way.

Recent events in corporate America are telling. The elderly in this country are pitted against giant pharmaceutical companies that seek to extend their patents on medications with attempts to block inexpensive generic drugs. The same sordid story has already been repeated in Africa, ravaged by the AIDS virus, and unable to afford the expensive drugs peddled by multinationals. At a broader level, public confidence in the integrity of American business is suffering, as the stock market plummets in the face of increasing evidence of widespread corporate and financial corruption in the wake of the Enron scandal. The chickens are coming home to roost. It is past time at least to begin the long journey of ending the duplicitous perpetuation of de facto colonial policies within the laws of the U.S. It is past time to return integrity to patent law.

356. Charles P. Baker, *Recent Developments Lead to Section Activities*, 6 A.B.A. SEC. OF INTELL. PROP. L. 1 (July 2002).