



Article

Traditional Agriculture, Biopiracy and Indigenous Rights

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Received: / Accepted: / Published:

Abstract: This paper addresses the legal and policy implications related to agricultural plant biopiracy and indigenous rights in light of the global governance of innovation. The first section of the paper addresses patent laws in the United States and how they apply to agricultural plants and intellectual property rights. The second section of this paper addresses international laws, agreements and conventions in light of indigenous rights and patrimony of plants. There is a balance that needs to be struck between allowing justified protection of valid intellectual property rights, with protection of indigenous rights, collective rights and patrimony of plant genetic material.

Keywords: biopiracy, patents, intellectual property, indigenous rights, agriculture, patrimony, genetics, plants, law.

1. Introduction

Cultures around the world today are very much connected and influenced by local, regional, national and global actions. There are no truly pristine landscapes or untouched cultures. Despite globalization and the migration of people all around the world, local, indigenous cultures exist, albeit with changes across time.

Much like the colonizers and explorers from the 15th Century onward, outsiders are still exploring and exploiting other cultures. Today, however, these outsiders proceed not on behalf of a monarch or church, but rather on behalf of corporate monetary interests. The kings and queens of the past who funded the search for trade routes, gold and other goods, have been supplanted by the global corporation.

While past attitudes toward native peoples were often based on notions of evolutionary superiority, which have been debunked, corporate exploiters still seek to exploit the resources as well as the knowledge of indigenous peoples. The term “indigenous” and the related identification of people considered to be indigenous can vary depending on context. For the purposes of this article, the term “indigenous people” refers to people living in local communities that maintain somewhat traditional lifestyles.

This paper addresses the legal and policy implications related to agricultural plant biopiracy and indigenous rights in light of the global governance of innovation. “Biopiracy’ is the term most commonly used when multinational corporations profit from the medicinal and agricultural uses of plants known to indigenous or native societies and fail to compensate those communities” (Dwyer 2008:221). The first section of the paper addresses the laws that apply to agricultural plants and intellectual property. Indigenous rights are also addressed since globalization of agriculture and trade has unique effects on indigenous people and their culture.

The second section of this paper provides an understanding of traditional knowledge systems. This discussion provides a basis for describing how traditional indigenous knowledge is cultural and imbedded in the concept of community, rather than individual rights or exploitation.

2. Results and Discussion

2.1. History of Patent Law in the United States

Until the last century, plant genetic resources were considered to be common heritage (Brush 2005). “Common heritage refers to the treatment of genetic resources as belonging to the public domain and not owned or otherwise monopolized by a single group or interest” (Brush 2005: 64). The

history of patent law in the Americas, however, demonstrates the evolution of the concept of private property rights as applied to living organisms such as plants. Patents essentially grant the patent-holder exclusive rights over their new invention for a limited period of time, often twenty years depending on the applicable law.

The question of what is eligible for a patent has been litigated in the United States for over one hundred and sixty years. In 1852, the Supreme Court held that “no one can appropriate ... exclusively to himself under the patent laws,” a “principle,” a “fundamental truth,” or “natural agenc[y]” because such monopolies “discourage arts and manufactures.” *Le Roy v. Tatham*, 55 U.S. 156, 174-175 (1852). “The Court has long held that this provision contains an important implicit exception. “[L]aws of nature, natural phenomena and abstract ideas are not patentable.” *Mayo Collaborative Services v. Prometheus Laboratories, Inc.* 566 U.S. ____ (2012), slip op. at 1 (quoting *Diamond v. Diehr*, 450 U.S. 175, 185 (1981); and citing *Bilski v. Kappos*, 561 U.S. ____, slip op. at 5; *Diamond v. Chakrabarty*, 447 U.S. 303, 309 (1980); *Le Roy v. Tatham*, 14 How. 156, 175 (1853); *O’Reilly v. Morse*, 15 How. 62, 112-120 (1854); cf. *Neilson v. Harford*, Webster’s Patent Cases 295, 371 (1841)(English case discussing same)).

In the United States, the present Patent Act, referred to as the “utility Patent Act” states:

Whoever invents or discovers any new and useful process, machine, manufacture, or **composition of matter**, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

35 U.S.C. § 101(emphasis added). This language is essentially the same as that drafted by Thomas Jefferson, with the exception that the word “process” was inserted in place of the original word “art.” However, there was apparently some ambiguity as to whether patents could apply to living organisms such as plants, animals or bacteria. The question of whether biological matter or living organisms are subject to patenting revolves around the words “manufacture” or “composition of matter” contained in the statute. Notwithstanding the fact that the term “composition of matter” is susceptible to broad interpretation, Congress later passed legislation specifically directed at providing exclusive rights to certain plants bred by human intervention. See 35 U.S.C. §161-164 (1952); 7 U.S.C.A. §2321 et seq.

(1970). Thus, in the United States, plants can obtain exclusive patent protection if the requirements of the statute are met under either the Plant Protection Act or the Plant Variety Protection Act. Thus there are three statutes at play when seeking a patent for a plant, each with distinctions in the requirements that has led to litigation over the interpretation of the statutes in an attempt to find a more lenient standard of patent protection, since the applicant need only meet the requirements of one statute.

The question of whether a living organism could be patented arose in *Diamond v. Chakrabarty*, 447 U.S. 303 (1980), in a case questioning the applicability of the utility Patent Act, rather than the Plant Patent Acts just discussed since the patent did not involve a plant. In *Diamond*, the issue was over the patenting of a genetically-engineered live bacterium capable of breaking down crude oil. The Supreme Court agreed in a plurality opinion. *Diamond, supra*. The Court held that in determining whether a living organism is eligible for a patent involves the distinction “between products of nature, whether living or not, and human-made inventions.” *Diamond*, 447 U.S. at 313. The Court held that the patent was valid.

While not directly at issue in the case, the existence of the two Plant Patent Acts was discussed by Justices Brennan, White, Marshall and Powell, who dissented in *Diamond*, noting “[t]he patent laws attempt to reconcile this Nation’s deep seated antipathy to monopolies with the need to encourage progress.” 447 U.S. at 319. The dissent argued that the Plant Patent Act and Plant Variety Protection Act are evidence of Congress’ belief that living organisms are excluded from utility Patent Act, but that plants patents are allowed under those two specific statutes, rather than the utility Patent Act. In addition, the dissent stated that “the composition sought to be patented uniquely implicates matters of public concern.” 447 U.S. at 322. Thus the interpretation of the utility Patent Act was not unanimous and implicated competing principles of statutory interpretation and public policy. This split opinion demonstrates the importance of the composition of the United States Supreme Court when it comes to matter of important public policy that can affect millions of people.

Twenty-one years after the *Diamond* decision, the issue of whether plants are included in the utility Patent Act was directly raised in *J.E.M. Ag Supply, Inc. v. Pioneer Hi-Bred Int’l, Inc.*, 534 U.S. 124 (2001). In *J.E.M. Ag Supply*, the issue was over patented hybrid corn seeds sold under a limited

license agreement that seeds could not be used for seed stock or use in production of new hybrids. The majority of the Court, in an opinion written by Justice Thomas, held that newly developed plant breeds fall within the subject matter of § 101 of the Patent Act – “composition of matter.” Thus patents were available for plant varieties, despite the fact that plants are manifestations of nature. Despite the fact that Congress had passed two acts specifically providing for patent protection of plants, the Supreme Court, in a split decision, determined that plants could be patented under the utility Patent Act, which provides different criteria for obtaining a patent, which apparently provides more leniency to the applicant.

The question over whether patents involving laws of nature are valid is still at issue, with questions of public policy and the collective good still being debated. Earlier this year, the Supreme Court, in *Mayo Collaborative Services v. Prometheus Laboratories, Inc.* 566 U.S. ____ (2012), issued a ruling in a case involving a patent for a medical test. In *Mayo*, the public interest was implicated since the patent directly impacted and limited medical testing for patients. The Court held that the disputed medical claim was not patentable since “the steps in the claimed process (apart from the natural laws themselves) involve well-understood, routine, conventional activity engaged in by researchers in the field.” Slip op. at 4. Granting and enforcing exclusive patents rights to testing and treatments of ill people is contrary to the public interest and discovering a law of nature and applying it does not deserve monopoly protection. The Court ruled against the patent that was contrary to the public interest and was also directly related to a law of nature.

The same could be said for applying the laws of nature via genetic recombination of plants, which occurs in nature, especially when applied to food sources needed to feed six billion people. The sexual reproduction of plants is simply applying the laws of nature. The humans provide the necessary plant material to combine with another plant and nature does the rest. While injecting non-plant material, similar to the substance inserted in the bacterium in *Chakrabarty*, may meet the “human-made” criteria, combining plant genes is simply following a law of nature, which plants have done for millions of years, leading to great diversity. This is especially true in light of thousands of years of

domestication and natural selection of common agricultural plants such as corn, rice, wheat, and soybeans.

2.2. International Agriculture and Indigenous Rights

With the globalization and westernization of much of the world, the intellectual property rights of indigenous people have become a significant issue. Various international conventions and resolutions provide for patent protection of plant varieties, including the International Convention for the Protection of New Varieties of Plants (1961, as rev. 1972, 1978 and 1991), the International Undertaking on Plant Genetic Resources for Food and Agriculture (1983), the Food and Agriculture Organization (FAO) Resolution 5/89, the 1994 Trade Related Aspects of Intellectual Property (TRIPS), and the 2001 International Treaty on Plant Genetic Resources for Food and Agriculture (ITPGR). In addition, in 1992, the Convention on Biological Diversity (CBD) was adopted at the United Nations Conference on Environment and Development in Rio de Janeiro, Brazil. This convention was aimed at conserving biodiversity through economic incentives. While this Convention was not specifically directed at food and agriculture, all plants were included. This Convention acknowledged intellectual property rights and also contained the idea of national sovereignty over plants and animals – patrimony -- as a basis for informed consent and benefit sharing. Thus the CBD established the notion that plant genetic resources are the property of nations.

The Convention on Biological Diversity considers plant genetic resources to be tradable commodities subject to national sovereignty rights (Aoki 2009). This Convention is considered to be a powerful tool that can be used to enforce the rights of indigenous people, since it “recognizes the intimate relationship between preservation of biodiversity and the protection of the traditional knowledge of indigenous populations”(Powell and Chavarro 2008:145).

While there are a number of international documents providing for the protection of intellectual property, the issue is whether the protection is given to the first to obtain a patent versus the traditional people who have historic knowledge and use of the plant yet did not seek a patent. Notably, the Andean Genetic Resources Committee (AGRC) was established by Andean countries to establish a

coherent regional strategy regarding the use of genetic resources and to ensure equitable benefit-sharing for their countries' populations. The AGRC promotes the protection of traditional knowledge, in compliance with Andean Community Decision 391, which seeks to:

- a) Establish the conditions for just and equitable participation in the benefits of the access;
- b) Lay the foundations for the recognition and valuation of the genetic resources and their by-products and of their associated intangible components, especially when native, Afro-American or local communities are involved;
- c) Promote conservation of the biological diversity and the sustainable use of the biological resources that contain genetic resources;
- d) Promote the consolidation and development of scientific, technological and technical capacities at the local, national and sub-regional levels; and
- e) Strengthen the negotiating capacity of the Member Countries. n231

Peru has created the National Commission for the Protection of Access to Peruvian Biological Diversity and to the Collective Knowledge of the Indigenous Peoples (National Anti-Biopiracy Commission), which has the task of identifying and investigating patent applications derived from Peruvian biological resources (Dwyer 2008). Thus there are efforts to establish plant patrimony against outsiders who have the sophistication and wherewithal to obtain patents on plant genetic material origination in other nations.

The United Nations created a group called the Working Group on Indigenous Populations, which drafted a Declaration on Discrimination Against Indigenous Peoples in 1994. This document was never formally adopted by the membership of the United Nations. Notably, Article 4 of this declaration acknowledges the right of indigenous peoples:

To maintain their distinct political, social and cultural characteristics while retaining the right to participate fully, if they choose to, in the political, legal life of the State.

While this document has not been adopted, it contains recognition that there is a cultural divide between Western culture and traditional or indigenous cultures and systems of governance. Since advances in shipping transportation over 500 years ago leading to the “discovery” of the New World, there has been a confrontation between explorers, exploiters, colonists and indigenous peoples. This confrontation has a deep history of death and destruction of native populations and their cultural

systems. With the globalization of almost all markets today, there still exist unequal balances of power in negotiating and surviving modern assaults. Not only have traditional systems been disrupted, but they continue to be exploited for “new” ideas in the rush to be the first to patent or capture market share of new products.

As a result of these modern developments, a concept known as biopiracy has developed wherein natural, native products are obtained by and exploited by outsiders. This exploitation can involve obtaining patents on products that were discovered by traditional people thousands of years ago, yet patent inspectors granted patent applications anyway.

For example, a United States citizen sought and received a patent for ayahuasca, which is a plant with pharmacologic effects used by Amazonians for centuries. Amazonian leaders successfully got the patent invalidated on the basis that the plant variety was not novel (Jin 2011). Ayahuasca is well-known throughout South America yet the Patent Office granted a patent, requiring traditional peoples to affirmatively take action to invalidate the patent. Not only did this process place the burden of invalidation on indigenous people, but it implicated international relations and recurring cultural offense upon native people who have been subject to indignities since colonial times. The fact that this patent was granted demonstrates that the patenting process for plants is fraught with error. Had this been a lone example, such a claim may not be made; however, this is not the only time a plant with a deep history of traditional use has been patented. Thus traditional culture and collective property rights are important in understanding the present conflict between patent law and plant genetic resources.

The patenting of plants also implicates international trade relations. An example of the devastating trade effects an ill-gained patent can have on trade is exemplified by the enola bean. A U.S. citizen traveled to Mexico and brought back some yellow beans and later applied for a patent, which he obtained. This patent-holder brought infringement actions and threats of actions against Mexican yellow bean importers, creating a ripple-effect in all Mexican bean imports (Sundaram 2005). While the patent was ultimately invalidated, the trade loss occurred in the interim, demonstrating the adverse market effects plant patents can have on the stability of trade relations.

Humans first domesticated plants thousands of years ago, in many separate locales with many different plants. For example, in North America, 5000 years ago pepo squash (*curcubita pepo* var. *ovifera*) was domesticated (Smith and Yarnell 2009). Peru is also a center of independent domestication of plants. While many Americans may think of peanuts as being native to the Southern United States, potatoes as native to Ireland or tomatoes as being native to Italy, they in fact are native to Peru. Thus humans have been manipulating seeds, domesticating plants and causing morphological and genetic changes for thousands of years across the globe. The exchange of seeds has thus occurred without notions of intellectual property rights for thousands of years (Brush 2005). In fact colonial explorers brought back seeds and plants to Europe, which were cultivated and exchanged across the world without providing any monetary remuneration to the people who domesticated these plants.

Peru has a large diversity of plants amounting to about 10% of the total plant species in the world. Peru's diverse floral regime includes: about 25,000 species, 128 domesticated plants, and 4,400 native species with known uses ranging from medicinal to cosmetic (Powell and Chavarro 2008). One province in the Peruvian Andes has more potato diversity than the entire North American continent (Brush 2005). Due to this wide diversity of plants as well as large number of plants useful in human culture, bioprospecting and biopiracy may be present in Peru.

Peru has already faced biopiracy problems, including issues with the camu camu (*Myrciaria dubia*) plant, which was being exported to Japan for medicinal purposes (Powell and Chavarro 2008). Peru has taken action to protect its biological resources directed at disclosure of origins. Together with Brazil and India, Peru has proposed an amendment to the WTO TRIPS Agreement that would require disclosure of the source of the genetic materials, such as plants and traditional knowledge, on the patent application (Powell and Chavarro 2008). This proposal, however, has not been adopted and plant patents continue to be granted without disclosure of the origin of the plant genetic material.

Are the originators of the domesticated species being protected or are the first to obtain a patent protected? If the law is about truth and justice, then requiring disclosure of the origin of the plant genetic material does not seem like a lot to ask, yet there is resistance to this requirement. Given the fact that Peru has such vast natural plant resources and also given its unique and deep history of

agricultural innovation with plants, Peru is justified in asking that the whole truth be provided in patent applications.

3. Conclusions

Indigenous Peruvian peoples were the original creators of many domesticated food products, including potatoes, yams, peanuts, tomatoes and quinoa. Notwithstanding these incredibly significant events that altered mankind and society, not only are indigenous people not getting credit or payment for these discoveries, but others are profiting from their endeavors through the patent system and insistence on adopting intellectual property rights via treaties that benefit multinational corporations with the money, lawyers and knowledge to race to the patent office to gain a monopoly on plant resources.

The culture and worldview of indigenous people is different from that of western corporate representatives, government officials and crafty patent lawyers. The intellectual property rights playing field is an uneven one and indigenous rights need to be addressed and protected. Biopiracy is simply another form of colonial domination that should be outlawed and prosecuted. Requiring that the origin of the plant genetic material be disclosed in patent applications is a step in the right direction.

Conflict of Interest

The author declares no conflict of interest.

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