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CARVING PROPERTY RIGHTS OUT OF THE PUBLIC DOMAIN TO CONSERVE BIODIVERSITY¹



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"And will anyone say he had no right to those acorns or apples he thus appropriated because he had not the consent of all mankind to make them his? Was it a robbery thus to assume to himself what belonged to all in common?" Locke, The Second Treatise of Government, ¶28 (1690)

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Let us begin with the proposition that the public domain consists of that which is not subject to a property right. How are the boundaries between private property and public domain defined? As an attorney, my answer, predictably, is that the boundaries are determined by legal rules established by **constitution**, statute, regulation, and the common law developed by courts. The field of jurisprudence informs us that these legal rules derive from several sources, including commercial practices, ethical standards, and the desire for equity or justice. When a new practice or new ethical standards evolve, as is the case with biodiversity prospecting, the law may have to evolve too, to set the boundaries where they belong.

Where should boundaries be drawn to distinguish property

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rights **affecting** biodiversity from the public domain? I will try to answer this question by referring to three kinds of property rights that can be asserted over biological resources in the context of "biodiversity **prospecting**."

Biodiversity prospecting may be defined to include a wide range of activities, ranging from traditional activities most likely to take place in developing countries in the tropics where the species diversity is highest, to sophisticated techniques most likely in the developed countries with advanced biotechnology capacity. The activities may include: identifying a plant, animal, or microbe species; characterizing its biological properties; screening for biological activity; extracting genetic material and other components; purifying microbes, genes and specific chemicals having biological activity; using the genes to genetically alter other species for agricultural purposes; and using the products in pharmaceutical or industrial applications. Which of these activities are in the public domain? Which are subject to property rights?

For the first example, **let's** take the law of trade secrets. Trade secrecy protects confidential information that gives the owner a competitive advantage over those who do not know it. Secrecy is usually evidenced by affirmative efforts to establish, define, and protect the information as a secret. Information can be a trade secret, then, if it (1) is secret, (2) conveys an

advantage over competitors, and **(3)** is subject to efforts to keep it secret. If information becomes public, conveys no advantage, or is not subject to any efforts to maintain its secrecy, it becomes part of the public domain.

Consider a traditional healer in a tropical country who knows the identity of a medicinal plant, methods for extracting the medicinal component, and methods of use. Is the knowledge a trade secret? There appears to be competitive advantage in knowing a medicinal treatment, so if the methods are secret and subject to efforts to maintain **secrecy**, the answer should be yes. Is the plant itself subject to trade secrecy? **No**, it remains in the public domain, where anyone else can do with it what they will. And if the methods are publicly disclosed, they go into the public **domain**.

Consider now a pharmaceutical company that knows a **technique** for screening the **healer's** plant extracts for an ability to combat the AIDS virus. **Again**, if the information is secret and subject to efforts to maintain secrecy, it can be protected as a trade secret. If the technique is publicly disclosed, it becomes part of the public domain, and anyone can use it.

Two points can be made. First, the scope of new information that can be subjected to trade secrets is so broad as to encompass both the traditional knowledge of a shaman and sophisticated

biotechnology. Second, **however**, one can see that the boundary between a trade secret and the public domain is **difficult** to draw. Disputes about theft of trade secrets typically turn on the extent of the efforts to maintain **secrecy**, and the extent of public disclosure.

For **example**, where an extractive technique is handed down from generation to generation of medicine men, the applicability of trade secret protection may depend on whether others in the tribal society know the technique, and whether others outside the tribe know it.

In the highly regulated pharmaceutical industry, secrets may also go into the public domain as a result of regulations requiring disclosure to the government. In the United States, the Supreme Court has held that disclosure by the government of a trade secret is a taking of property, subject to just compensation under the Fifth Amendment to the Constitution. **Ruckelshaus v. Monsanto Co.**, 467 U.S. 986 (1984). Nonetheless, the barrier between trade secrets and the public domain must be characterized as "leaky."

My second example is patents on purified **biochemicals**. The scope of a patent is defined by its claims, which must distinguish the invention from the prior art and the public domain. The claims thus define the boundary between the invention and the public domain. Consider once again the shaman and the medicinal plant.

The plant itself is not subject to patent protection because it is a "product existing in **nature**." The same is generally true for raw **extracts**. In contrast, a purified drug isolated from the plant by a pharmaceutical company may be patented, however, in many countries. A genetically engineered drug based on a gene from the medicinal plant can also be patented, at least in the United **States**. And a new method of using the plant can be the subject of patent protection.

How is it that the plant and extract are unpatentable products of nature, while the purified drug, the **recombinant** drug, and the method of use are patentable inventions? **Doesn't** this dichotomy serve the interests of the biotechnologists at the expense of the shaman? Is there an imbalance which will undercut the ability of the stewards of tropical biodiversity to profit from conserving their ecosystems. I **don't** think so.

First, a purified chemical is not a product existing in **nature**, because in its natural state the chemical is associated with countless biological substances, **cytoplasmic** "goo," and other impurities. A patent claim to a purified drug is generally drawn in terms of the absence of impurities and the enhanced effectiveness of the drug in the purified state. The invention lies in the "human ingenuity" and labor of purification, not in the plant. See *Diamond v. Chakrabarty*. 447 U.S. 303, 313 (1980). Thus, the plant, raw extract, and other impure forms of the drug

would fall outside the scope of the patent, in the public domain. They are still available for use and further invention without regard to the patent.

Second, the **shaman's** extract, if new, non-obvious, and effective, could also be patentable. Third, the same analysis holds for the **recombinant** drug, except here, the patent would be even narrower than the purified drug. Therefore, the drug purified from the plant would probably fall outside the scope of the patent on the recombinant drug, and would remain in the public domain. See *Scripps Clinic & Research Foundation v. Genentech, Inc.*, 18 **U.S.P.Q.2d** 1001 (Fed. Cir. 1991) (recombinant blood factor different from purified **molecule**). The raw extract, the purified drug and the recombinant drug could all compete in the marketplace. Presumably, a premium for the patented products would only be paid if they were superior to the raw product, in which case the exclusive rights provided by the patent system have achieved the ends of promoting innovation.

Fourth, while the pharmaceutical **company's** newly determined and unexpected use of the plant or extract are patentable, there is no unfairness, because the **shaman's** method of use could also be patented if it were unexpected, and had not been previously disclosed. Meanwhile, other uses of the plant would not be precluded by a claim to the new method of **use**.

Thus, the principle that patents are limited to the scope of their claims distinguishes the public domain, and allows low tech custodians of biodiversity as well as high tech biotechnology prospectors to carve property rights out of the public domain through their ingenuity and effort. Meanwhile, the unpatented products and methods remain in the public domain.

My last example is what I call sovereign rights. Roger **Sedjo** and others have suggested for several years that nations should assert sovereignty over their biological resources and "shut the greenhouse door" for anyone who does not pay an access fee and meet other requirements. The Convention on Biological Diversity signed in Rio this June by over 150 nations (but not the United States) adopts the principle that biological resources are not a public, common good, but rather that nations have sovereign rights to exploit them. Article 3.

This system of property rights is absolute, in the sense that it removes all biodiversity prospecting rights from the public domain. On the one hand, sovereign rights over biological resources can, in some countries, become draconian, corrupt, or so inefficient that no one will undertake biodiversity prospecting there. On the other hand, by wise exercise of sovereign rights, a country like Costa Rica can support institutions that balance the need for scientific and **taxonomic** study of species diversity, for income, for conservation of wilderness, and for protection of

ecosystems from overuse.

I believe that all three types of property rights are necessary to adequately define the boundaries between the public domain and property rights (whether private or **sovereign**). It is important to examine private **property**, whether intellectual property rights such as trade secrets and patents or other rights such as sovereign rights over biological resources, to see what they leave in the public domain. If we **can't** make such **distinctions**, the sources from which people can obtain material and ideas for profit, **research**, and innovation may become constrained. With such an analysis, hopefully we can balance incentives for conserving our genetic heritage with incentives for creating new and beneficial **technologies**.