

2010

Misappropriation of Shuar Traditional Knowledge (TK) and Trade Secrets: A Case Study on Biopiracy in the Amazon

Winston P. Nagan

University of Florida Levin College of Law, nagan@law.ufl.edu

Eduardo J. Mordujovich

Judit K. Otvos

Jason Taylor

Follow this and additional works at: <http://scholarship.law.ufl.edu/facultypub>



Part of the [International Law Commons](#)

Recommended Citation

Winston P. Nagan, Eduardo J. Mordujovich, Judit K. Otvos, & Jason Taylor, *Misappropriation of Shuar Traditional Knowledge (TK) and Trade Secrets: A Case Study on Biopiracy in the Amazon*, 15 *J. Tech. L. & Pol'y* 9 (2010), available at <http://scholarship.law.ufl.edu/facultypub/458>

This Article is brought to you for free and open access by the Faculty Scholarship at UF Law Scholarship Repository. It has been accepted for inclusion in Faculty Publications by an authorized administrator of UF Law Scholarship Repository. For more information, please contact outler@law.ufl.edu.

ARTICLES

MISAPPROPRIATION OF SHUAR TRADITIONAL KNOWLEDGE (TK) AND TRADE SECRETS: A CASE STUDY ON BIOPIRACY IN THE AMAZON

*Winston P. Nagan**

with

*Eduardo J. Mordujovich, Judit K. Otvos, & Jason Taylor***

I.	INTRODUCTION	10
II.	BIOPROSPECTING TURNED BIOPIRACY IN THE SHUAR NATION	15
	A. <i>The Lure of the Shuar Heritage</i>	15
	B. <i>Bioprospecting for the Ostensible Preservation of Biodiversity</i>	21
	C. <i>How the Model of Bioprospecting Works</i>	23
	D. <i>Misappropriation of Shuar TK: A Case Summary of Biopiracy</i>	26
VII.	IS TK PROPERTY?	27
	A. <i>Property in Indigenous Communities</i>	27
	B. <i>Property and Legal Theory</i>	29
	C. <i>TK as Property</i>	31
VIII.	THE NATURE OF TK AS INTELLECTUAL PROPERTY	34
	A. <i>The Rise of Intellectual Property</i>	34
	B. <i>Protecting TK and the Ideological Assumptions and Misconceptions of Contemporary Intellectual Property Law</i>	36

* Professor Winston Nagan conducted extensive research and investigation preparing for this Article. Nagan's expertise of indigenous tribes and traditional knowledge has been attained through years of personal investigation and first-hand knowledge among indigenous tribes. Accordingly, assertions and propositions within this article are supported by Nagan's firsthand knowledge through his personal exploration and examination as observer participant in the Shuar community. He is Procurador Judicial, Federación Interprovincial de Centros Shuaras (FICSH) and the Shuar Nation Corporation. He wishes to acknowledge the assistance in the field of Shaman Ricardo Tasakimp and Juan Carlos Jintiach, Former Executive director of the Amazon Alliance.

** Fellows of the Institute for Human Rights, Peace and Development at the University of Florida.

C.	<i>The Basic Anthropomorphic Foundations of Intellectual Property</i>	38
VI.	LEGAL METHODS FOR PROTECTING TK FROM BIOPIRACY	40
A.	<i>A Primer of Legal Strategies for the Advocate</i>	40
B.	<i>Intellectual Property, Treaty Law: Trade and Industrial Secrets and Protection of TK</i>	44
C.	<i>Biopiracy as a Wrong under Customary International Law</i>	53
D.	<i>Biopiracy as a Tort in Violation of the Law of Nations</i>	58
E.	<i>Biopiracy as a Human Rights Tort in Violation of the Law of Nations</i>	59
IV.	CONCLUSION	63

I. INTRODUCTION

As it stands today, the act of biopiracy continues to evade categorical distinction in international law and the domestic law of the United States.¹ Despite a growing recognition of its harmful and widespread consequences and its near unanimous characterization as a blatantly unjust practice, the act of biopiracy is neither a tort nor a crime.² Indeed, the lack of any legal imprimatur to accompany this universally condemned practice precludes an act of biopiracy from forming the basis of liability for which relief may be lawfully granted. One reason for this actionable gap is the murky nature of the act itself. The practice of biopiracy is, by and large, conducted under a cloak of business-as-usual under the banner of household corporate logos and publicly-funded institutions.³ Acts of biopiracy transpire in remote and exotic stages where the specter of public scrutiny is as menacing as the occasional curious eco-tourist passer-bys. The players on the ground—the biopirate foot soldiers—readily avail themselves of a long tradition

1. Graham Dutfield, the Herchel Smith Senior Research Fellow at Queen Mary, University of London, has adeptly characterized the term “biopiracy” as describing “the ways that corporations [and government organizations] from the developed world claim ownership of, free ride on, or otherwise take unfair advantage of, the genetic resources and traditional knowledge and technologies of developing countries.” Graham Dutfield, *What is Biopiracy*, INTERNATIONAL EXPERT WORKSHOP ON ACCESS TO GENETIC RESOURCES AND BENEFIT SHARING 1 (2005), available at <http://www.canmexworkshop.com/documents/papers/1.3.pdf>.

2. See Neal Shover & Aaron S. Routhe, *Environmental Crime*, 32 CRIME & JUST. 321, 324 (2005).

3. See Sivashree Sundaram, *Battling Bills, Beans, and Biopiracy*, 15 ALB. L.J. SCI. & TECH. 545 (2005).

of unfair and underhanded trade practices dating back to the earliest harbingers of colonial imperialism. The biopirate's booty is nestled inconspicuously between multinational corporate annual reports boasting impressive profits and innocuous scientifically-colored treatises illustrating novel ethnobotanical discoveries.⁴

Where the murkiness of biopiracy as a general matter leaves little room for legal theory to anchor, the relative clarity of specific instances of biopiracy may provide sufficient factual information from which to develop appropriate legal theories. In particular, the way biopiracy has been used to misappropriate the traditional knowledge (TK) of the Shuar Nation of Ecuador suggests that there may be legal theories for which the process of misappropriation may give rise to liability under international law as well as under developments in the domestic laws of the United States and Ecuador. The possible efficacy and legal coherence of any such theory are dependent upon an understanding of the background of the problem of biopiracy, the general and specific methods used by biopirates, and a clarification of the nature of the interests in question as misappropriated property.

While the specific focus of this Article is on a particular indigenous community, their experience is representative of the various problems and threats faced by, and complex status and concerns characteristic of, indigenous communities on a global basis.⁵ The Shuar Nation (Shuar) is

4. Marin Khor, *A Worldwide Fight Against biopiracy and Patents on Life*, THIRD WORLD NETWORK, <http://www.twinside.org.sg/title/pat-ch.htm> (last visited Feb. 25, 2010).

5. Although there is no formal universal definition of the term "indigenous communities" or the equivalent term "indigenous peoples," a report based on a 14-year study conducted by Jose R. Martinez Cobo, the U.N. Special Rapporteur of the Sub-Commission on Prevention of Discrimination and Protection of Minorities, provides the following generally accepted working definition:

Indigenous communities, peoples and nations are those which, having a historical continuity with pre-invasion and pre-colonial societies that developed on their territories, consider themselves distinct from other sectors of the societies now prevailing on those territories, or parts of them. They form at present non-dominant sectors of society and are determined to preserve, develop and transmit to future generations their ancestral territories, and their ethnic identity, as the basis of their continued existence as peoples, in accordance with their own cultural patterns, social institutions and legal system.

Jose R. Martinez Cobo, "Study on the Problem of Discrimination Against Indigenous Populations" at 29, U.N. Doc. E/CN.4/Sub.2/1986/7/Add.4 (1987), discussed and cited approvingly as the commonly accepted understanding of the concept of "indigenous people" in "The Concept of Indigenous Peoples," Background paper prepared by the Secretariat of the Permanent Forum on Indigenous Issues, at 1-2, 4, U.N. Doc. PFII/2004/WS/1/3, available at http://www.google.com/url?url=http://www.un.org/esa/socdev/unpfi/documents/workshop_data_background.doc&rct=j&ei=TayNS_yv19CztgfKgKXwCA&sa=X&oi=nshc&resnum=1&ct=r&esult&cd=1&ved=0CAwQzqQoAA&q=UN+Concept+of+indigenous+people&usg=AFQjCNF

found in Amazonia, encompassing the Southeast part of the Republic of Ecuador. The Shuar own a territory approximately the size of Portugal.⁶ Through an exceptional capacity for self-preservation and militaristic savvy, they have retained physical control over their territory for over 5,000 years, protecting themselves and their physical environment from waves of colonizers and would-be exploiters.⁷ The territory is now considered to be a global biological hotspot due to the concentration of a vast array of plant varieties within a relatively small surface area; in fact, the territory is estimated to hold approximately 17-18% of the world's biodiversity.⁸ Modern resource surveys also indicate that the territory has enormous petroleum reserves and is unduly rich in mineral and other extractive resources.⁹ The question of who owns the land and the resources of the territory has thus become a critical issue for a multitude of interest groups.

The challenges the Shuar confront are complex but reducible to a pair of interrelated property issues. First, the Shuar face legitimate threats of invasive modernization carrying with them the prospect of eco-social destruction for the entire community. The influence of modernization impacts and continues to strongly influence the region as both the healthcare and petroleum industries attempt to realize the

nTpBrkShyP4JXke8jJu_Bu9DHPw (last visited Mar. 18, 2010).

6. The sovereign territory of the Shuar, home to over 100,000 members of the Shuar community, stretches across roughly 25,000 square miles of southeastern Ecuador, between the upper mountains of the Andes and the Amazonian lowlands, and between the Pastaza and Marañón Rivers. See Juan Carlos Jintiaich et al., *The People of the Sacred Waterfalls: An Introduction to the Shuar of the Amazon*, <http://img9.custompublish.com/getfile.php/706201.699.tppvwyuvsq/Shuar seminar beskrivelse.pdf?return=www.riddu.no> (last visited Mar. 2, 2010).

7. The Shuar are highly skilled at protecting themselves and their environment. Their reputation as strategically gifted warriors, able to use their knowledge of the rainforest as well as traditional methods of warfare, was solidified when they successfully defeated as many as 30,000 Spanish Conquistadors, after which they allowed the Spanish priest, as the sole survivor, to return to Spain with a full account of the defeat to which he had bore witness. Part of this cultural history is traditionally orally transmitted as well. This information was given to the author in meetings with the Directiva of the Shuar Federation. See also JOHN PERKINS & SHAKAIM MARIANO SHAKAI IJISAM CHUMPI, SPIRIT OF THE SHUAR: WISDOM FROM THE LAST UNCONQUERED PEOPLE OF THE AMAZON 101 (2001).

[E]ven today Shuar territory is governed primarily by the Shuar Federation. "You never see a policeman inside that huge area; it's run very much as though it is a separate country outside the limits of Ecuadorian rule and also beyond the grasp of the United States and the United Nations."

Id.

8. Biodiversity Hotspots—Andes—Overview, Conservation International, <http://www.biodiversityhotspots.org/xp/hotspots/andes/Pages/default.aspx> (last visited Feb. 26, 2010).

9. Oil and Gas in Ecuador—Overview, MBend: Information Services, <http://www.mbendi.com/indy/oilg/sa/ec/p0005.htm> (last visited Feb. 26, 2010).

economic opportunities present among the manifold resources within the Shuar territory. This potential revenue source has become an attractive prospect for the deeply indebted Ecuadorian government as well.¹⁰ Such prospects have led to intense pressure and competition to squeeze the Shuar culture to extractive submission, marginalize its political leadership and assert an unfettered claim and consequent control over Shuar resources.¹¹

The significance of this opportunistic tsunami is acutely international in scope. Shielding five thousand years of Shuar tradition from contemporary predators is inescapably linked to globally-mandated efforts to save the Rain Forest from improper and rapacious exploitation.¹² Neither pursuit is attainable without first ensuring unequivocal recognition of the Shuar's proper legal claim to title.

The resources at stake include extensive mineral resources, petroleum, and the interface of these with the tremendous resources embodied in the flora and fauna of the Rain Forest.¹³ In addition, the Shuar human resources, including Shuar women and children, stand to be exploited and abused by outside interests moved by economic gain and racist domination. Thus, the question arises: what is the status of the land they own under human rights law?¹⁴

10. See generally Tim Mansel, *Ecuador's Oil Pollution Fears*, BBC NEWS, Apr. 15, 2002, available at <http://news.bbc.co.uk/2/hi/americas/1930671.stm>.

11. Jennifer Moore, *Ecuador: Politics Closes Indigenous Shuar Radio*, Jan. 20, 2010, <http://upsidedownworld.org/main/ecuador-archives-49/2327-ecuador-politics-close-indigenous-shuar-radio>.

12. Convention on Biological Diversity, History of the Convention, available at <http://www.cbd.int/history/>.

13. The results of the so-called oil boom in parts of the Rain Forest were nothing short of sheer environmental devastation. Entire groups have been eradicated; areas largely untouched by cancer suffer from many cases of cancer today, including Leukemia; pollution of the rivers and streams has led to the death of not only wildlife, but also of children who drink the water. There has been no real clean-up, and the efforts to clean the oil spills and oil pits have resulted in essentially a cover up of the ecological holocaust. See, e.g., The Lago Agrio Legal Team of the Amazon Defense Coalition, *Rainforest Catastrophe: Chevron's Fraud and Deceit in Ecuador*, AMAZON WATCH, Nov. 9, 2006, http://www.amazonwatch.org/newsroom/view_news.php?id=1267 (describing Chevron's deliberate dumping of pure crude oil throughout Ecuador's rainforest); Mansel, *supra* note 10 (citing resistance to a new pipeline under construction that runs through an ecologically significant bird reserve in the rainforest).

14. The gross and malicious dereliction of responsibility by foreign petroleum interests, who polluted parts of First Nation territories in Ecuador, has dramatically increased the Shuar's concern that its claim to full recognition by the Ecuadorian government of the Shuar's complete property rights over their traditional lands be juridically honored. This concern by the Shuar Nation was demonstrated in 1999 when the Shuar and Ashuar organized successful campaigns to, at least temporarily, stop Arco Oriente (Arco) from drilling on the traditional lands. The organized federations were given legal personality by the courts in this dispute when the courts recognized that Arco had violated the Shuar's right to organizational integrity. In 1999, a civil court ruled that Arco could not circumvent the federations by striking deals with the small Shuar

The second dimension of the property issue facing the Shuar—and the concern of this present writing—focuses on the resource embodied by the ethnobotanical TK.¹⁵ TK embodies a rich tradition of preserved and intact knowledge about the usage of the Rain Forest's flora and fauna, this being of considerable value, empirically and implied, to modern pharmaceutical interests. The eco-social culture of the Shuar has generated a powerful heritage of Shamanic knowledge.¹⁶ That knowledge of plant and genetic resources has extraordinary medical and commercial value.¹⁷ The physical destruction of pristine lands by exploitation and deforestation and the ensuing calamities suffered by the indigenous people of the Rain Forest are not the only downfall of many of these First Nations. The mass dissemination of stolen TK has stripped indigenous people of an essential method for maintaining their economic viability. How, then, might the economic patrimony of TK be properly protected by existing legal frameworks and human rights law? Who owns this asset, and if compromised, how is it to be valued for the purpose of remedial justice? It is not only a matter of cultural survival for the Shuar but, indeed, a matter of global ecological integrity and, ultimately, of the survivability of humankind. Where the balance of justice tips on this issue over the next decade will help determine the paradigm governing global resource management as humanity attempts to traverse a critical crossroad in its relationship with the Earth.

Part II of this Article provides an outline of the importance of biodiversity and TK for medical and pharmaceutical interests and develops a generic model of bioprospecting, which has been used as a cover for acts of biopiracy. The model is drawn from general experience as well as the specific facts in our possession. This section then details how the bioprospecting and biopiracy process actually works in practice, including an outline of the operations of biopiracy in the specific case of the Shuar. Part III raises the proposition—widely accepted as conventional wisdom—that indigenous societies have no legally recognizable concept of property and a fortiori cannot have a

provinces in violation of the Independent Federation of Shuar People of Ecuador (FIPSE) policy of prohibiting local communities from negotiating with oil companies. See Tamara Jezic & Chris Jochnick, *The Meaning of a Legal Victory in the Ecuadorian Amazon*, CARNEGIE COUNCIL, Apr. 6, 2000, at http://www.cceia.org/resources/publications/dialogue/2_02/articles/616.html.

15. See Stephen A Hansen & Justin W. VanFleet, *Traditional Knowledge and Intellectual Property: A Handbook on Issues and Options for Traditional Knowledge Holders in Protecting their Intellectual Property and Maintaining Biological Diversity* 3 (2003), <http://shr.aaas.org/tek/handbook/handbook.pdf> (providing a well-articulated and concise definition of “traditional knowledge” and an overview of the term’s scope).

16. See Jintiach et al., *supra* note 6.

17. Tina Butler, *Shamans and Robots: Bridging the Past and Future of Ethnobotany and Bioprospecting*, Apr. 25, 2005, http://news.mongabay.com/2005/0425-tina_butler.html.

notion of TK as a property value. This section then addresses the ensuing question of whether TK has the requisite qualities to be considered protectable property at all, and proposes the central principle that indigenous people indeed have concepts of property well recognized in contemporary analytical jurisprudence. Moreover, this section suggests that these same insights are firmly established in legal anthropology as well as in conventional jurisprudence. Finally, the section deals specifically with TK as property, contained within the secretive Shaman tradition of the Amazon Rain Forest, recognizing that it is because the Shaman TK was held to be a secret in the first place that bioprospecters have used extraordinary means of deception to misappropriate such knowledge.

Part IV explores the concept of TK in the context of the development of such ideas as the “new property,” which includes, in particular, intellectual property, providing an appraisal of the problems of protecting TK against the ideological assumptions and misconceptions of certain aspects of intellectual property law. This Article concludes by proposing that the concept of property under the Inter-American system may well include TK as property for the purpose of protecting such property under the Inter-American Convention.

II. BIOPROSPECTING TURNED BIOPIRACY IN THE SHUAR NATION

A. *The Lure of the Shuar Heritage*

Once the exclusive domain of pioneering ethnobotanists like Dr. Richard E. Schultes, the greater scientific community has gradually come to terms with its own curiosity concerning the innumerable varied uses of natural resources as employed by indigenous cultures.¹⁸ The presumptions that once branded as apocryphal the claims, methods, and practice of dubious areas like “traditional medicine”¹⁹ have given way

18. Schultes, who taught at Harvard for over thirty years, is considered the “father of ethnobotany, the field that studies the relationship between native cultures and their use of plants.” Jonathan Kandell, *Richard E. Schultes, 86, Dies; Trailblazing Authority on Hallucinogenic Plants*, N.Y. TIMES, Apr. 13, 2001, at C11. See also CHIDI OGUAMANAM, INTERNATIONAL LAW AND INDIGENOUS KNOWLEDGE: INTELLECTUAL PROPERTY, PLANT BIODIVERSITY, AND TRADITIONAL MEDICINE 140 (2006) (acknowledging that the presence of pharmacological properties in plants used in traditional therapy is “beyond question”).

19. The World Health Organization [hereinafter WHO] defines traditional medicine as “the sum total of knowledge, skills and practices based on the theories, beliefs and experiences indigenous to different cultures that are used to maintain health, as well as to prevent, diagnose, improve or treat physical and mental illnesses.” World Health Organization Fact Sheet, <http://www.who.int/mediacentre/factsheets/fs134/en/> (last visited Mar. 22, 2009). The WHO estimates that in some parts of the world 80% of the populations use traditional medicine as

to a consensus that the remaining indigenous knowledge traditions present an untapped panacea for the afflictions, appetites, and vanities of humankind.²⁰ The collective buzz brought by this recognition, however, has been dampened by the sobering realization that the sources of TK are vanishing at a rate far outpacing efforts to protect them.²¹

Aided by a growing sense of urgency and a promising spate of success stories over the last three decades, the bioprospecting industry—the inevitable offspring of the science of ethnobotany—has blossomed like the ornamental flowers on the unassuming rosy periwinkle.²² Modern botanists, exploring exotic regions of the world, use the goodwill, courtesy, and generosity of traditional leaders and healers to identify those plants that may hold particular interest for scientific research. Great reputations are earned and careers advanced based on discoveries made by botanists taking credit for knowledge appropriated from TK sources.

In their home countries, the admission of such takings could result in a loss of reputation and would generally be depreciated as involving, in effect, the taking of somebody else's work product and knowledge. Yet, encouraged by an academic culture which rewards the prize find and by an institutional tendency to "look the other way," botanists have made a practice of uncovering local TK secrets and appropriating their value in the market economy by patenting the information acquired once they have determined its currency in terms of further scientific testing. Nonetheless, such benefits would generally be seen as an incident rather than objective of the botanists' intrusions into the traditional culture.

The TK of plant life and other organisms in the Amazon rainforest and other areas of high biodiversity has increasingly been recognized by researchers as an important source of information directly related to increased efficiency for new product development, especially within the pharmaceutical industry.²³ Accompanying this growing realization is an

their primary source of medical care. *Id.*

20. See Graham Dutfield, *TRIPS-Related Aspects of Traditional Knowledge*, 33 CASE W. RES. J. INT'L L. 233, 235 (2001).

21. Contending that the shamans among the Amazonian indigenous populations he had encountered were eager to share their medical secrets with the outside world, Schultes warned that "time is running out." Kandell, *supra* note 18 (quoting Richard E. Schultes, *Burning the Library of Amazonia*, SCIENCES, Mar./Apr. 1994, at 15). "The Indians' botanical knowledge is disappearing even faster than the plants themselves." *Id.*

22. See generally BRONWYN PARRY, *TRADING THE GENOME: INVESTIGATING THE COMMODIFICATION OF BIO-INFORMATION* (2004).

23. See, e.g., OGUAMANAM, *supra* note 18, at 5-6 (providing examples of the importance of traditional knowledge to the development of pharmaceuticals; for instance, Oguamanam notes that "the efficacy of screening plants for medicinal properties increased by more than 400 per cent" with the use of traditional knowledge).

emerging battle for knowledge hegemony, which has become a primary objective of intervention on the part of governments and special interest groups. To this end, government and commercial players routinely usurp the foundation of TK, develop it, patent it, and make vast profits while denying any benefit-sharing to those communities from whom this patrimony is stolen.²⁴ These groups, however, are newcomers to the field of applied botany. The indigenous communities providing the biological source material and the associated applied knowledge—that which fuels the lucrative development process—acquired their TK in the first place through centuries of cultural inheritance.²⁵ That inheritance itself generated a complex internal epistemology and inquiry on the uses of these items of knowledge in their communities.

In the 1980s, the National Institute of Health (NIH) and related scientific groups in the United States, made public representations that, in the area of health care, the over-reliance on inorganic compounds in developing new antibiotic and other drugs would not serve the health care needs of the future.²⁶ Bacteria, fungi, and other organisms dangerous to human health were becoming immune to the inorganic-based drugs, indicating that these organisms could change faster than

24. In 1991, pharmaceutical company Monsanto was recruiting employees to “travel . . . somewhere exotic” and “dig up a few soil samples for the sake of science.” Margann Miller-Wideman, spokesperson for Monsanto said that “you never know what you’re going to find or where you are going to find it. . . . [N]othing’s off limits.” See *The Latin American Alliance: Bioprospecting/Biopiracy and Indigenous Peoples*, http://www.kahea.org/gmo/pdf/bioprospect_ing_people.pdf (last visited Feb. 23, 2008) [hereinafter Latin American Alliance].

25. There are some 300-370 million indigenous people in the world, speaking more than 4,000 different languages and dialects. In Latin America, there are some 300-400 separate indigenous populations, all with their own traditional features, intimate relationship with the land, and distinct self-identity. REPORT FROM THE WORLD LIBRARY AND INFORMATION CONGRESS: 73RD IFLA GENERAL CONFERENCE AND COUNCIL, Lic. Edgardo Civalero & Sara Plaza Moreno, *Indigenous Oral Tradition in Southern Latin America: a Library's Effort to Save Sounds and Stories from Silence 2* (2007), http://www.ifla.org/IV/ifla73/papers/108-1.Civalero_trans-en.pdf. Indigenous communities usually do not have writing systems but instead transmit knowledge through the oral tradition. Thus, through their oral tradition comes their history, the values, their customs, their cultural heritage, and identity. *Id.* at 4. See also JEANNE ACHTERBERG, *IMAGERY IN HEALING: SHAMANISM AND MODERN MEDICINE* (1985) (describing how indigenous communities pass their knowledge about the medicinal value of plants through their oral tradition of story-telling, much like most of the knowledge of indigenous communities). Deeply rooted in indigenous communities' culture is the notion of a Shaman, who in essence is the supreme authority of all this knowledge that has been passed on from generation to generation.

26. See Ranjan Gupta et al., *Nature's Medicines: Traditional Knowledge and Intellectual Property Management; Case Studies from the National Institutes of Health (NIH), USA*, 2 CURRENT DRUG DISCOVERY TECHS. 203-19 (2005). For a contemporary discussion of these issues, see Pedro Cuatrecasas, *Drug Discovery in Jeopardy*, 116 J. CLINICAL INNOVATIONS 11 (2006); see also Daniel S. Fabricant & Norman R. Farnsworth, *The Value of Plants Used in Traditional Medicine for Drug Discovery*, 109 ENVTL. HEALTH PERSP. 69-75 (2001) (supp. 1).

the human capacity to manipulate inorganic compounds in the medical and pharmaceutical labs.²⁷ The obvious solution was to look to nature's diversity for new sources of compounds that could be more effective in the development of drugs.²⁸ Thus, the priority, it was thought, should be given to organic sources of compounds for the development of more effective drug therapies in the future.²⁹

The result of these representations to the Congress of the United States was the amending of the Foreign Assistance Act to include funding for gaining access to organic compounds thought to repose in the natural environment itself.³⁰ The approach taken by Congress was to support U.S. bioprospecting for promoting biodiversity.³¹ Certainly,

27. For an illustration, see Allan Schapira et al., *Malaria: Living with Drug Resistance*, 9 PARASITOLOGY TODAY 168-74 (1993) (finding about a dozen cases of resistance to inorganic insecticides, addressing the epidemiological factors associated with the development and spread of drug-resistant malaria, and proposing a mathematical model with implication for future drug development).

28. *Id.*

29. *Id.*

30. In 1961, the USA passed the Foreign Assistance Act in an effort to encourage developing countries to acquire resources essential for development. The Foreign Assistance Act, 22 U.S.C. § 2151 (1961). The Act had five goals:

- (1) the alleviation of the worst physical manifestations of poverty among the world's poor majority;
- (2) the promotion of conditions enabling developing countries to achieve self-sustaining economic growth with equitable distribution of benefits;
- (3) the encouragement of development processes in which individual civil and economic rights are respected and enhanced;
- (4) the integration of the developing countries into an open and equitable international economic system; and
- (5) the promotion of good governance through combating corruption and improving transparency and accountability.

Cornell University Law School, U.S. Code Collection, http://www.law.cornell.edu/uscode/html/uscode22/usc_sec_22_00002151----000-.html (last visited Feb. 23, 2008). Signed in 1986,

Public Law 99-529 contained provisions to expand U.S. efforts to protect biological diversity and authorizes [USAID] to cooperate and support the relevant efforts of other agencies . . . Public Law 101-167, signed November 21, 1989, promotes the increased use of resources for training in . . . biodiversity, requires [US]AID and the National Science Foundation to expend funds for an international biodiversity program.

Foreign Assistance Act, Digest of Federal Resource Laws of Interest to the U.S. Fish and Wildlife Service, <http://www.fws.gov/laws/lawsdigest/FOREIGN.HTML> (last visited Mar. 2, 2010).

31. "Bioprospecting has been defined as the systematic search for, and the development of, new sources of chemical compounds, genes, micro- and macroorganisms, and other economically valuable biological products." Lydia Makhubu, *Essays on Science and Society: Bioprospecting in an African Context*, 282 SCIENCE 41-42 (1998), available at <http://www.sciencemag.org/cgi/content/full/282/5386/41>; see also Graham Dutfield,

biodiversity would be critical to the bioprospector. Nature, after all, is the repository of biodiversity, and in biodiversity lies a rich store of organic material, the chemistry of which yields organic compounds for use in medical and other commercial contexts.³² It is possible that a scientific assumption behind this initiative was also influenced by the idea that nature invariably tends to produce the organism that may threaten human existence while simultaneously producing the counter organism that negates this threat. In this sense, there was no necessary misrepresentation in how this legislative initiative was actually packaged. Additionally, the management of the program and the distribution of funding were allocated to a respected aid-giving arm of the federal government, the U.S. Agency for International Development (USAID).³³

USAID took as its mandate the idea that it should do everything possible to promote bioprospecting activity in foreign nations, especially in indigenous communities, where there would be a rich store of undeveloped and under-explored resources of biological diversity that could be used for potential scientific development, patenting, and marketing in furtherance of U.S. interests.³⁴ The general idea was innocuous as it was implemented. If prospectors could simply appropriate samples of natural resources, in large quantities, from environments rich in biodiversity, and remove them to the U.S. laboratories, the laboratories would have the sophistication to find compounds of economic and medical value.

As it turned out, this uneconomic investment did not yield results of real value.³⁵ The statistical indications suggested that by using this method, 1 item out of every 10,000 might yield something of economic value after researching the particular resource.³⁶ This made the initial

Bioprospecting: Legitimate Research or 'Biopiracy'?, POLICY BRIEFS, SCI. & DEV. NETWORK (May 26, 2003), <http://www.scidev.net/en/agriculture-and-environment/bioprospecting/policy-briefs/bioprospecting-legitimate-research-or-biopiracy-1.html> (last visited Mar. 3, 2009) (describing "bioprospecting" as the "centuries-old practice of collecting and screening plant and other biological material for commercial purposes, such as the development of new drugs, seeds and cosmetics").

32. See generally Pushpam Kumar & Nori Tarui, *Identifying the Contribution of Indigenous Knowledge in Bioprospecting for Effective Strategies*, <http://www.millenniumassessment.org/documents/bridging/papers/kumar.pushpam.pdf> (last visited Mar. 3, 2010).

33. Foreign Assistance Act, *supra* note 30.

34. Center for Development Information and Evaluation, *Win Win Approaches to Development and the Environment: Bioprospecting and Biodiversity Conservation*, available at http://www.usaid.gov/pubs/usaid_eval/ascii/pnaby200.txt (last visited Feb. 21, 2010).

35. Kumar & Tarui, *supra* note 32, at 5-6.

36. The Rural Advancement Foundation International confirms that random testing of plants has a success rate of 1 in 10,000 in finding a valuable active ingredient. Latin American Alliance, *supra* note 24.

trust of biodiversity and bioprospecting unattractive, unproductive and economically prohibitive.³⁷ However, the NIH and its allies began to pay close attention to the work of so-called economic ethnobotanists.³⁸ These actors brought attention to the fact that statistical knowledge about a particular ecosystem could be valuable and economically effective if one could appropriate the TK of selected indigenous people around the world.³⁹ The statistical numbers vary depending upon the degree to which the TK is uncontaminated, and the degree to which the environment from which this knowledge is drawn remains untarnished by the forces of modernization and development. A particular and attractive target of this initiative was the Shuar Nation of Ecuador.

The word Shuar literally means "people."⁴⁰ As a First Nation of Ecuador, the Shuar have resisted efforts of Spanish colonization and neocolonization efforts by the State.⁴¹ These efforts have successfully preserved their traditional culture and have largely contributed to the preservation of the vast ecological system that exists in the Rain Forest. The Shuar "occupy" a territory of immense richness and diversity in terms of the plant life and vast natural resources found within its border.⁴² The Shuar territory in the Amazonian part of Ecuador is widely regarded as a biological hot spot on the planet.⁴³ One sixth of all

37. Kumar & Tarui, *supra* note 32, at 13.

38. *Id.* at 17.

39.

Drug discovery requires knowledge of the structure and reactivity of small molecules and macromolecules, and of the ways in which the molecules interact by means of both covalent and non-covalent recognition during signal transfer. Several effective clinical agents have been discovered by chemists, who possess a deep understanding of these topics and, in particular, knowledge of the relationships between structure and reactivity/activity properties for particular classes of molecules.

Stephen Neidle & David E. Thurston, *Chemical Approaches to the Discovery and Development of Cancer Therapies*, 5 NATURE REVIEWS CANCER 285, 285 (Apr. 2005). Thus, if the random testing of plants is combined with local shamanic knowledge that could aid the chemist in understanding the structural composition of the molecules in the plant, the success rate can be improved to about 1 in 5,000, or 1:2 ratio. Latin American Alliance, *supra* note 24. Further, a U.S. Congressional Report in 1993 concluded that the National Cancer Institute could have doubled their success rate for finding anticancer drugs, in the period between 1956-1975, if they had taken into account the knowledge of the traditional communities to specifically target certain plants for testing. Kumar & Tarui, *supra* note 32 (referencing U.S. CONGRESS 1993 REPORT: BIOTECHNOLOGY, INDIGENOUS PEOPLES, AND INTELLECTUAL PROPERTY RIGHTS, Congressional Research Service Report for U.S. Congress (Apr. 16, 1993)).

40. Jintiach et al., *supra* note 6.

41. *Id.*

42. *Supra* note 6.

43. Conservation International: Biodiversity Hotspots, <http://www.biodiversityhotspots.org/xp/Hotspots/andes/Pages/default.aspx> (last visited Feb. 23, 2008).

plant life is located in the tropical Andes region, exactly where the Shuar reside.⁴⁴ Thus, the Shuar territory would be of immense interest to the promoters of bioprospecting for medical and commercial purposes.

The TK of the Shamans in the Shuar Nation is, moreover, one of the most intact and uncontaminated forms of knowledge on Earth.⁴⁵ It is a long history of thousands of years of uncontaminated transmittal.⁴⁶ The Shamanic tradition of the Shuar involves rigorous training of the mind, involving years of practice and teaching.⁴⁷ The training includes spiritual and mental discipline along with psychological understanding and insight into the material world and physical components of health related problems.⁴⁸ The Shaman is required to have a virtual encyclopedic knowledge of the sources of the rainforest, a knowledge which is difficult to acquire.⁴⁹ The Shaman is expected to not only master the knowledge but to develop it and administer the outcomes of his training and education in the practical world of local healing.⁵⁰ The knowledge requires intense training and discipline and is held as a community secret, in part because the plant and animal ingredients and combinations administered to the patients could, in the hands of those individuals who lack the appropriate knowledge, cause the patients great injury and even death.⁵¹ Hence, Shamanic knowledge is kept secret for professional reasons as well as for the protection of the patient from the abuse caused by misguided or unknowledgeable use of such medical resources.

B. *Bioprospecting for the Ostensible Preservation of Biodiversity*

The subsequent U.S. congressional funding to support the processes of preserving biodiversity accepted as a fundamental principle that

44. *Id.*

45. The Shuar is thought to be the only indigenous community in the Americas to never be conquered, and as a consequence, ““their culture has been kept whole.”” JOHN PERKINS & SHAKAIM MARIANO SHAKAI IJISAM CHUMPI, *SPIRIT OF THE SHUAR: WISDOM FROM THE LAST UNCONQUERED PEOPLE OF THE AMAZON* 101 (2001).

46. *Id.*

47. *Id.* at 128-32.

48. *Id.*

49. Various studies have shown that shamanic knowledge about medicinal plants yields to substantially increased success in which plants end up yielding drug development. For example, one article reports that 86% of the plants that Samoan shamans used for medicinal purposes ended up being of interest when scientists tested the plants in the laboratory for potential drug developments. Further, plants used by Belize Shaman yield 4 times as many results for anti-HIV drugs than plants tested randomly. P.A. Cox & M.J. Balick, *The Ethnobotanical Approach to Drug Discovery*, *SCI. AM.*, June 1994, at 82-85.

50. *Id.*

51. *Id.*

economic botany and its related subdiscipline, ethnobotany, should be important components of the bioprospecting process.⁵² These fields also came with their own institutional set of players, largely but not exclusively centered in the great botanical institutions of the United States.⁵³ These institutions include the New York Botanical Garden, the Missouri Botanical Garden, as well as the University of Chicago and the University of Illinois Botanical Gardens.⁵⁴ These institutions were bioprospectors for their own botanical and economic interests long before there was any interest in bioprospecting for protecting biodiversity. Now, these institutions could use their techniques and skills in acquiring TK about biodiversity, including plant resources, with the imprimatur of the U.S. government, NIH, and federal health establishments, as well as its allies and collaborators, the great pharmaceutical companies: Pfizer, Merck, and Monsanto.⁵⁵ Thus, a standard prototype was developed for the acquisition of knowledge generally regarded as secret TK in particular indigenous cultures.

The first and most important initiative was to target the richest possible source of TK, which would yield the highest statistical potential of commercial and therapeutic value.⁵⁶ The targets would be regions in which biodiversity was well preserved, the culture living in that ecosystem was largely uncontaminated, and the TK was both credible and intimately tied to the rich diversity within which the TK had evolved. The Shuar, stewards of a pristine biological hotspot, were an obvious target. The ecosystem and the indigenous peoples' knowledge could be an ideal focus of expropriation and transfer to the United States. Upon transfer, such knowledge and the biological referents included in it would be used to produce organic compounds which could be patented and marketed on a global basis.⁵⁷ Thus, the system would provide research and development opportunities for the medical establishment, the great universities, and private sector laboratories often associated with the great pharmaceutical industries.⁵⁸ The system would also lead to the prospect of generating substantial profits, a critical incentive for most participants in the chain of bioprospecting decision-making, including not only the pharmaceutical industry but also the botanical garden institutions that stood to receive,

52. Latin American Alliance, *supra* note 24, at 4.

53. *Id.*

54. *Id.*

55. Pfizer and Monsanto (used to be called Shaman Pharmaceuticals, Inc.) have been using traditional knowledge of indigenous populations in order to obtain the medical features of plants for some years now. Kumar & Tarui, *supra* note 32.

56. *Id.* at 15.

57. *See id.* at 2.

58. *Id.* at 3.

albeit indirectly, real economic benefits.⁵⁹

In a general sense, there was also the lure of enhanced value to the economy of the United States and its allies in the appropriation, scientific development and commercialization of this knowledge.⁶⁰ In short, the process involved a transfer of wealth in the form of intellectually developed knowledge from indigenous people, among the poorest and powerless on Earth, to the world's richest and most powerful nations. It is for this reason that there is an emerging global discourse centered around the issues of certification of TK and the juridical character and ultimate efficacy of benefit-sharing as a mandate of international law.⁶¹

C. *How the Model of Bioprospecting Works*

The term bioprospecting has major currency in U.S. law and practice. There are, in fact, two major legal instruments of global salience. One of these instruments is the U.N. Convention on Biological Diversity (CBD).⁶² Among the several provisions of concern to the medical and pharmaceutical establishment in the United States are some very specific provisions that make biodiversity itself an ecological imperative for international law and policy.⁶³ With that policy objective

59. In the mid 1980s, analysts estimated that pharmaceutical companies were losing \$200 million in sales for each plant of medicinal value that was lost in the rainforest. Latin American Alliance, *supra* note 24, at 2 (citing *Medicinal Plants Lost?*, SCRIP WORLD PHARM. NEWS, Oct. 1, 1986, at 22). Because drug development from natural resources is a hot-bed of potential drugs, the "market for natural product research specimens within the pharmaceutical industry alone is (US) \$30-60 million per annum." *Id.* The retail value for plant-derived drugs in 1985 was around \$45 billion per year. *Id.*

60. *Id.*

61. *Id.* at 6.

62. Convention on Biological Diversity [hereinafter CBD], available at <http://www.cbd.int/convention/convention.shtml> (last visited Mar. 24, 2010).

63. The preamble of the CBD stresses the importance of biodiversity for the future of the planet. The CBD is "conscious of the intrinsic value of biological diversity and of the ecological, genetic, social, economic, scientific, educational, cultural, recreational and aesthetic values of biological diversity and its components." *Id.* at 143. It is further "[c]onscious . . . of the importance of biological diversity for evolution and for maintaining life sustaining systems of the biosphere." *Id.* The CBD goes on to note the "concern that biological diversity is being significantly reduced by certain human activities . . . and noting that it is vital to anticipate, prevent and attack the causes of significant reduction or loss of biological diversity at source." *Id.* The preamble also emphasizes that "the fundamental requirement for the conservation of biological diversity is the in-situ conservation of ecosystems and natural habitats and the maintenance and recovery of viable populations of species in their natural surroundings." *Id.* Finally, the CBD stresses "the importance of and the need to promote international, regional and global cooperation among States and intergovernmental organizations and the non-governmental sector for the conservation of biological diversity and the sustainable use of its

designed to secure diversity itself, the convention provides for adjudication before the international court of justice⁶⁴ and specifically provides for the protection of the TK and genetic resources in Article 8(J).⁶⁵ This process under the Convention would effectively subject U.S. biopiracy policy and practice to international supervision under international law. It would provide for the judicial settlement of claims that are based on the abuse of the eco-social biodiverse environment as well as the misappropriation of knowledge and resources taken from such areas.⁶⁶

It is, therefore, unsurprising that the United States prefers a program of unilateral prospecting in biodiverse environments, allowing virtually no protection for the States whose diversity has been studied and exploited and leaving the door wide open for the appropriation of economically valuable items of knowledge about the diverse ecosystem.⁶⁷ Meanwhile, the victims of such appropriation would be without an effective remedy, since U.S. law and customary practice could block access to information concerning which specific elements of knowledge were taken and to whom they were distributed for the purpose of research and the eventual registry of patents for global marketing.

Under the Foreign Assistance Act, the U.S. government funds bioprospectors directly through USAID.⁶⁸ The agency is, therefore, directly involved in the allocation of grants, the facilitation of access in the field, the registry of acquired TK, and its placement in the United States. From this point, U.S. policy closely guards the secret TK that it has acquired and distributed according to criteria that are largely non-transparent.

components” and the “broad range of environmental, economic and social benefits from . . . investments [in biological diversity].” *Id.*

64. CBD, *supra* note 62, art. 27(3)(b).

65. Article 8(j) reads:

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

Id. art. 8(j).

66. CBD, *supra* note 62.

67. The United States has, like many treaties, signed the CBD but has not ratified it. Convention on Biological Diversity, List of Parties, <http://www.cbd.int/convention/parties/list/> (last visited Feb. 23, 2008).

68. Foreign Assistance Act, *supra* note 30.

In short, as an aspect of its legislative mandate, USAID performs the critical function of aiding and abetting the activities of bioprospectors in the field. Government funding is provided under grant to appropriate the TK and the organic materials necessary to support the continued uses of the knowledge. The bioprospectors, often one of the big botanical gardens, would then hire their ecological and ethnobotanical “hit men.”⁶⁹ The “hit men” travel to the targeted region and liaison with officials in the U.S. embassy as well as USAID representatives. USAID finds a local indigenous official and introduces the parties. The “hit men” then employ one of a number of standard cover stories to mask the actual work of appropriating knowledge and specimens for the bioprospectors agenda. For example, a frequently used pitch is one that projects the “hit men” as, essentially, idealistic and morally committed educators or philanthropists there to help a small, isolated village with the education or health care needs of its youth. An indigenous official is asked to sign a document, sometimes called a “convenio,” which authorizes the “hit men” to camp out at a village and promote the educational objectives of teaching the village children. The entire process is done with great secrecy and normally with an approving nod from some lower level ministry official.

The cover story can vary. The “hit man” may be a professor from a major university who wants to bring a group of students to learn about the indigenous culture and to have the students interact with the local community. However, the prime purpose is not to socialize and drink Chicha or some local indigenous brew; it is to collect economic and/or health related information from the traditional system of knowledge in that community. The village official is given a gift, in effect a “bribe,” to be discreet about any agreement made. In one example, the official was offered an open-ended visa for him and all the members of his family. A visa is an expensive and highly valued document. In another case, the local official was offered more than a visa priority for his entire family; he was induced with funds in the form of a “scholarship” to study in a foreign country. Funding was sufficient to bring his family as well.

Thus, the “bribe” falls within the formal and typical functions of the embassy in facilitating educational opportunities abroad as well as managing the normal visa problems, but without the normal restrictions and bureaucratic red tape that accompanies the process. One may, of course, infer that these benefits are highly valued and would not have been offered but for the access which the official can normally provide. It would seem, thus, that the benefits given under the cover of normal

69. The term economic “hit man” is appropriated from the title of John Perkins. JOHN PERKINS, *CONFESSIONS OF AN ECONOMIC HITMAN*, at ii (2004).

diplomatic functions are nonetheless a “bribe.” These benefits, given as a quid pro quo for the secret “convenio,” are unlawful and violative of state and traditional law.

The assurance of complete confidentiality about the presence of the “hit men” in the village is critical to the art of bioprospector. Sometimes the bioprospector simply shows up with the contract, usually in English, asking a particular official of the community for a thumb print or signature in return for which the official or the person signing the document would receive two scholarships for members of his village. The contract could stipulate that the unauthorized individual sign away all material assets and knowledge of economic value of the entire community. In a particular case, a botanical garden offered an official of the Shuar two scholarships to study in the midwest in return for a transfer of all botanical assets and knowledge to that entity.⁷⁰

D. Misappropriation of Shuar TK: A Case Summary of Biopiracy

In the case of the Shuar, the head-man of the community usually is the head-man of a number of villages which are widely distributed in the Shuar territory. The “hit man” sets up a camp in one of the villages and explains to the chief that the head-man has approved his presence, and he has come with teachers to help the children of the village. He further explains that the children will inherit a beautiful ecosystem in the rain forest and emphasizes the importance of educating them about their own ecosystem and inheritance. The children are sent to the “school,” where the schoolmaster (i.e., the “hit man”) tells the children to go into the forest and collect plants. The schoolmaster instructs the children to ask their parents which plants they use for various ailments or for various practical activities in their daily lives. If the parents are uncertain about, say, what plants are used to reduce fever, alleviate belly aches or repel insects, the schoolmaster suggests the parents consult with the Shaman, and in this way ensures that the students will know which plants to identify, collect, and bring to school.

The collection of the plants and information is done by the children on the further promise that when enough plants are collected and enough information given from the family or the Shaman, the information will be put into a school book, in the Shuar language, for the use of the children in the village school. In one actual case, the “hit man” collected some 578 items of TK. This was then given to USAID

70. After consultation within FISC and with representatives of the local governing bodies, the author was asked to serve on the Board of Directors of the SNC. His role is that of a juris consult and political advisor to the Shuar Nation. Nagan’s expertise of indigenous tribes and traditional knowledge has been attained through years of personal investigation and first-hand knowledge among indigenous tribes [hereinafter Nagan].

as an official report. The report stipulated the technical name of the plant, its traditional economic uses, and contained a diagram of the plant itself. As indicated, after the “hit man” collects a staggering size of knowledge and plant samples, these samples are scientifically recorded on reports which are passed on to USAID. USAID, via an interagency agreement, passes these reports onto the NIH. Through an internal agreement or understanding, the NIH passes this onto a beneficiary organization, often, and in this particular case, the National Cancer Institute (NCI). The NCI puts the information on its registry, which is closed to the public and for which there is only limited access, normally assigned to the great pharmaceutical companies. The volume of stolen knowledge in this particular case was so staggering that it is probably the largest example of biopiracy in history.⁷¹

The foregoing scenario provides a model of how bioprospecting generally works in terms of the role of the U.S. government and major botanical organizations in acquiring, processing, storing, and distributing the knowledge of traditional Shamans and healers. It is representative of the existing asymmetrical paradigm of benefit sharing, where the benefits go exclusively to a wealthy State, the wealthiest botanical institutions, the wealthiest universities, and the wealthiest pharmaceutical companies. It is an example which acutely contrasts the open-hearted, altruistic generosity of the traditional communities with the apparently “modern” moral values characterized by cynicism, deception, greed, and racism.

VII. IS TK PROPERTY?

A. *Property in Indigenous Communities*

A major roadblock to the use of the law to protect indigenous property and indigenous TK, in particular, is the difficulty in both theory and practice of properly describing the nature of property and its jurisprudential underpinnings. In addressing this problem, this section considers the nature of property and of intellectual property and, in doing so, demonstrates that property in general legal theory, as well as in the context of the anthropomorphic foundations of TK as intellectual property, is property that may be taken by practices akin to misappropriation. The roadblock to legal protection may be a specter after all.

71. See *id.* “Trade Secrets,” submitted by Winston P. Nagan, on behalf of the Shuar Nation Corporation (Apr. 8, 2008 unpublished) for a detailed overview of the factual pattern described herein.

The term “property” is a legal construction whose meanings are not always understood in comparative legal culture. A central theme of property is, however, rooted in a very universal idea that, in any community, some things of value are protected as “belonging” to an individual, a small kinship, or a family unit, or, indeed, to the larger collective. The distinction builds on a psychological idea well-illustrated in the Roman civil tradition, which indicates that a thing [res] may be yours or mine. In short, it works on the assumption that there are things in the community over which a person or group of persons may claim that “this is mine,” and that the other thing is yours. Thus, property, being as complex a legal construct as it is, works on a rather simple psychological truth that human beings live in families and communities, or societies and states, and have a certain fundamental sense about what things of value are theirs, either jointly or severally, and what things belongs to others, either individually, jointly or severally.⁷²

The advent of Eurocentric hegemony also meant the expansion of the legal culture of the imperial powers. This meant that the legal systems of the subjugated people and, in particular, indigenous communities, were not taken into account in any serious fashion as the imported legal systems extended itself throughout those communities. With regard to property, it was commonly held that indigenous communities simply had no concept of property because property requires individual title and ownership, which they apparently lacked. Since the main economic resource of an indigenous community was largely the land it occupied, it was simply assumed that the only idea of title that indigenous people had was an undifferentiated communalism. In short, since everyone owned everything, no one owned anything.

Frequently, colonial courts provided self-serving and weak justifications for acts of naked expropriation and aggression.⁷³ In the Americas, it was the Pope himself, the Holy Father, who claimed, in effect, that all titles to land in Latin America vested in his Holiness. This claim, however, was repudiated early on by the Spanish jurist and

72. See JOHN LOCKE, SECOND TREATISE OF CIVIL GOVERNMENT § 124 (1690): “The great and chief end . . . of men’s uniting into commonwealths, and putting themselves under government, is the preservation of their property. To which in the state of nature there are many things wanting.”

73. Case law in the Privy Council, United Kingdom, suggested that the Crown did not take actual possession of the land by reason of conquest and that pre-existing property rights continued. See, e.g., *In re Southern Rhodesia*, [1919] A.C. 211, where Lord Sumner wrote that “it is to be presumed, in the absence of express confiscation or of subsequent expropriator legislation, that the conqueror has respected [pre-existing aboriginal rights] and forbore to diminish or modify them.” *Id.* at 233. However, the court also ruled that the form of indigenous ownership did not amount to the notion of a title to which the indigenous people were beneficiaries.

theologian Francisco de Vitoria in 1532.⁷⁴ History, thus, quickly repudiated this extravagant claim, and modern legal theory confirms the wisdom of the historical judgment.

B. *Property and Legal Theory*

Legal theory as developed in the classic Western analytical tradition has provided a much deeper insight into the nature of the complex interests encoded in such words as “right” and “property” itself. During the nineteenth century, scholars began to observe that legal words were often used in ways that reproduced confusion and obfuscation. To some extent, the sensitivity to the use of legal terms and phrases was largely due to the success of John Austin’s theory of law.⁷⁵ Austin developed the theory of law in terms of the notion of “sovereignty.”⁷⁶ In doing so, Austin demonstrated that the term “law” itself was used in many different senses, at times seeming to be part of legal discourse but, in fact, not properly “law” in the technical sense of his system.⁷⁷ Other critical words in legal discourse began to be more carefully analyzed as well. Among these was the notion of what a “right” really was and how, in general, the concept of “rights” properly understood would clarify the different ways in which it was used in practice to explain legal relationships, including relationships to property interests.⁷⁸

An enormous intellectual breakthrough came in the early twentieth century. Distinguished jurisprudence scholar Wesley Newcomb Hohfeld demonstrated that when the word “right” was analytically dissected, it included a range of complex complementary and opposing interests often unobservable even to the most skilled legal scholars and judges.⁷⁹ To illustrate, the idea of a “right” could be used in the sense of being a legal power.⁸⁰ Accordingly, the opposite of a legal power would be the recognition that some other legal person has “no right.”⁸¹ The word “right” was used here in a strict sense, entailing a necessary correlative relationship, namely, the concept of “duty.”⁸² Thus, in the Hohfeld approach, one could show that when the word “right” is used, it could refer to the concept of a legal power, privilege, immunity, a liability, or

74. Francisci de Victoria, *DeIndis et de Iure Belli Relectiones* (Carnegie Inst., J.P. Bate transl., 1917).

75. JOHN AUSTIN, *THE PROVINCE OF JURISPRUDENCE DETERMINED* (1832).

76. *Id.* at 57.

77. *Id.* at 1-4.

78. *Id.* at 25-26.

79. WESLEY NEWCOMB HOHFELD, *FUNDAMENTAL LEGAL CONCEPTIONS AS APPLIED IN JUDICIAL REASONING AND OTHER LEGAL ESSAYS* 1-21 (1919).

80. *Id.* at 36.

81. *Id.*

82. *Id.* at 38.

a disability.⁸³ Critically, the term “right” could be used only if it was conjoined with a correlative like “duty.”⁸⁴ The logical conclusion led to the concept of a “right” which could not preclude its opposite, that is, the concept of a no-right; in this sense, the notion of a right is a privilege for which there is no right as a jural correlative.⁸⁵

To summarize, the Hohfeld’s Jural Opposites were as follows: (1) Right/No-Right; (2) Privilege/Duty; (3) Power/Disability; and (4) Immunity/Liability. The Jural Correlatives, in turn, were: (1) Right/Duty; (2) Privilege/No-Right; (3) Power/Liability; and (4) Immunity/Disability.⁸⁶ This system was no fly-by-night theory but, rather, became the foundation for the Restatement of the Law of Property and, more generally, of analytical jurisprudence.⁸⁷ An elucidation of this sophisticated analytical scheme is beyond the scope of this Article, but it serves to point out that the assumed superiority of conventional law was itself somewhat crude in its deeper understanding of the nature of human interests and entitlements in the context of conventional legal culture.⁸⁸ The importance of this sophisticated analytical system, however, was evident to anthropologists who could use these ideas to explain the juridical character of legal interests and entitlements of people who live in indigenous communities and whom, it is often erroneously claimed, have no concept of legal rights, interests, and property.⁸⁹

Early twentieth century anthropologists approached the sophisticated Hohfeldian analysis of the grammar of a general legal system.⁹⁰ The great anthropologist Malinowski, through observation and participation, was able to establish that the law of a so-called primitive community was, in fact, a dynamic system of social relations and interactions dealing with core interests.⁹¹ Those interests could clearly be identified in terms of well understood ideas of rights, duties, powers, privileges, immunities, and disabilities, to name a few.⁹² Malinowski’s work revealed the prevailing idea that indigenous communities do not have legal concepts that allocate benefits and control over things of value and interest for what it was: a simple matter of myopia from the perspective

83. *Id.* at 36.

84. *Id.* at 38.

85. *Id.* at 5.

86. *Id.* at 36.

87. See HLA HART, *THE CONCEPT OF LAW* (2d ed. 1994).

88. See RONALD DWORKIN, *TAKING RIGHTS SERIOUSLY* 14 (1978).

89. See generally Harold Demsetz, *Toward a Theory of Property Rights*, 57 *AM. ECON. REV.* 347, 352-54 (arguing that the conversion of public land to private means is normatively attractive, even to indigenous cultures).

90. See BRONISLAW MALINOWSKI, *CRIME AND CUSTOM IN A SAVAGE SOCIETY* 9-10 (1972).

91. *Id.* at 46-47.

92. *Id.*

of anthropological inquiry.⁹³ In a famous collaboration between two famous U.S. legal theorists, Karl Llewellyn and Adamson Hoebel,⁹⁴ these scholars demonstrated that an indigenous nation of North America, the Cheyenne, had a working legal system with methods of enforcement and, in fact, had a foundational and basic set of well understood juridical understandings that cumulatively constituted an operational or “living” constitutional system.⁹⁵

Such work often stood out as inconvenient to parties with an eye to commercial interests in the indigenous heritage, because its implications suggested that the exploitation and expropriation of the rights of indigenous nations would be a more arduous business if the juridical character of such societies were actually recognized.⁹⁶ Hoebel himself specifically wrote a treatise applying the Hohfeldian scheme to a comparative study of the legal systems of so-called primitive peoples.⁹⁷ In short, he recognized the inaccuracy of the notion that indigenous peoples have no legal systems and no legal rights which are comparably efficacious to Western systems with clearly defined roles and rights of persons in the community and in the eco-system.⁹⁸ Only intellectual laziness or convenience could explain the mainstream “truth” which failed to ascribe a vibrant concept of rights, and property rights in particular, to indigenous peoples.

C. *TK as Property*

The TK of many indigenous communities is a knowledge that is generally preserved, cultivated, and transmitted to future generations of TK specialists in the community.⁹⁹ A critical aspect of this specialization is knowledge about human well-being and health. The rigorous training of these Shamanic specialists in the Amazonian tradition is partly spiritual, partly psychological, and partly material.¹⁰⁰ Thus, a trained Shaman has tools to diagnose the ailment or malady of a

93. *Id.* at 47-49.

94. See KARL L. LLEWELLYN & E. ADAMSON HOEBEL, *THE CHEYENNE WAY: CONFLICT AND CASE LAW IN PRIMITIVE JURISPRUDENCE* (1941).

95. *Id.* at 323.

96. See Mercedes Sayagues, *Rights: Reversing Worldwide History of Exploitation of Indigenous Peoples*, INTER PRESS AGENCY, Feb. 22, 2010 (noting an agreement between the South African San Council and the Counsel for Scientific and Industrial Research to pay the tribe up to eight percent of profits for a diet drug derived from the Hoodia plant).

97. E. ADAMSON HOEBEL, *THE LAW OF PRIMITIVE MAN* 47-63 (1954).

98. See *id.* at 69-70.

99. See *supra* Part II.

100. See Michael Harner & Sandra Harner, *Core Practices in the Shamanic Treatment of Illness*, 13 *SHAMANISM* 19, 19-20, 24-25 (2000).

patient using multiple vantage points or foci.¹⁰¹ The patient's problems may have its roots in a spiritual crisis, a psychological dysfunction, or a largely material cause, like an injury resulting in a broken limb or a partially-clogged artery.¹⁰² The Shaman's diagnosis must usually account for multiple factors to determine what is required to relieve the suffering and cure the patient.¹⁰³ An important tool at the disposal of the Shaman is the knowledge of what is available in the natural eco-system that may facilitate the diagnosis and treatment of the patient's problem.¹⁰⁴

The Shamans in the rain forest of Ecuador are particularly well-trained in their profession. They hold an unusually deep understanding of plants and other natural resources available in the rich biodiversity of the rain forest's ecosystem.¹⁰⁵ Through a combination of material and psychological insight and spiritual understanding garnered from practical exposure and centuries of shared expertise, they know which plants, barks, and other life forms are of important medical value. The plants, roots, and other elements of the environment require the thorough understanding of how these living organisms are to be used, combined, and prescribed. The material medicines are often combined with insights into the psychological foundations of dysfunctions, sometimes described as "energy dysfunction" or the "unequal distribution of energy" in the patient that generate the symptoms and effects of certain kinds of illnesses.¹⁰⁶

Some of the plants or plant combinations are intense in their impact on the human physiology as well as on the mind.¹⁰⁷ As a control against the potential abuse of these treatments, the Shaman's training requires enormous sacrifices and extensive discipline as well as life-long commitment, invariably leading to a profoundly sanctified recognition of the value of this TK. This knowledge is a defining cornerstone of the roots of cultural identity and social solidarity of the Shuar community.¹⁰⁸ The values of TK are not casually acquired nor

101. *Id.* at 23-24.

102. *Id.* at 24-26.

103. *Id.*

104. *Id.* at 24.

105. See Steven R. King & Thomas J. Carlson, *Biocultural Diversity, Biomedicine and Ethnobotany: The Experience of Shaman Pharmaceuticals*, 20 *INTERCIENCIA* 134 n.9-10 (1995).

106. Narelle Bouthillier, *With Energy and Spirit: Healing Practitioners and Their Prospectives on Healing for Women Survivors of Sexual Abuse*, *RELIGIOUS HEALING IN BOSTON: REPORTS FROM THE FIELD*, May 2002, at 9-12, available at <http://www.hds.harvard.edu/cswt/resources/print/rhb/reports/04.Bouthillier.pdf>.

107. See *supra* Part II (in the control of an untrained or ignorant practitioner, these treatments can cause serious injuries and fatalities to the patient).

108. See Bradley C. Bennet, *Hallucigenic Plants of the Shuar and Related Indigenous Groups in Amazonian Ecuador and Peru*, 44 *BRITTONIA* 483, 483 (1992).

irresponsibly distributed.¹⁰⁹ It is, in effect, a professional secret. The transfer of this aspect of culturally sensitive and valued knowledge is structured to efficiently inform the future generations who would ultimately secure the survivability and well-being of the community.

Shamanic knowledge is, correspondingly, a tightly controlled and critical aspect of secret TK that is powerful and highly valued, carefully nurtured and distributed only to those who are accepted as trainees for its perpetuation.¹¹⁰ Such acceptance requires the trainee to be committed, serious, responsible, and capable of experiencing great mental and physical deprivations to strengthen the mental and spiritual faculties necessary for becoming a community Shaman healer.¹¹¹ Consequently, it has been extremely difficult for bioprospectors and fly-by-night opportunists to acquire a full and coherent account of the Shuar store of TK. The bioprospectors who seek to acquire such TK using fraud and deceit would compromise the trade secret value of TK. The bioprospector would assume that a crude, stealthy appropriation of such knowledge is optimal knowledge and thus exhaust the value of such knowledge in commercial and therapeutic terms. In fact, the knowledge acquired may be very shallow, and further research may misunderstand and depreciate its value to science and, indeed, its optimal commercial values and uses.

Bioprospectors who misappropriate the Shuar knowledge work on the erroneous assumption that each plant serves a discreet purpose, be it medical, cultural, or economic. In fact, the Shamanic knowledge is not static. The Shamans work continually at improving the depth of psychological and spiritual insight into the inner nature of plants and related resources of the rainforest. Thus, Shaman practice is, in part, about Shamanic TK epistemology, continuously broadened and shared with other qualified Shaman to respond to the practical problems that Shuar experience living in the rainforest. The Shaman may, for example, use several plants in complex combinations to produce an exponential range of possible therapeutic values, a direct result of continual experimentation and information-sharing among them. This

109. *Id.*

110. This systemic transfer of knowledge is reflective of TK in general. The “traditional” aspect of TK does not imply a non-technical or primitive foundation but, rather, describes the manner in which that knowledge is created. Hansen & Van Fleet, *supra* note 15 (“[TK] is ‘traditional’ because it is created in a manner that reflects the traditions of the communities, therefore not relating to the nature of the knowledge itself, but to the way in which that knowledge is created, preserved and disseminated.”). *See also* “Elements of a Sui Generis System for the Protection of Traditional Knowledge,” World Intellectual Property Organization, Intergovernmental Committee on Intellectual Property and Genetic Resources, Traditional Knowledge and Folklore, 3d Sess., WIPO/GRTKF/IC/3/8 (2002), available at http://www.wipo.int/edocs/mdocs/tk/en/wipo_grtkf_ic_3/wipo_grtkf_ic_3_8.pdf.

111. *See* PERKINS & CHUMPI, *supra* note 7, at 128-32.

continual propagation and “inter-breeding” of Shamanic knowledge is yet another reason why such knowledge is regarded as a vital secret and transmitted only to those who are qualified, in training, or who themselves are engaged in broadening the boundaries of the knowledge base of the Shaman profession.

The interest of modern science in the TK of the Shuar has itself influenced an entire economic field, namely economic botany.¹¹² This is a well-established field within industrialized society, and highly rewarded both professionally and economically.¹¹³ A specific branch of this field has catalyzed into another vast and growing area of botany known as ethnobotany, which studies TK about botanical assets considered to be of high economic value.¹¹⁴ If the view that TK is not suited for protection is based on the supposition that it has no economic, commercial, or scientific value, the importance that scientists and bioprospectors place on ethnobotany as a major scientific endeavor appears to nip it in the bud. The existence of a specific U.S. governmental policy and a vastly aggressive strategy to appropriate as much of this knowledge as possible and exploit its benefits would seem to further undermine the view that ethnobotany is economically and scientifically worthless.¹¹⁵

VIII. THE NATURE OF TK AS INTELLECTUAL PROPERTY

A. *The Rise of Intellectual Property*

One of the most notorious facets of the conception of property today is the wide acknowledgment of the human imagination as the most important source of human wealth in the new millennium. In short, we create property by imagining something. If that imagining, on further reflection, suggests something of value, it may progress from the expression of an idea into a group or individual secret that can be defined, traded and used for the exchange of value.¹¹⁶ The new wealth of our time is expressed as the “new property” of intellectual property, a product of intellectual effort, but it is, in fact, deeper and older than that.

112. See GUIDELINES ON THE CONSERVATION OF MEDICINAL PLANTS 1 (International Union for conservation of Nature and Natural Resources, 1993).

113. See Society for Economic Botany Website, http://www.econbot.org/_welcome/_to_seb.php (last visited Mar. 29, 2010).

114. See, e.g., Society for Economic Botany; International Society of Ethnobiology; Society of Ethnobiology; Journal of Ethnobiology and Ethnomedicine; Journal of Ethnobotany Research and Applications.

115. See *supra* Part II.

116. See JAMES POOLEY, TRADE SECRETS § 4.01 (1997) (describing elements of a trade secret under U.S. law).

It is the use of the human mind as an instrument of reason and logic, as an instrument of creative orientation and association, as an instrument of deep reflection seeking to pry open doors of knowledge, insight and opportunity. Thus, it is in the human mind that we expand knowledge and insight and better understand the expansion of human consciousness itself.¹¹⁷

There is no fundamental difference between what is imagined and produced by the discipline of a tradition in the Ecuadorian rainforest and what is done so in the formal graduate classes seeking to expand and understand the boundaries of knowledge. Neither can claim a monopoly on the capacity to impact and improve upon the human situation. If we can protect ideas that come out of the graduate seminars of Oxford, Yale, and Cambridge, we must equally protect the ideas and insights that come from a tradition that, while using different methods, is able to produce socially and commercially valuable results.

It is a familiar truism that law is continually evolving, creating new concepts of value and interest and devising appropriate and just means to establish how these are to be controlled, regulated, shaped and shared. The modern state notoriously recognizes new and novel interests. Administrative law is one illustration. Here, the state creates important entitlements and benefits that may not have existed before and may only be important because the material or scientific foundations of society have evolved so as to make them a perceived necessity. The United States explicitly recognizes this evolution in the scholarly literature dedicated to the concept of the new property.¹¹⁸ Although this idea seemed novel at the time of its emergence into legal discourse, it was simply an explicit recognition of the notion that society and the human beings who interact in it are continually creating and recreating new forms of interests and value. The “new property” system recognizes that, in some ways, the modern state has vastly accelerated this process.¹¹⁹

Conventional law, therefore, recognizes that new forms of property are continuously being created by practice, as well as by conscious legislative and administrative action, in the modern state. The modern state creates a vast flow of entitlements, the procedural juridical

117. See Justin Hughes, *The Philosophy of Intellectual Property*, 77 GEO. L.J. 287, 332-39 (1988).

118. See generally Charles A. Reich, *The New Property*, 73 YALE L.J. 733 (1964).

119. In the High Court of South Africa (Cape of Good Hope Provincial Division) Case No: 10226/06, In the matter between Glen Duncan [Applicant] and the Minister of Environmental Affairs and Tourism [First Respondent] and Chief Director: Research, Antarctica & Islands of the Department Environmental and Tourism: Marine & Coastal Management [Second Respondent], Judgment rendered by Winston P. Nagan (Acting Judge of the High Court of South Africa) on Feb. 28, 2007.

character of which is not always precisely defined. However, once the interest is identified, those entitled to the interest are protected from arbitrary takings that compromise those interests.¹²⁰ Such interests are also actively developed under such concepts as the legitimate substantive expectation a person may hold in reliance on acts of a government.¹²¹ Thus, new or novel forms of property or interest are continually being discovered or created and protected by law, and the property and interests developed have an explicit human rights dimension. The Universal Declaration of Human Rights describes the protection of property as a human right, declaring that "everyone has the right to own property alone as well as in association with others. . . . No one shall be arbitrarily deprived of his property."¹²² This means, for instance, that indigenous people own the property over their lands and not simply the grazing rights. Likewise, they own their profound and dynamic store of indigenous knowledge, and that knowledge is their property as a fundamental human right. Their right to own their lands and their TK-intellectual property are thus ownership rights recognized as fundamental human rights.

In the area of intellectual property, these ideas are expanded dynamically, since it is in the area of intellectual property that humanity today experiences a vast amount of its economic growth. In short, it is the new property created out of the human imagination that is recognized as having value and is protected from arbitrary or capricious appropriation or from antagonistic interests bent on misappropriating and using for value such forms of property and entitlement.

B. Protecting TK and the Ideological Assumptions and Misconceptions of Contemporary Intellectual Property Law

In 1993, a conference in Belagio, Italy considered the problem of intellectual property as currently constructed in national law and conventional international law (treaty law). The outcome of this

120. See Reich, *supra* note 118.

121. See *supra* note 119.

122. Universal Declaration of Human Rights art. 17, Dec. 12, 1948. The protection of property is guaranteed in other international human rights instruments as well as regional human rights declarations. See American Declaration on the Rights and Duties of Man, Article XXIII_m (Apr. 1948) ("every person has a right to own such private property as meets the essential needs of decent living and helps to maintain the dignity of the individual and the home." See also American Convention on Human Rights, Article 21- "Everyone has the right to the use and enjoyment of his property. . . . No one shall be deprived of his property except upon payment of just compensation. . . ." American Convention on Human Rights, July 18, 1978, 1144 U.N.T.S. 123; see also African Charter on Human and Peoples' Rights art. 14, June 27, 1981, 1520 U.N.T.S. 217 ("The right to property shall be guaranteed.").

conference was the Bellagio Declaration.¹²³ In the Declaration a clarification is provided of the assumption behind intellectual property law, stating “contemporary intellectual property law is constructed around the notion of the author, the individual, solitary and original creator, and it is for this figure that its protections are reserved.”¹²⁴ This Declaration, though appropriately drafted with respect to its purpose, makes a grievous error. It does not adequately reach the notion that patent law may be used to aid and abet a naked fraud, theft, and widespread misappropriation of the intellectual property of others.

In short, the tools in the system do not reflect legal neutrality but, rather, a process by which a stranger may steal another’s property or knowledge, lodge documents in a foreign state, meet the formal requirements which are limited of that state’s law and proclaim ownership worldwide. It is precisely this legal technicality which creates a legal vacuum that facilitates the misappropriation of the intellectual property of others. The international regime appears to want to speed up the registry of patents without an inquiry as to their origin or possible shared originators. This is, largely, a current global debate about the proposed changes and supplementation of the Convention on Bio-Diversity, in particular Article 8[J]. The debate there revolves around whether a certification is a practical and effective pre-condition prior to filing for a patent. The misappropriating party has an immense advantage in that, once the patent is filed and possibly approved in a distant state, it is virtually impossible to challenge the patent holder for the violation of a trade or industrial secret, especially if the plaintiff is an indigenous group or community. Apart from any other difficulties, it is vastly expensive and beyond the reach of most indigenous communities to mount an effective challenge to the system at present. In addition, the patent law will rarely, if ever, demand that the entity registering the patent certify the origin of the idea and the related materials from which the patent is constructed.

A team of researchers at the University of Florida, working with Shuar leaders, reviewed 3,000 patents of major pharmaceutical companies and could find no evidence of certification of the foundations of the knowledge from which the patented organic compounds developed were registered.¹²⁵ Although the discourse on

123. Bellagio Declaration from the 1993 Rockefeller Conference “Cultural Agency/Cultural Authority: Politics and Poetics of Intellectual Property in the Post-Colonial Era,” Mar. 11, 1993.

124. *Id.*

125. See Dutfield, *supra* note 31 (describing the view held by critics of bioprospecting that the “patents on products developed as a result of the efforts of ‘bioprospectors’ are sometimes based so closely on [traditional knowledge] that they are in fact a form of intellectual piracy”); see also Sayagues, *supra* note 96.

revising the Convention on Biodiversity (CBD) focuses, *inter alia*, on the issue of certification, it is clear that should certification be mandated internationally, it will be fiercely resisted by the small group of interests and States that have benefited enormously from stealing and misappropriating the intellectual product of indigenous peoples. The solitary-owner assumption defies social reality. It seems appropriate, therefore, to approach the repudiation of the assumption through an explicit theoretical and sociological explanation of the nature of property, individualism, and community.

C. The Basic Anthropomorphic Foundations of Intellectual Property

The more realistic and empirically sustainable idea of property, person, and community rests on the obvious notion that every individual comes into being in an ineluctable relationship with others. These radiating relationships constitute family, group and, ultimately, State. The individual thus emerges into a social reality of community which includes the perspectives of the past, the present, and the future. It follows that the individual's personal ingenuity and productivity is not wholly atomized nor completely distinct from the history and circumstance of the community that produced and nurtured her.

Although individuals may ingeniously improve upon the intellectual product of their culture, their own ideas of property (what is mine and what is yours) and, indeed, the very perception of property in general, is that of a construct in relation to others and to the political system which constitutes the community. Sometimes these divergent stances stress the theory that one form of social organization is individualistic, while the other is communitarian. But, it is difficult to imagine any society that is not both individualistic and communitarian. In actuality, emphases on individualism and community are both elements of the nature of social process. In short, social interaction is characterized by patterns of both collaboration and conflict. It is these cross-cultural social interactions that provide fluidity about what property and value has been and might be in the future and which, in turn, inform cultural expectations about line-drawing over the value of things that are both demanded and shared by community members.

Property, and especially TK as intellectual property, is, therefore, very much a human, social, political, and juridical construction. Contrary to popular belief, the boundaries of property and the forms of its uses are dynamic rather than static. This insight is nowhere more obvious than in the area of intellectual property. Intellectual property is in the first instance a product of the human imagination. The human imagination itself is influenced by the context and the relational

dynamics of social process. But, the fact that an idea of value exists in the mind of a Shaman or a graduate student in a modern university does not, alone, convert the idea into property. That is, the “idea” is a necessary but not a sufficient condition of society vesting the idea with the notion that it is of value and, as such, may only be used, appropriated or enjoyed when given practical or concrete expression under limited conditions.

In this sense, intellectual property from an anthropomorphic perspective codifies the imaginative experience of tradition, defines that experience in concrete expression, and evolves, mutates and stimulates still other ideas and imaginations such that society continuously produces new and utterly novel forms of this so-called property. What, then, are the boundaries of property, intellectual or otherwise? A realistic assumption, although troublesome to many, is that property, rather than being a vested or reified artifact, is a construct whose forms and interests will be constrained only when the human imagination ceases. But the human imagination will cease only when human associations ultimately end. This would seem to be the ultimate constraint on property. Under this light, TK can be viewed as the product of traditional techniques and epistemologies, as well as of the imagination, and it is no less valuable than the humdrum products of the many scientists seeking to reproduce—in camouflaged signs and symbols—the ideas of others.

The idea that TK is not property and does not carry value for indigenous communities is, therefore, utterly unsustainable in terms of history, in terms of jurisprudence and in terms of social science. It is a value whose currency is promoted by those who have misappropriated the intellectual patrimony of TK and have sought to exclusively monopolize the benefits of value-added procedures and techniques and their marketing. The primary force behind the pattern of misappropriation is, of course, the time-worn motives of profit and self-interest. These practices are carried on in the name of advancing knowledge in respected fields such as ethnobotany and economic botany. They are done in the name of advancing science within the systems of modern pharmaceutical research and the promotion of modern drugs as a pure commodity, with a callous disregard for the broader value implications which they actively seek to undermine or ignore.

Often, these acts are committed under the auspices of bioprospecting, a term tantamount to biopiracy.¹²⁶ Further acts are camouflaged in the name of biodiversity but frequently translate into the

126. It is our submission that such activities, performed under color of the term “bioprospecting,” significantly gravitate toward what we define as “biopiracy.”

appropriation of what may be value in nature of biodiversity from this perspective. Consequently, indigenous communities are at the mercy of additional predators who can now exploit their lands for other commodities and disregard the integrity and diversity of the ecosystem. Having abstracted what the prospectors think is all that is valuable from the people and the biodiverse ecosystem, the entire ecosystem is now expendable, causing profound hardships for the people who live in these environments. As this destructive process unfolds, it exposes the affected area to an increasing risk of wholesale community obliteration. That is, when biodiversity, together with genetic and human resources, are allegedly exhausted, the weak incentive to protect the biodiverse ecosystem and the human community in it begins to erode. Energy and extractive interests bring in a new round of prospectors who may ruthlessly resort to methods of coercion to achieve access for these resources, thereby threatening the survival of the community itself.

VI. LEGAL METHODS FOR PROTECTING TK FROM BIOPIRACY

A. A Primer of Legal Strategies for the Advocate

There are multiple ways in which law, as an effective process of intervention, may be developed to provide an adequate authoritative and controlling response to the processes and practices of bioprospecting and to ensure that the misappropriations of TK may be adequately protected. The key issue which must be addressed in this regard is a clarification of the notion that indigenous people have discrete property interests and, in particular, property interests in those forms of TK that fall under the broad framework of the protection of intellectual property expectations on a regional and global basis. What follows is a primer of concrete strategies outlining key legal principles and doctrines in international and comparative law that may be deployed by advocates who seek just and equitable resolutions for the indigenous nations affected by the scourge of biopiracy.

The first of these is to explore the scope and relevance of the foundational concepts of trade and industrial secret law. A review of practices in the civil law, in the common law, in representative statutory law states as well as in international law shows there is a common core of legal concepts that consistently recur in all the criteria that touch on the protection of trade and industrial secrets.

Second, is the idea of the recurring concept of piracy, which is an international legal concept that generally confers universal

jurisdiction.¹²⁷ The concept of piracy as a wrong recognized in international law has been expanded from robbery on the high seas to the highjacking of planes and ships. Piracy has been further expanded in the digital age to cover electronic commerce and communications, and expanded generally in the realm of intellectual property to the infringement of copyright.¹²⁸ Using the techniques of modern communication theories, there are strong juridical foundations for the construction of a customary international law rule which, by legal analogy, may appropriately cover the international wrong of biopiracy.

A third possible avenue of legal recourse is contingent in part upon the soundness of the description and analysis of traditional legal rights as protecting the property interests of indigenous people. If the concept of a trade or industrial secret is a formal property that forms the basis of a claim under a conventional international treaty, that claim would still have to be characterized for the purpose of civil litigation in a domestic tribunal. In general, the wrongful misappropriation of a trade or industrial secret is regarded in both civil and common-law systems as being either *delictual* or tortuous in character.

Fourth, the juridical foundation to support a claim in a domestic court for the violation of a substantive property interest relies on the principle that the prescriptive norm ruling the case is one drawn from the field of private international law. In short, the *lex loci delictus* is authorized to prescribe that law for the wrongful—that is, *delictual* or tortuous—taking of a property interest. Thus, the law of the state where the wrong or delict occurred is authorized under international law, including private international law, to supply the rule of decision in such a case.

In contemporary choice of law, this test is varied somewhat but there appears to be a growing consensus that the operative rule of decision would be the law of the place that has either a significant relationship to the events or occurrences or, at a minimum, has a reasonable relationship to those parties involved in the allegedly wrongful events. In addition, the wrong could be a civil law and common law wrong in the concerned jurisdictions, thus obviating any notion that there is a true conflict between the concerned states or jurisdictions. However, the logic leads to an even stronger argument, if such a claim is filed in an appropriate federal court in the United States.

Fifth, a direct claim in law which may be based directly on the concept of an international tort directly in violation of the Law of Nations. U.S. practice has specialized considerably in this area. For

127. See Kenneth C. Randall, *Universal Jurisdiction Under International Law*, 66 TEX. L. REV. 785, 791 (1988).

128. See Dutfield, *supra* note 1 (deconstructing the term “piracy” as applied in the context of biopiracy).

example, Section 1350, Title 28 of the U.S. Code, popularly known as the Alien Tort Statute, holds that the federal courts may determine cases brought by an alien for a tort in violation of the law of nations.¹²⁹ This statute has been applied in several federal judicial districts in the United States and the section has been affirmed most recently by the U.S. Supreme Court in *Sosa v. Alvarez-Machain*.¹³⁰ If the logic is sufficiently compelling that the elements of a tortious wrong apply to the protection of trade secret knowledge, and specifically to TK as trade secret knowledge, and if the elements of this wrong are consistent with the standards for declaring the existence of a rule of customary international law, then there is a potential claim under section 1350. The claim would be based on the tort of an international law wrong of biopiracy and, accordingly, an alien would be able to sue under section 1350 given proper jurisdiction over the defendant.

Sixth, the concept of property for indigenous people, if successfully extended to include TK as intellectual property, may provide a firm juridical foundation in human rights law for the protection and the provision of remedies for the misappropriation of TK. This would provide another approach to legal redress for the misappropriation of TK, perhaps more compelling than the concept of an international tort of biopiracy. Specifically, framing this as a human rights issue would require an analysis that focuses on the treatment of TK as intellectual property under Article 17 of the Universal Declaration of Human Rights.¹³¹

The case law coming out of the Inter-American Court of Human Rights has taken a broad and liberal view of the concept of property as applied to the indigenous nations of Latin America.¹³² Though the Court has as yet to extend the concept of property to TK as a protectable property interest, there exists a strong basis in human rights law and

129. 28 U.S.C. § 1350 (2009) (“The district courts shall have original jurisdiction of any civil action by an alien for a tort only, committed in violation of the law of nations or a treaty of the United States.”).

130. 542 U.S. 692, 719, 724 (2004) (maintaining that the Alien Tort Statute was not intended as a “jurisdictional convenience to be placed on the shelf for use by a future Congress or state legislature that might, someday, authorize the creation of causes of action or itself decide to make some element of the law of nations actionable for the benefit of foreigners,” but, rather, was meant to have a “practical effect the moment it became law” to “provide a cause of action for the modest number of international law violations with a potential for personal liability at the time.” The original offenses targeted by the Statute included “violation of safe conducts, infringement of the rights of ambassadors, and piracy.” *Id.* at 715.

131. The Universal Declaration of Human Rights art. 17, Dec. 10, 1948, <http://www.un.org/en/documents/udhr/index.shtml#a17>.

132. *See, e.g.,* *Moiwana Village v. Suriame*, Judgment of June 15, 2005, Inter-Am Ct. H.R., (Ser. C) No. 124 (2005); *Case of Indigenous Community Yakye Axa*, Judgment of June 17, 2005, Inter-Am. Ct. H.R., (Ser. C) No. 125 (2005).

theory, as well as in the practice of the Inter-American Court, to consider this a protectable human right. The arbitrary deprivation or misappropriation of this TK property would be analogous to the tortious harm with which industrial and trade secret law is concerned. Consequently, a possible remedy could lie in the jurisprudence of the Inter-American Commission and Inter-American Court of Human Rights. Further, using the existing principle under the Inter-American system that misappropriation of TK is an international wrong, a showing of this class of harm would establish a *prima facie* tort in violation of the law of nations for the purpose of domestic litigation under section 1350.

The seventh possible stratagem for action may be the claim for legal redress for the misappropriation of TK based on the current prescriptions on the CBD. The CBD provides some degree of protection for indigenous interests based on TK and other genetic materials localized to such communities.¹³³ However, the precise language of the relevant article and its relationship to other related articles in the CBD is very ambiguous and generally considered to be incomplete.¹³⁴ Thus, there is a continuing discourse designed to improve upon the basic expectations in this instrument concerning the interests of indigenous people. Notwithstanding the limitations of the CBD, the convention does provide for extraterritorial jurisdiction concerning issues arising out of the CBD.

The CBD also provides for judicial settlement for disputes under the International Court of Justice.¹³⁵ This may include the possibility of a state's party litigating the rights associated with indigenous interests before the ICJ in certain situations. Article 8(J) is of particular interest from the perspective of the identification of treaty-based legal interests for indigenous people, concerning both TK and the genetic inheritance. Article 8(J) seeks, *inter alia*, to protect TK, stipulating formal certification for access and benefit sharing regarding the gains derived from such knowledge.¹³⁶ The approach of Article 8(J), in this regard, read in the context of the proposed Bonn Guidelines puts the economic interests of indigenous communities into the context of the right to development.¹³⁷ This is a method which is also giving rights to the development of more detailed protections as indicated in the Bonn Guidelines. These guidelines, however, are moral guidelines and do not necessarily generate specific legal rights should they be violated.

133. Universal Convention on Biodiversity arts. 15, 19 (June 5, 1992).

134. *Id.*

135. *Id.* art. 27.

136. *Id.* art. 8(j).

137. U.N. Declaration of Rights to Development, Dec. 4, 1986, available at <http://www.un.org/documents/ga/res/41/a41r128.htm>.

However, they could implicitly be read as providing an authoritative gloss on rule 8(J) when read in light of the principles of jurisdiction and judicial settlement, and could provide a form of legal redress for malicious violations of the provisions relating to access, certification, and benefit sharing. There are currently negotiations under way to define the scope and character of Article 8(J) of CBD and these negotiations are now being influenced by the recently adopted General Assembly Resolution, Declaration on the Rights of Indigenous Peoples.¹³⁸

B. *Intellectual Property, Treaty Law: Trade and Industrial Secrets and Protection of TK*

In 1996, five Andean nations, including Ecuador, negotiated and adopted the Cartagena Agreement, forming the subregional Andean Community (CAN).¹³⁹ Since its origin, CAN has remained active in negotiating and agreeing among Member States to expand the agreement to combat new challenges confronting Member States. TK is a well-tread issue in decisions under CAN. Interpretations of these recent decisions bear directly on the nature of the legal theories employed to define the property character of TK and the expectations of Member States. These expectations explain the circumstances under which TK may be protected from predatory interests. For example,

138. U.N. Declaration on the Rights of Indigenous Peoples, Sept. 13, 2007, available at <http://www.un.org/esa/socdev/unpfii/en/declaration.html>.

139. The Andean Community of Nations (CAN) trade agreement consists of Bolivia, Colombia, Ecuador, Peru, and Venezuela. Andean Community, CAN, About Us, <http://www.comunidadandina.org/> (last visited Mar. 1, 2009) [hereinafter CAN]. It is one of the main trading blocs of South America, along with Mercosur, or the Common Market of the South, which consists of Argentina, Paraguay, Uruguay and Brazil. SICE, FOREIGN TRADE INFORMATION SYSTEM, <http://www.sice.oas.org/trade/mrcsr/mrcsrtoe.asp> (last visited Mar. 1, 2009). Article 21 of the Cartagena Agreement, the foundational instrument of CAN, established an Andean Community Commission with a representative from each Member State's government. Andean Community: Treaties and Legislation, available at http://www.comunidadandina.org/ingles/normativa/ande_rie1.htm. Article 27 of the Cartagena Agreement sets out the process for presenting and passing proposals before the Commission. *Id.* Article 27 of the Cartagena Agreement in conjunction with Commission Decision 344 decided to replace Decision 344 with Decision 486, entitled Common Intellectual Property Regime. Andean Community, Decision 486: Common Intellectual Property Regime [hereinafter Decision 486], available at <http://www.comunidadandina.org/ingles/normativa/D486e.htm>. Decision 344, entitled Common Regime on Industrial Property, addresses patents, industrial secrets, trademarks, and tradenames. SICE, Andean Community, Decision 344, available at <http://www.sice.oas.org/trade/JUNAC/decisiones/DEC344e.asp>. Decision 486 reworks the language of Decision 344, emphasizing the Paris Convention, WTO, TRIPS, and specifically traditional knowledge of indigenous communities and the need to follow the various international instruments when dealing with intellectual property.

Decision 486 addresses common intellectual property.¹⁴⁰ This decision aims to codify settled international expectations concerning intellectual property and to further define the legal character of indigenous TK as intellectual property.¹⁴¹ Title XVI, Chapter II touches on the theme of industrial secrets.¹⁴² Industrial secrets are defined in Article 260.¹⁴³ The definition, precisely on point, functionally follows the common law concept of a trade secret, considering an industrial secret to be “any undisclosed information within the lawful control of an individual person or legal entity that may be used for any productive, industrial, or commercial activity and that is capable of being transmitted to a third party.”¹⁴⁴

In the case of the Shuar and any other conceivable case of biopiracy, the knowledge relating to traditional uses of plants for healing and other purposes is clearly “capable of being transmitted to third parties.”¹⁴⁵ Were it not so, the entire field of ethno- or economic botany would collapse or never have arisen in the first place. Moreover, the TK is, in fact, “within the lawful control”¹⁴⁶ of legally recognized traditional leaders under the Shuar Nation Corporation (SNC), incorporated under the laws of the Republic of Ecuador. The SNC manages the Shuar’s property interests as they relate to contemporary economic and commercial realities and serves as the incorporated legal persona of the Federacion Interprovincial de Centros Shuar (FICSH), which is the authorized political representative of the Shuar Nation.¹⁴⁷ FICSH traces its roots to 1964 when representatives of the Shuar, responding to increasing pressure by the Ecuadorian government for colonization of the Shuar territory, founded FICSH. The Shuar recognized the need to have a central governing body to act as a voice for the community in the effort to protect the Shuar traditional lands, which is vital to their cultural survival.¹⁴⁸ FICSH was officially recognized by the Ecuadorian

140. Decision 486, *supra* note 139.

141. Article 3 of Decision 486 specifically says “[t]he Member Countries shall ensure that the protection granted to intellectual property elements shall be accorded while safeguarding and respecting their biological and genetic heritage, together with the traditional knowledge of their indigenous, African American, or local communities.” *Id.*

142. *Id.*

143. *Id.* art. 260.

144. *Id.*; see also RESTATEMENT (FIRST) OF TORTS § 757 cmt. b (1939) (defining a trade secret to consist of “any formula, pattern, device or compilation of information which is used in one’s business, and which gives him an opportunity to obtain an advantage over competitors who do not know or use it).

145. Dutfield, *supra* note 20, at 233.

146. Decision 486, *supra* note 139.

147. Inter-America Development Bank, Proposal for Financing and Technical Cooperation for FICSHA, <http://idbdocs.iadb.org/wsdocs/getdocument.aspx?docnum=451710>.

148. Their first goal was to establish ownership of their land. With some outside help and funding, the organization has surveyed, mapped, and titled 400 communities. Overall, they have

legislature that year.¹⁴⁹ FICSH is charged with the significant task of governing over Shuar political, economic, cultural, and juridical interests, and holds regular assemblies where representatives from all internal regions of the Shuar participate in policymaking and electing officials. These officials constitute the “directiva”—the Board of Directors—and act in executive and administrative capacities.¹⁵⁰ In 2004, the FICSH Grand Assembly, in its capacity as the highest political decision-making body of the Shuar Nation, authorized the establishment and incorporation of the SNC and approved the Board of Directors of the corporation and its juridical ties to the political authority of the Shuar.¹⁵¹

A critical objective for establishing the corporation was for Shuar community leaders to gain hands-on experience in decision-making involving corporate and economic matters. The SNC thus serves three purposes. First, the SNC serves to define and defend all property rights of the Shuar in the Shuar territory. Second, the SNC serves to establish the legal personality of the Shuar in all private law matters of economic ownership and possession of property. Third, the SNC serves to provide Shuar community leaders with experience in responsible, accountable and transparent corporate management. The SNC’s role is to continuously refine the economic interests and patrimony of the Shuar in order to protect those interests in law and to provide the Shuar a specific international legal entitlement to all their goods, properties and patrimony.¹⁵²

Further, Article 260(a) stipulates that the knowledge must be a secret “in the sense that it is not, as a body or in the precise configuration and

safeguarded eighty percent of their ancestral land. Cadaval, <http://www2.truman.edu/~marc/webpages/nativesp99/grito/weblinkIEN.html> (last visited Feb. 24, 2010).

149. Acuerdo Ministerial No. 2568, Oct. 22, 1964.

150. The fundamental structure of the FISCH centers around the Grand Assembly, which meets periodically, and serves as a popular assembly and final law-making authority of the Shuar Nation within the powers allocated to it under the law and custom of Ecuador. The Assembly elects a Directiva with ministerial portfolios governing all aspects of Shuar cultural, political and economic development. Additionally, there are local governing bodies within the Shuar Nation who elect representatives to the Assembly, which is the final decision-making authority of the Shuar. The Assembly consists of representatives from all sectors of the Shuar nation, consisting of the Huambisa, Aguaruna, Achuar, Huaorani, and Shiviari Indians. Although FICSH has had significant achievements, it continues to struggle with funding for its own governmental operations. Currently, the members of FICSH serve on a volunteer basis.

151. After consultation within FISC and with representatives of the local governing bodies, the author was asked to serve on the Board of Directors of the SNC. His role is that of a juris consult and political advisor to the Shuar Nation.

152. See *supra* note 151; see also Kristen Hite, Note, *Back to the Basics: Improved Property Rights Can Help Save Ecuador’s Rainforests*, 16 GEO. INT’L ENVTL. L. REV. 763, 772 (2004) (“in 1964 . . . the first Indian Federal was created by the Shuar Nation in the Amazon to demand government recognition of collective territorial rights.”).

assembly of its components, generally known among or readily accessible to persons within the circles that normally deal with the kind of information in question”¹⁵³ The TK of the Shuar is a carefully guarded secret of an internal professional class of healers, the Shamans.¹⁵⁴ Within Shuar society, the Shamans have a national professional society governed by elected officials.¹⁵⁵ Indeed, Ecuadorian law provides a State stipend to Shamans because of the healing functions they perform in the health care system.¹⁵⁶

Article 260(b) focuses on the fact that the industrial secret must have commercial value because it is secret,¹⁵⁷ and Article 260(c) states that the owners of the knowledge take reasonable steps to keep the knowledge secret.¹⁵⁸ In brief, the TK held by the Shuar specifically meets these criteria of secrecy and reasonable procedures to keep the knowledge secret.¹⁵⁹ For this reason, major U.S. interests in the field of ethnobotany were forced to use cunning tactics, tantamount to fraud, to acquire a vast quantum of TK of scientific, economic, and medicinal value.¹⁶⁰ Instrumentalities of the United States and its prospectors then secretly extracted this carefully guarded TK from the Shuar territory and passed it on to a National Cancer Institute (NCI) Register, which is not generally accessible to the public.¹⁶¹ Later, the same organizations decided, having exploited the knowledge, to put the knowledge into the public domain.¹⁶²

This was an intentional effort to destroy the property value of the misappropriated TK. It was done with the understanding that once the

153. Decision 486, *supra* note 139, art. 260(a).

154. Dutfield, *supra* note 20, at 246 (“The Shuar view shaman knowledge as an ‘exchangeable commodity’ which can be purchased. The tangible, alienable nature of specific items of shaman knowledge is revealed by the fact that this knowledge can be bought, sold, lent, as well as be subject to theft.”)

155. *Id.*

156. See John O’Neill et al., *Best Practices in Intercultural Health* (a publication of the Inter-American Development Bank, Washington, D.C., Sustainable Development Department, Best Practices Series) (2006). The Ecuadorian state has initiated an intercultural health program that attempts to build networks of indigenous organizations, government health departments at various levels, health care providers and NGOs; this regionally-focused program provides indirect funding for services. *Id.* at 38.

157. Decision 486, *supra* note 139, art. 260(b).

158. *Id.*

159. See *supra* note 151; see also Dutfield, *supra* note 20, at 275 n.39 (describing how Shamans restrict TK secrets to protect those without the proper training and knowledge from unwittingly harming themselves or others).

160. See Latin American Alliance, *supra* note 24, at 2.

161. See *id.* at 4 (stating that samples held in “NCI’s Natural Products Repository . . . are available to ‘qualified researchers’ under material transfer agreements”).

162. See, e.g., Bradley C. Bennett et al., *Ethnobotany of the Shuar of Eastern Ecuador*, 14 *ADVANCES IN ECON. BOTANY* (2002) (describing in detail the names of plants and their uses by the Shuar people).

TK was in the public domain, no matter how it was originally acquired, it was no longer a secret and therefore carried no commercial value to the original owners.¹⁶³ Although published, the very nature of this publication in a book for internal circulation meant that, in effect, only the biopirate and its confederates had knowledge of the publication itself; therefore, the knowledge in this book still maintains the status of a trade secret as recognized by significant sources of international law based on available instruments and customary practice.¹⁶⁴ Moreover, a further legal stratagem of great inequity was used to undermine the Shuar's trade secret claims. By the time the Shuar discovered what had transpired, the statute of limitations would have blocked lawsuits based on well established U.S. law and principles of international law and human rights.¹⁶⁵

Without any obvious and specific process of taking reasonable steps, the Shuar simply refused to provide this kind of intelligence up front to bioprospectors and other botanical predators. In fact, one major botanical garden approached the Shuar with a contract, that if completed, would have juridically exchanged everything of economic value to them for two scholarships to an American institution. The leaders of the *directivo* of the Shuar at the time found the offer embarrassing. This is not a matter of reasonableness; it is a matter of approaching such outright callousness and up front communications without insulting the other party. Here, the reasonableness of the response was to simply drop the offer into the dustbin outside the presence of the prospector. On a later trip to Ecuador, the abogado defensor of the Shuar was sitting with a junior bioprospector from an Ivy League university who engaged the Shuar lawyer in a conversation without realizing his status in relationship to the Shuar. During this conversation, the bioprospectors stated "that trying to get something out of the Shuar was utterly frustrating. They think they are clever. But I am going to find a way to get what they got."¹⁶⁶

163. *See, e.g.*, *Ruckelshaus v. Monsanto Co.*, 467 U.S. 986, 1002 (1984) ("If an individual discloses his trade secret to others who are under no obligation to protect the confidentiality of the information, or otherwise publicly discloses the secret, his property right is extinguished.")

164. *See, e.g.*, *Space Aero Prods. Co. v. R.E. Darling Co.*, 208 A.2d 74, 82 (Md. 1965) ("A trade secret owner, however, does not abandon his secret by a limited public publication for a restricted purpose.")

165. *See, e.g.*, FLA. STAT. § 688.007 (1988) ("An action for misappropriation must be brought within 3 years after the misappropriation is discovered or by the exercise of reasonable diligence should have been discovered."); PAUL GOLDSTEIN, *INTERNATIONAL LEGAL MATERIALS ON INTELLECTUAL PROPERTY* 19-20 (2000) (includes details of Article 39 of the international TRIPS Agreement for "Protection of Undisclosed Information" giving members the right to prevent unauthorized disclosure of trade secrets).

166. *See supra* note 151.

Additionally, in 2002, the Shuar wrote a Bill of Fundamental Rights.¹⁶⁷ The Bill was adopted by the Grand Assembly, the highest decision-making authority of the Shuar.¹⁶⁸ One of the central issues confronting the Assembly concerned the formation of a partnership with a reputable and internationally recognized research institution, for the purpose of sharing their knowledge for the mutual benefit of that entity, the Shuar community and society at large.¹⁶⁹ For these reasons, the requirement of reasonable steps taken to control the information, as stipulated by Article 260(c), has been satisfied by the Shuar.¹⁷⁰ In short, the traditional secret knowledge of the Shuar, as established by both the Shuar practice of reasonably preserving it and the overt strategies of predatory practices to steal their knowledge using methods that are unlawful at all levels, is a protectable trade secret under codified international law.¹⁷¹

The information concerning the TK as an industrial secret is of tremendously high economic and medical value, related to the characteristics, purposes of products, production processes, and related matters touching on patenting and marketing drugs based on inorganic compounds.¹⁷² More specifically, the TK permits the researcher to target specific species in terms of outcomes that can guide expeditious research and to speed the isolation of the active ingredients, which may then be patented and ultimately marketed.¹⁷³

167. See Winston Nagan & Judit Otvos, *Legal Culture Confronts Science in Search of a New Paradigm of Humane Governance: The Expanding and Constraining Boundaries of Legal Space, Curvature of Time and the Challenge of Globalization* at 22-23, WORLD ACAD. ART & SCI. (2008).

168. See *supra* note 151.

169. See *id.*

170. Decision 486, *supra* note 139, art. 260(c).

171. See Nagan & Otvos, *supra* note 167; GOLDSTEIN, *supra* note 165.

172. See George Frisvold & Kelly Day-Rubenstein, *Bioprospecting and Biodiversity Conservation: What Happens When Discoveries are Made?*, 50 ARIZ. L. REV. 545, 546 (2008).

[R]oughly a quarter of prescription drugs contain some natural products. This percentage increases when one considers traditional medicines used in developing countries. Despite advances in chemistry and biotechnology, production of these drugs via synthesis, tissue culture, or genetic manipulation often remain uneconomical. The anti-malaria drugs quinine and quinidine, for example, are still produced from chincona bark.

Id.

173. See Jennifer Amriott, *Investigating the Convention of Biological Diversity's Protections for Traditional Knowledge*, 11 MO. ENVTL. L. & POL'Y REV. 3, 14 (2003) (explaining how people in India use products from the neem tree for numerous medicinal purposes and that the TK from the tree "has been commercially developed into an effective pesticide that does not harm human health").

Article 262 stipulates the ownership rights of TK against third parties who engage in practices that are, essentially, unfair. Article 262(b) states that “communicating or disclosing, without the consent of the person lawfully in control of that information, the industrial secret referred in subsection (a) with the intent of obtaining advantages for oneself or another party or of causing injury to the person in control of that information”¹⁷⁴ This provision is unremarkable in the sense that it is a principle of law and morality that is found in almost every organized community. Reduced to its fundamental policy, this provision says that you cannot steal somebody else’s trade secret. If one steals with a specific intent to actually injure the person, the wrong is compounded.¹⁷⁵ In short, theft of a trade secret is universally prohibited. Moreover, the specific intent of not only stealing and monopolizing advantages but being absolutely meticulous that the advantages would not be shared with the victims, simply compounds the moral and legal turpitude of the bioprospector. The Shuar have experienced this and, sadly, this experience is by no means unique.¹⁷⁶

A particularly troublesome provision for the bioprospecting industry is the actual use of the TK after it has been misappropriated or stolen. Article 262(e) prohibits the following conduct:

using an industrial secret obtained from another person, while knowing, or negligently failing to know, that the party who communicated the secret had acquired it by use of the means cited under subsection (c), or did not have consent to communicate it from the person lawfully in control of that information.¹⁷⁷

This Article implicates governmental authorities who retrieve and store such information and allocate it on the grounds of the

174. Decision 486, *supra* note 139, art. 262(b).

175. See, e.g., FLA. STAT. § 688.005 (allowing courts to award attorney’s fees to the prevailing party if “willful and malicious misappropriation exists”); *Tri-Tron Inter. v. Velto*, 525 F.2d 432, 547-38 (9th Cir. 1975) (finding that punitive damages were appropriate because of “the connivance, misrepresentation of intent and underhanded dealing” by the defendants).

176. See *Frisvold & Day-Rubenstein*, *supra* note 172, at 548.

Tropical countries have been unable to exercise intellectual property rights and capture gains from products developed from their raw genetic materials. For example, while [*sic*] Eli Lilly, maker of vinblastine and vincristine, derived from Madagascar’s rosy periwinkle, earned \$100 million per year from these drugs. Madagascar, the source of the raw materials received no royalties from sale of the drug.

Id.

177. Decision 486, *supra* note 139, art. 260(e).

government's own policies and preferences. It further implicates the major pharmaceutical entities who, through prestige and preference, acquire this knowledge for their own research and development purposes. It possibly implicates major universities or institutions who may reasonably be expected to know how the material which they study has been acquired and yet, with the high intelligence they presume to monopolize, they seek to claim ignorance. Even first year law students are familiar with the axiom *ignorantia juris non excusat*: ignorance of the law is no excuse.¹⁷⁸

We have focused on the well-established comparative and international legal principles as reflected in the law of Ecuador under the Cartagena agreement.¹⁷⁹ However complex patent law and trade secret law might appear, there is hardly any complexity in the obviousness of basic legal and moral principles that touch on fraud, deception, theft, cover-ups, unjust benefits, aiding and abetting and rewarding such behavior, and also benefiting from such conduct. These are not vastly new or complicated legal principles. In fact, most of these principles are considered to be the bedrock of modern capitalism. They are also the foundations of all cultures that have legal systems that are transmitted by writing or oral tradition. In the village you simply cannot grab the other chap's cow or chicken. Although, there is a greater sense of community proprietorship, people in all village communities do not consider that when a visitor shows up he does not own his pants or underwear anymore. These are vast parodies of social reality and a gross depreciation of the wisdom and sophistication of indigenous peoples and in many instances first nations in many states.

The principles drawn from Decision 486 of the CAN dealing with common intellectual property are remarkably parallel to trade secret law in most States, and particularly the United States. Indeed, in the U.S. trade secret law is highly developed and aggressively enforced. For instance, Coca Cola has been able to maintain its trade secret formula for decades. The United States leads the world in insisting that piracy of cultural and other outputs be fully and effectively policed, not only inside the United States, but also universally. Thus, the growing problem of appropriating trademarks for phonograms, photography, television, digital media and online music, are matters that are considered to be critical to issues of fair dealing, reward for ones efforts, and a vigorous condemnation of the new forms of piracy.¹⁸⁰

178. BLACK'S LAW DICTIONARY 762-63 (8th ed. 2004).

179. CAN also published Decision 391 on Common Regime on Access to Genetic Resources, which further addresses intellectual property rights.

180. The Convention for the Protection of Literary and Artistic works [hereinafter Berne Convention] in 1886 was the beginning of global copyright protection. In 1971, the Berne Convention was revised to include new technological developments, such as phonography,

The United States and other industrialized countries insist that anti-piracy regulations cut across or should be reciprocally prescribed, applied, and enforced across State and national lines and should approximate the idea of universalizing the crime of classical piracy on the high seas.¹⁸¹ In fact, there is so much uniformity as to the principles designed to protect trade secrets in common law and federal law, as well as in the Uniform Trade Secrets Act, that the comparison with the law of equities and the laws of other Andes nations suggests that there is clearly an emerging rule of customary international law that prohibits the stealing of trade secrets. Equity is an authoritative source of international law in the protection of indigenous property interests. International equity minimally incorporates a strong juridical concern for the international and regional human rights of indigenous people.

In addition to general international law, the rules of private international law as between Ecuador and the United States would provide for both countries jurisdiction to prescribe and apply substantive law that recognizes the legal rights of the Shuar.¹⁸² For example, the Shuar have rights under classical private international law, with the prospect of applying U.S. law of the state of domicile of the potential defendants, and most states in the United States either have adopted the uniform act or have a common law that protects the law of trade secrets as an aspect of the law of torts.¹⁸³ In addition, there is international law in which the property rights of indigenous peoples, which have been arbitrarily stolen with the aiding and abetting of a foreign government, may fall in the protections of the jurisprudence of

photography and television. The 1961 International Convention for the Protection of Performers, Producers and Phonograms and Broadcasting Organizations, and the 1971 Geneva Convention for the Protection of Producers of Phonograms against Unauthorized Duplication of their Phonograms, reflect the growing concern for new forms of piracy. The World Intellectual Property Organization [hereinafter WIPO] produced two treaties in 1967, the WIPO Performances and Phonograms Treaty and the WIPO Copyright Treaty, which extended the Berne Convention to the digital world. In the USA, H.R. 2517 Piracy Deterrence and Education Act of 2003 was introduced in Congress to enhance criminal enforcement of copyright laws pertaining to the Internet and online piracy of the digital world. *See* Piracy Deterrence and Education Act, H.R. 2517, 108th Cong. E2(1)-(2) (2003).

181. *Black's Law Dictionary* defines piracy as, "robbery, kidnapping, or other criminal violence committed at sea." Black's further extends traditional notions of piracy by including "a similar crime committed aboard a plane or vehicle, hijacking" and "the unauthorized and illegal reproduction or distribution of materials protected by copyright, patent, or trademark law" as definitions of piracy. BLACK'S LAW DICTIONARY 1186 (8th ed. 2004).

182. *See* Katie Bates, Note, *A Penny for Your Thoughts: Private and Collective Contracting for Traditional Medicinal Knowledge Modeled on Bioprospecting Contracts in Costa Rica*, 41 GA. L. REV. 961, 984 (2007) (recognizing that private international law can successfully provide for multi-country jurisdiction where substantive law can be prescribed and applied for the protection of indigenous peoples such as the Shuar).

183. *See* Uniform Trade Secrets Act, FLA. STAT. ANN. § 688.001-688.009 (2009).

the Inter-American Commission and Inter-American Court of Human Rights.¹⁸⁴ In addition, the Republic of Ecuador and States similarly situated are in fact the vast economic losers of an enormous economic asset. Ultimately the issue is not simply benefit-sharing with pots and pans for the indigenous Shaman and communities. It is that the actual value of what is stolen is a matter of deep interest to a State which is vastly in debt and which itself is examining whether the debts accrued to it were indeed matters of fraud, deceit, and outright exploitation.

C. *Biopiracy as a Wrong under Customary International Law*

An important question in international law is whether the aggregate behaviors which involve the theft and misappropriation of TK is also witnessing the emergence of a legal norm of soft law which we might describe as the international wrong of biopiracy.¹⁸⁵ Earlier in this Article, we used the term biopiracy as a useful marker to underline the nature of the wrongful conduct characteristic of bioprospectors in general. The critical question, therefore, is whether there exists some juridical basis for establishing a wrong of biopiracy, outside the existing conventional treaty law.

Piracy is a universal crime. The pirate is an enemy of humankind. Any State may apprehend and punish the pirate and lawfully appropriate the fruits of pirate wrongdoing. There are two aspects to the crime of piracy. First, a preliminary point; international law does not always clearly distinguish international wrongs in terms of international crimes or international wrongs that may also be enforceable through legal procedures analogous to civil remedies. For example, in international law, torture is a crime under treaty law.¹⁸⁶ It is also a wrong, and as a wrong, civil actions for damages are determined appropriate in certain cases. Thus, the wrong in international law may have both criminal law elements and civil law elements, which may co-exist concurrently or sequentially in terms of legal intervention.

In terms of the universal crime of piracy, the first aspect of it is encoded in the word “universal.” Specifically, this means that there are no territorial limits with respect to the prescription, apprehension, trial and conviction of the pirate. Modern international crimes in various treaties apply the universality principle as a legal obligation on a State

184. See OGUAMANAM, *supra* note 18; Jose R. Martinez Cobo, “Study on the Problem of Discrimination Against Indigenous Populations,” at 29, U.N. Doc. E/CN.4/Sub.2/1986/7/Add.4 (1987).

185. See Zachary Hiller, *The Promise & Peril of TRIPS*, 17 INT’L TRADE L.J. 54, 56 (2009).

186. International Covenant on Civil and Political Rights, G.A. Res. 2200A (XXI), art. 7, 21 U.N. GAOR, Supp. No. 16, U.N. Doc. A/6316 (Mar. 23, 1976) (“No one shall be subjected to torture or to cruel, inhuman or degrading treatment or punishment.”).

to apprehend and punish the wrongdoer, or extradite the wrongdoer to a State willing to do so.¹⁸⁷ Central to the concept of piracy from its inception, however, has been the idea that it is a crime that is not exclusive or limited by territorial considerations as a matter of principle. In particular, it should be noted that the crime of piracy in its original definition usually occurs on the high seas and therefore occurs on a space that is not within the exclusive jurisdiction of any particular State. Jurisdiction is itself, in this sense, inclusive, perhaps described by the inelegant term “universal.” Thus, the concept of piracy and the possibility of its extension via legal analogy would carry with it also the idea of universality as a matter of prescription, application, and enforcement.

The second aspect of piracy is, of course, the substantive definition. The classic definition talks in terms of robbery and stealing (property) as well as kidnapping persons on the high seas.¹⁸⁸ Thus, the issue of robbery and theft fits within the classical definition of piracy. The definition, however, has been extended to include efforts to appropriate aircraft or other vehicles, usually described as hijacking.¹⁸⁹

It would be important to note that the hijacking does not have to be on the high seas to be within the definition of aircraft piracy. In addition, the aircraft may be hijacked on the ground as well as in flight. Thus, hijacking as an act of air piracy, like piracy on the high seas, is not specifically limited or confined to the sovereignty of a particular territorial state. This represents a shift in the historic conceptualization of piracy and detailing the adaptive nature of piracy and its universal applicability.

The piracy analogy has been extended to include the appropriation and otherwise unlawful stealing of copyrights, patents, and trademarks, as well as the production and distribution of the “pirated material.”¹⁹⁰ The broader context of these specific forms of unlawful appropriation also involves modern technologies of communication that by their nature transcend traditional geographic space. Thus, the revolution in communications technologies, which effectually results in the compression of space and time, give credence to the juridical character of the general criterion of universal jurisdiction. In addition, it remains focused in part on the idea that what is taken is, essentially, property; that is, trademark, patent, copyright, and of course the catch-all phrase

187. See John R. Kennel, 48 C.J.S. International Law § 23 (identifying piracy as a crime of universal interest, under the universality principle, that a state must address).

188. BLACK'S LAW DICTIONARY 1186 (8th ed. 2004) (defining “piracy” as “[r]obbery, kidnapping, or other criminal violence committed at sea”).

189. *Id.* (defining “piracy” as “[a] similar crime [to that of robbery, kidnapping or other criminal violence] committed aboard a plan or other vehicle; hijacking.”).

190. *Id.*

intellectual property. The only outstanding question from the point of view of the intellectual traditional property of indigenous people is whether their intellectual property is property at all. There can be no question that analytically, and in sound legal theory, it is property. Moreover, the vast flow of developing law and legal expectations at all levels clearly demonstrate that traditional intellectual property is property, is aggressively sought after, and is used to produce exponential outcomes of wealth, power and prestige for those who can unlawfully appropriate this form of property and use it for their own benefit.

Yet it remains to be determined whether there is an international legal principle apart from specific treaty law, one that is an independent prescriptive norm expressing that acts in the nature of piracy, and biopiracy in particular, are violations of international law. Central to the process of creating customary international law is the notion that the ostensible rule must be articulate and clearly understood. That a rule must carry with it certain classical indicia that go to the establishment of a non-consensual rule of international law. The central elements are the articulation of State practice, the objective evidence of such practice, the specification of the specific elements of customary international law, elements that would include such issues as tradition and time, uniformity and consistency, as well as the idea that the rule is a rule of general universal application. The Statute of the International Court of Justice specifically talks of customary international law being “a general practice accepted as law.”¹⁹¹ The central legal doctrine behind this criterion is the notion that the accepted-as-law clause involves the *opinio juris sive necessitatis*.¹⁹²

It is quite clear that the central doctrine of piracy, which was generated partly by agreement, and from agreement, generated expectations of universal applicability, carries with it the imprimatur of at least an element of duration. With regard to uniformity and consistency, the doctrine has evolved through analogy to other areas of international concern, carrying with it the core elements that involve a universally agreed upon standard of wrongdoing. This includes robbery

191. Statute of the International Court of Justice, art. 38, 1(b), June 26, 1945, available at <http://www.icj-cij.org/documents/index.php?p1=4&p2=2&p3=0>.

192. See *North Sea Continental Shelf (F.R.G. v. Den.)*, 1969 I.C.J. 3, 41-5 (Feb. 20).

[In order to achieve this result [*opinion juris*], two conditions must be fulfilled. Not only must the acts concerned amount to a settled practice, but they must also be . . . evidence of a belief that this practice is rendered obligatory by the existence of a rule of law requiring it. . . . The States concerned must therefore feel that they are conforming to what amounts to a legal obligation.

and stealing another's property in the context of general international concern as opposed to the concern of a single sovereign. These concepts capture the generality of a rule of customary international law—however formulated and however extended through analogy—keeping faith with the core principles of wrongdoing.

We can now look specifically at the analogical extension of the central doctrines of piracy to the issue of biopiracy. The critical question here must analytically be seen in terms of the process by which expectations of what is lawful and unlawful are established in general international law. The emergence of a soft law of biopiracy emerges from the core foundations of piracy doctrine in international law as well as from the emergence of national, regional, and international norms encoded in a multitude of treaties. The two together have generated enhanced expectations about the incremental expansion of the piracy doctrines from ships to planes, to other vehicles, to electronic and cyber products, and to intellectual property and thus to the intellectual property of traditional peoples on a universal basis. The central element in the context of seeking to ground the customary international rule prohibiting biopiracy is, therefore, to recognize who the instruments of international law making are. These include specialized regimes within the Inter-American system, the human rights regimes in multiple regions of the world, spear-headed by the work of the International Labor Organization, U.N. Economic Social Cultural Organization, the World Trade Organization, as well as specific and near-universal legislation and domestic decision-making within States which protect the new forms of intellectual property through areas such as trade secret law.¹⁹³ Thus, when we contextualize the emerging legal norm of biopiracy we see that it carries a powerful imprimatur of the most important participants in the international law making process in the world community.

We now come to the question of the prescriptive content of the norm or rule. Is biopiracy definable in terms that are prescriptively precise and sufficiently general to have the form and structure of a prospective rule of law? Biopiracy may be effectively defined; biopiracy is conduct that targets the TK base of a society with the intent of wrongfully misappropriating intellectually valuable TK from traditional

193. See, e.g., U.N. Declaration on the Rights of Indigenous Peoples, *infra* note 212; International Labour Organisation, *Convention 169: Indigenous and Tribal Peoples Convention* (June 27, 1989) [hereinafter International Labour Organisation], <http://www.ilo.org/ilolex/cgi-lex/convde.pl?C169>; Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS), Apr. 15, 1994; Marrakesh Agreement Establishing the World Trade Organization, Annex 1C, THE LEGAL TEXTS: THE RESULTS OF THE URUGUAY ROUND OF THE LEGAL TEXTS: THE RESULTS OF THE URUGUAY ROUND OF MULTILATERAL TRADE NEGOTIATIONS 320 (1999), 1869 U.N.T.S. 299, 33 I.L.M. 1197 (1994), http://www.wto.org/english/docs_e/legal_e/27-trips.pdf.

communities by fraud, deceit, theft, and malicious procedures.¹⁹⁴ The wrongful appropriation of such knowledge is used to produce and distribute products of economic value for the sole gain of the bioprospectors or their principals and agents.¹⁹⁵ The wrongful conduct constituting biopiracy is conduct that is universally prescribed by custom, legislation, treaty law, and by general international law.¹⁹⁶

The second component of the rule is whether it carries any international authority imprimatur. It is quite clear that no State and no reputable private sector entity would refute the principle that using theft, fraud, and deceit as the mechanism of obtaining the intellectual product of another person or community is simply morally reprehensible. Thus, the very content of the norm and its widespread adherence in law at all levels from the international arena to the customary norms of the indigenous communities themselves, established the principle that the norm of biopiracy is supported by a powerful authority component inherent in the nature of the norm itself.¹⁹⁷ Other components of authority supplemental to this include the fundamental policies that protect intellectual property from theft and misappropriation, and such fundamental policies find support in the human rights dimension of property.¹⁹⁸

The final component of the prescription that outlaws biopiracy is whether it may carry any expectation of practical application. To the extent that powerful actors on the international scene intimately involved in biopiracy strenuously prevent the actual processes and outcomes from being generally accessible, international law remains somewhat weak in the issue of enforcement. However, weak enforcement at all levels does not mean that there is no expectation of enforcement at all. It is precisely because there is a strong expectation of enforcement that strenuous efforts are made to make enforcement difficult. For example, indigenous communities get little or no legal assistance from their own States to litigate their lawful claims against bioprospectors and other economic "hit men."¹⁹⁹ In addition, there seems little desire to provide indigenous communities with the practical legal assistance needed at the international level to appraise their claims and to intercede on their behalf in terms of the multiple methods of

194. See Dutfield, *supra* note 1.

195. See, e.g., *id.* at 1-3; Latin American Alliance, *supra* note 24, at 1.

196. See Hansen & VanFleet, *supra* note 15, at 5.

197. See generally IKECHI MGBEOJI, *BIOPIRACY: PATENTS, PLANTS, AND INDIGENOUS KNOWLEDGE* (2006); Raidza Torres, *The Rights of Indigenous Populations: The Emerging International Norm*, 16 YALE J. INT'L L. 127, 158 (1991).

198. See ELLI LOUKA, *BIODIVERSITY & HUMAN RIGHTS: INTERNATIONAL RULES FOR THE PROTECTION OF BIODIVERSITY* 19-24 (2002).

199. See Latin American Alliance, *supra* note 24.

dispute resolution indicated in Chapter 6 of the U.N. Charter. This does not undermine the fundamental principle that the expectation of enforcement with regard to biopiracy, like other forms of piracy, is strong, and that strength is sufficiently compelling to provide the rule of customary international law of biopiracy with its firm juridical placement as a critical norm of world order in international law today.

Finally, there exists a clear and well-understood fundamental norm in international law which outlaws biopiracy, and that norm is well understood by the critical target audience in the international community.²⁰⁰ The target audience includes groups and individuals specializing in international trade matters; the victims whose intellectual property is being stolen; the community of strategic operators who are the "hit men" devising and executing discreet methods of deception; and the major organizations, interests and, at times, governments who orchestrate public relations campaigns to present themselves as the beneficent saviors of mankind while simultaneously depreciating the fundamental rules of the system that they benefit from.

D. *Biopiracy as a Tort in Violation of the Law of Nations*

In U.S. law an alien may sue in the federal courts for violation of rights under the Law of Nations.²⁰¹ The violation must be in the form of a claim based on an international tort.²⁰² The threshold question is whether biopiracy can be considered a tort under international law. Without recourse to the specific human rights issues, we have sought to show that the concept of biopiracy has the prescriptive content of a wrong in international law with the core elements of the principle of robbery, which is a form of misappropriation of property under international jurisdiction. The norm is supported by both common law and civil law principles concerning the protection of trade secrets. Both the common law and the civil law regard the breach of a trade or industrial secret as a violation based on either the law of delict or the law of torts.²⁰³

Central to this analysis is a well-accepted principle of comparative law, used in modern private international law although expressed in slightly different language, that it is a wrongful act to appropriate the trade secret of another when that other has done what is reasonable to protect it.²⁰⁴ This principle is supported by the authoritative source of

200. Torres, *supra* note 197, at 145-47.

201. 28 U.S.C. § 1350 (1948).

202. *Id.*

203. See RESTATEMENT (FIRST) OF TORTS § 757, cmt. e (1939).

204. DARRELL A. POSEY & GRAHAM DUTFIELD, BEYOND INTELLECTUAL PROPERTY: TOWARD TRADITIONAL RESOURCE RIGHTS FOR INDIGENOUS PEOPLES AND LOCAL COMMUNITIES

modern international law dealing with general principles of law accepted by so-called civilized nations.²⁰⁵ Thus, the principles of comparative law, private international law and international law may be used to sustain the argument that biopiracy is a tort in violation of the Law of Nations. This same principle finds indirect but additional support in modern state legislation, as well as modern treaty-based obligations.²⁰⁶ The rule is also rooted in expectations about the protection of property and the proscription of arbitrary deprivation that the proscription accords with the expectations of the community that this rule is supported by the idea of authority.²⁰⁷ Finally, the further expectation that such expectations are protected both nationally and internationally is so strong that it cannot be considered that such a rule is simply a matter of legal aspiration. Cumulatively then, it may be confidently submitted that there is a rule of contemporary customary international law which is a clear and precise definition.

E. *Biopiracy as a Human Rights Tort in Violation of the Law of Nations*

This specific legal strategy focuses on the principle that TK of indigenous people holds a special place in international human rights law. First, the flow of international instrumentalities dealing with human rights in general, and the human rights of indigenous people in particular, establishes the notion that there is a human right to property in international human rights law. The only question has been regarding the scope of this right. In the context of the work of the international labor organization as well as the work of the Inter-American system, there is considerable authority which mandates that the property rights of indigenous people require strict levels of international supervision and concern.²⁰⁸ These expectations are also reflected in state law in

88 (1996) (stating that conceivably, "a considerable amount of indigenous peoples' knowledge could be protected as trade secrets," and that a shaman often keeps the knowledge to the exclusion of the general community).

205. See generally Bellagio Declaration from the 1993 Rockefeller Conference "Cultural Agency/Cultural Authority: Politics and Poetics of Intellectual Property in the Post-Colonial Era," Mar. 11, 1993, <http://www.cwru.edu/affil/sce/BellagioDec.html>.

206. *Id.*

207. See Kathy Bowrey & Jane Anderson, *The Politics of Global Information Sharing: Whose Cultural Agendas are Being Advanced*, 488 (2009), available at <http://sls.sagepub.com/cgi/reprint/18/4/479>.

208. See Mark Hannig, *An Examination of the Possibility to Secure Intellectual Property Rights for Plant Genetic Resources Developed by Indigenous Peoples of the NAFTA States: Domestic Legislation Under the International Convention for Protection of New Plant Varieties*, 13 ARIZ. J. INT'L & COMP. L. 175, 211 (1996).

many states, including those in Latin America.²⁰⁹ What is crucial here is the insistence, in the jurisprudence of the Inter-American Court of Human Rights, that the right to property of indigenous people be broadly defined. Central to this definition has been the idea that certain forms of indigenous property are critical to cultural survival.²¹⁰ The wholesale misappropriation of indigenous people's knowledge and its subsequent abuse or misuse is a threat to the cultural survival of that community. Thus, the foundations of the nature of property have been established on a human rights foundation. The wrong of the misappropriation of such rights is therefore a tort or a delict in violation of the Law of Nations and, thus, meets the criterion of 1350 litigation in U.S. Courts.

Even so, regardless of the requirements of the notion of a tort or a human rights tort under the Law of Nations, which is influenced by the litigation requirements in the U.S. Courts under 1350, there would appear to be jurisdiction to declare rights of property under the Inter-American Convention of Human Rights. Indigenous peoples would certainly have the right to petition the Inter-American Commission for a declaration that the appropriation of any property central to cultural survival of an indigenous community of the Americas is protected as a human rights interest in the Inter-American system.

The human rights dimension of TK as property has surfaced as the protection of the right to property from arbitrary takings in the Universal Declaration of Human Rights (UDHR).²¹¹ The right to property is not defined in the UDHR.²¹² However, to give it meaning would at least require that the content and process of this right be construed as being consistent with all the other rights in the Universal Declaration. This would suggest that the right of property must necessarily be broadly construed. The development of property protections for indigenous people in the U.N. Declaration on the Rights of Indigenous People contains an article which broadens the notion of property and can be read to include TK as property.²¹³

The protection given in Art. 26(1) is to land and territories and, importantly for our purposes, "resources which they have traditionally owned, occupied, or otherwise used or acquired." Clearly, the concept of resources that have been "used and acquired" traditionally, therefore, fall within the boundaries of protected property from a human rights

209. See Latin American Alliance, *supra* note 24.

210. *Id.*

211. U.N. Declaration on the Rights of Indigenous Peoples, G.A. Res. 61/295, at 20, U.N. GAOR, 61st Sess. 107th plen. mtg., U.N. Doc. a/RES/61/295 (Sept. 13, 2007) [hereinafter Indigenous Rights Declaration], available at <http://www.unhcr.org/refworld/docid/471355a82.html>.

212. *Id.* art. 17.

213. *Id.* art. 11.

point of view.²¹⁴ This article also stipulates that the right to “own, use, [and] develop” resources are the subject of traditional ownership.²¹⁵ In terms of the black letter human rights prescriptions, there is a broad concept of property and the language used in these instruments permits a rational inclusion of TK as protected property. It should be noted that the Universal Declaration and the Indigenous Declaration are not necessarily, by themselves, binding international law, although, in the context of the Declaration, its wide provisions are a development based on conventional treaty law. Specifically, these provisions are an important gloss on the ILO Convention No. 169 which was a revision of an earlier ILO Convention No. 107.²¹⁶ Specifically, for the purpose of this Article, we defer to ILO No. 169 and, in particular, to Articles 14 and 15. Article 14 states that “the rights of ownership and possession of peoples concerned over the lands which they traditionally occupy shall be recognised.”²¹⁷ This clearly expresses the notion that the property rights of indigenous peoples preexist any notion of state ownership over those interests.

In Article 15, the specific mention is made to resource rights.²¹⁸ In their debates about this Article, some national governments resisted the notion that the indigenous people could own interests in resources below the surface of the land.²¹⁹ Representatives of the indigenous groups, however, insisted that their interests included resources below the surface of the land inasmuch as the exploitation of those resources, without their consent, would put their very survival at stake.²²⁰ Thus, the Article provides that the rights of indigenous people touching on natural resources shall be “specially safeguarded.”²²¹ The provision in Article 15 also establishes that if their interests are damaged by exploitation, then indigenous peoples should be compensated for resulting damages.²²² Finally, Article 15 stipulates the right of indigenous peoples to participate in the use, management, and

214. *Id.* art. 26(1).

215. *Id.* art. 26(2).

216. International Labour Organisation, *supra* note 193.

217. *Id.* art. 14(1).

218. *Id.* art. 15(1).

219. See Laurie Sargent, *The Indigenous Peoples of Bolivia's Amazon Basin Region and ILO Convention No. 169: Real Rights or Rhetoric?*, 29 U. MIAMI INTER-AM. L. REV. 451, 486 (1998) (finding that Venezuela, for example, does not support “provisions which give any special rights or greater autonomy for indigenous peoples as opposed to other citizens”); Traci L. McClellan, *The Role of International Law in Protecting the Traditional Knowledge and Plant Life of Indigenous Peoples*, 19 WIS. INT'L L.J. 249, 264 (2001).

220. McClellan, *supra* note 219, at 264-65.

221. International Labour Organisation, *supra* note 193, art. 15(1).

222. *Id.* art. 15(2).

conservation of their resources.²²³

In the practice of the law, there has been a clear recognition that indigenous people have legally recognizable property rights, in the sense the concepts and frameworks of the declarations and the ILO conventions are consistent with jurisprudential development in the courts. For example, in a case decided by the Constitutional Court of South Africa,²²⁴ Justice [Chaskslon] speaking for the court stated as follows:

In the light of the evidence and the findings of the Supreme Court of Appeal and the Land Claims Court, we are of the view that the real character of the title that the [Richtersveld] community possess in the subject land was a right to communal ownership under indigenous law. The content of that right included the right to exclusive occupation and use of the subject land by the members of the community. The community had a right to use its waters, to use its land for grazing and hunting, and to exploit its natural resources above and beneath the surface.²²⁵

In the case of *Cal v. Attorney General*,²²⁶ the Supreme Court of Belize had occasion to consider the land rights of the Maya communities of South Belize. The Court cited to comparative case law, the work of the Inter-American Commission, the decisions of the Inter-American Court of Human Rights, relied on the authority of ILO Convention No. 169 and the Declaration on the Rights of Indigenous People.²²⁷ The Chief Justice of Belize ruled that under both domestic and constitutional law, as well as international and human rights law, the state of Belize had an obligation to respect the rights and interests of the indigenous Maya community.²²⁸ These interests include their land and other resources. The Court ordered and granted a declaration that the Maya communities had collective and individual rights in the land and resources.²²⁹ It also declared that the Maya communities had collective title to the lands of their members which have been traditionally used and occupied and that this collective title included

223. *Id.* art. 15(1).

224. *Alexkor Ltd. v. Richtersveld Cmty.*, 2004 (5) SA 460 (CC) (S. Afr.), <http://www.saflii.org/za/cases/ZACC/2003/18.pdf>.

225. *Id.* at 31.

226. *Cal (on behalf of the Maya Village of Santa Cruz) v. Attorney General of Belize and Minister of Natural Resources and Environment*, Claims No. 171 and 172 of 2007, Supreme Court of Belize, ¶¶ 1-136.

227. *Id.*

228. *Id.* ¶ 134.

229. *Id.* ¶ 136.

derivative individual rights and interests of individual Maya villages, subject to Maya customary law.²³⁰

IV. CONCLUSION

Ultimately, the issue is not simply benefit-sharing with pots and pans for the indigenous Shaman communities. It is that the actual value of what is stolen is a matter of deep interest to a State which is vastly in debt and which itself is examining whether the debts accrued to it were indeed matters of fraud, deceit, and outright exploitation. The mass dissemination of stolen TK has stripped indigenous people of an essential method for maintaining their economic viability. Existing legal frameworks are ripe for modification. The function of the law, after all, is to create societal conditions which foster sustainable human interactions. The law must respond by creating the framework for a new, robust paradigm of benefit-sharing with respect to TK, not only to protect the cultural survival of the Shuar but, indeed, to preserve global ecological integrity and, ultimately, ensure the survival of humankind.

230. *Id.* ¶¶ 130-31.

