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I. INTRODUCTION

The conceptual and jurisprudential basis of property in indigenous culture differs from notions of property, especially private property, in the modern economic order.[1] Private property is a central and pivotal precept in the modern economic order; it holds a place of primacy and deference.[2] In part, this is because private property functions significantly as a foundation of economic exchanges at all levels of society around the world. These exchanges include a variety of forms, which in turn generate more property and more value, including that emerging from their inextricable link to what property law professor Margaret Jane Radin calls "personhood."[3]

Processes through which property in its real and intellectual forms is ascertained, valued, and exchanged for value are the subject of centuries' worth of analysis and continuing understanding in the West.

In this context, real and intellectual property interests reflect important aspects of the organization of modern society. As the basis of the modern economic order, these interests are commodities that may be readily exchanged in various forms of security and traded for value.[4] In this neoliberal political economy, sustainability is subordinate to resource exploitation.

Across indigenous cultures, the position of real and intellectual property is different. In many contexts, land is not an aspect of the indigenous community; it is the basis of the community itself, especially regarding the community's culture and spiritual beliefs.[5] In short, because land provides the basis of the community, the expropriation of land threatens the community's physical, cultural, and spiritual

1. *See* Alejandro Fuentes, Cultural Diversity and Indigenous People's Land Claims: Argumentative Dynamics and Jurisprudential Approach in the Americas 179–85 (Apr. 18, 2012) (unpublished Ph.D. dissertation, University of Trento), *available at* http://rwi.lu.se/wp-content/uploads/2012/08/Alejandro-Fuentes-doctoral-thesis.pdf; *see also* Declaration on the Rights of Indigenous Peoples, G.A. Res. 61/295, art. 25, U.N. Doc. A/RES/61/295 (Sept. 13, 2007) ("Indigenous peoples have the right to maintain and strengthen their distinctive spiritual relationship with their traditionally owned or otherwise occupied and used lands, territories, waters and coastal seas and other resources and to uphold their responsibilities to future generations in this regard.").

2. *See generally* James A. Dorn, *The Primacy of Property in a Liberal Constitutional Order*, 7 Indep. Rev. 485 (2003).

3. *See* Margaret Jane Radin, *Property and Personhood*, 34 Stan. L. Rev. 957, 957 (1982) ("The premise underlying the personhood perspective is that to achieve proper self-development—to be a person—an individual needs some control over resources in the external environment.").

4. This was not always the case in the older feudal tradition of Western society. Land was not a commodity; it was connected to status. So enduring was this idea that it was only in 1925 that the English Law of Property Act finally codified the idea that land could be commodified for the market. This was accomplished by consolidating and modernizing English property law, enabling a transition from a legal regime which vested all property ownership in the crown—where no private conveyance was possible since land could only pass through feudal title—to one where land could be transferred and leased by and between citizens. *See generally* J. Stuart Anderson, Lawyers and the Making of English Land Law 1832–1940 (1992).

5. The Inter-American Court of Human Rights explained, in *Mayagna (Sumo) Awas Tingni Community v. Nicaragua*, the important relationship between indigenous peoples, their land, and the sustainability of their culture and spirituality:

existence. Indeed, the destruction of the land's ecological integrity threatens the community's survival. In a larger sense, the survival of all societies depends on the viability and ecological sustainability of Earth's resources.

The indigenous idea that land resources are not an aspect of social order, but the basis of it, represents a clash of conceptual and normative values that challenges the foundations of the neoliberal political economy and its notions of private property.

The importance of property to indigenous peoples is born out of a history of deprivation, as countless indigenous peoples have been subject to colonial or neocolonial conquests. For centuries, communities have found themselves displaced, landless, and impoverished as new alien elites have sought to acquire their land and knowledge, often through force, pseudo-law, and trickery.[6]

This article draws attention to several problems relating to indigenous ownership of both real and intellectual property, and their related impact upon the well-being and essential dignity of indigenous peoples. Part II of this article introduces the concept of indigenous ownership of real and intellectual property. Part III digs deeper into challenges to indigenous ownership of land, using the Shuar people of Ecuador as a case study. Part IV examines the problem of bioprospecting, as well as some of its implications, and discusses how the problem has affected the Shuar. It additionally summarizes a few steps toward developing an effective strategy to confront the problem of bioprospecting as it applies to the Shuar. Finally, Part V concludes with an analysis of possible strategies to either stem or combat the effects of appropriation of indigenous peoples' land and knowledge.

II. INDIGENOUS PEOPLES AND CONTESTATIONS FOR INDIGENOUS RESOURCES

There is perhaps no issue more central to the survival of indigenous nations, groups, and peoples around the world than the question of property—both real and intellectual.

For indigenous communities, real property—land—often represents a spatial dimension of the culture and the foundation of social process; it is central to community existence, and represents the essence of cultural identity, as well as

> Among indigenous peoples there is a communitarian tradition regarding a communal form of collective property of the land, in the sense that ownership of the land is not centered on an individual but rather on the group and its community. Indigenous groups, by the fact of their very existence, have the right to live freely in their own territory; the close ties of indigenous people with the land must be recognized and understood as the fundamental basis of their cultures, their spiritual life, their integrity, and their economic survival. For indigenous communities, relations to the land are not merely a matter of possession and production but a material and spiritual element which they must fully enjoy, even to preserve their cultural legacy and transmit it to future generations.
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> Mayagna (Sumo) Awas Tingni Cmty. v. Nicaragua, Merits, Reparations, and Costs, Judgment, Inter-Am. Ct. H.R. (ser. C) No. 79, ¶ 149 (Aug. 31, 2001).

6. *See generally* Robert A. Williams, *Encounters on the Frontiers of International Human Rights Law: Redefining the Terms of Indigenous Peoples' Survival in the World*, 1990 Duke L.J. 660; Ethel Emily Wallis, Aucas Downriver: Dayuma's Story Today (1973).

spiritual and material patrimony.[7] It has a special and vital connection to the idea of community, culture, respect, and human rights. The question of land ownership has been a central and contested point in the struggle to protect the human rights of indigenous peoples.[8] Land is critical to their survival.

Throughout the history of the Americas, the effort to acquire land by aliens has been driven by greed and cultural dominance. Early in the history of Latin America, the conquest of Indian communities generated the question of who owned the conquered lands.[9] A succession of popes, starting with Alexander VI in 1493, claimed ownership of these lands and the right to award it to the Catholic faithful. To cement these claims, legal opinions were sought from distinguished juris consults, including a priest named Francisco de Vitoria. De Vitoria's opinion, though, rooted in natural law jurisprudence,[10] repudiated the pope's claim and affirmed that indigenous peoples' interest in land was sustained by natural law.[11]

The recognition that natural law should justify indigenous property ownership was significantly changed with the drafting of Brazil's first constitution.[12] Although the drafters recognized that natural law would limit their ability to expropriate Indian land, they did not feel that Indians should be given any such legal support to protect their interests. Instead, they emerged with the notion that Indian land interests were limited to those interests above the surface of the land.[13] These might

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7. *See* Special Rapporteur on Indigenous People and Their Relationship to Land, *Prevention of Discrimination and Protection of Indigenous Peoples and Minorities*, Comm'n on Human Rts., U.N. Doc. E/CN.4/Sub.2/2000/25 (June 30, 2000) (by Erica-Irene A. Daes).

8. *See id.*

9. *See, e.g.*, James Muldoon, *Papal Responsibility for the Infidel: Another Look at Alexander VI's* Inter Caetera, 64 Cath. Hist. Rev. 168 (1978).

10. Natural law describes legal conditions and principles which purport to derive from nature and thus from good and proper human order across forms of individual and group conduct. *See* H.L.A. Hart, The Concept of Law 156 (3d ed. 2012) ("[The Thomist tradition of Natural Law] comprises a twofold contention: first, that there are certain principles of true morality or justice, discoverable by human reason without the aid of revelation even though they have a divine origin; secondly, that man-made laws which conflict with these principles are not valid law."); *see also* Lon Fuller, *Positivism and Fidelity to Law*, 71 Harv. L. Rev. 630 (1958) (offering a natural law alternative to positivism in the international context).

11. In his celebrated *De Indis*, de Vitoria argued that indigenous peoples in the Americas were—and had ever been—vested with inalienable rights under natural law, including those over the land on which they resided. De Vitoria attributed these rights to the indigenous peoples' human nature itself, which in his view could not be withheld by anyone, including the pope, in the absence of a just war. *See* Francisco de Vitoria, On the American Indian (1532), *reprinted in* Francisco de Vitoria: Political Writings 278–84 (Anthony Pagden & Jeremy Lawrence trans., 1991); *see also* Francisco de Vitoria, I On the Power of the Church (1532), *reprinted in* Francisco de Vitoria: Political Writings, *supra*, at 45, 84 (arguing that *natural law*, which is common to all cultures, predominates over all nations and can thus be deemed a "law of nations," or *ius gentium*, which itself is part of a larger declaration of *human rights*). A range of scholars have similarly suggested that human rights are endowed with natural law because they are inherent rights, and thus not activated by sovereigns, states, or legal regimes. *See, e.g.*, Richard Falk, Reviving the World Court 116 (1986).

12. *See* Constituição Política do Império do Brazil [Constitution] Mar. 25, 1824 (Braz.).

13. *See id.* arts. 131–36, 178.

include occupancy rights or grazing rights. However, all resources under the surface were determined, by the constitution itself, to belong to the state.[14] This interpretation of indigenous ownership rights might be viewed as an extension of the medieval-maxim-turned-civil-law-precept made famous by Sir Edward Coke: *Cuius est solum, eius est usque ad coelom* ("He who owns the soil owns also up to the sky").[15] The renowned eighteenth-century English jurist William Blackstone extended this concept to include private ownership of subsurface rights,[16] but the Brazilian Constitution bent this precept to its breaking point by vesting subsurface ownership in the state rather than private landholders. Certainly, these distinctions could create ambiguities that could lead to the taking of indigenous property by brute force.

Just as land rights are critical to the survival of indigenous cultures, so too are their intellectual property rights to knowledge accumulated over the course of generations. Intellectual property in indigenous communities is considered their "Traditional Knowledge." There remains some disagreement among authoritative international commentators concerning the definition of "Traditional Knowledge" and how best to institutionalize protections.[17] In any case, it is commonly understood that the use of the

14. *See id.* art. 2.

15. *See* Edward Coke, The First Part of the Institute of the Laws of England 4.a. (Garland Publ'g, 1979) (1628) ("[T]he earth hath in law a great extent upwards, not only of water, as hath been said, but of ayre and all other things, even up to heaven, for *cujus est solum ejuts est usque ad coelom* . . . .").

16. Blackstone's variation on the precept, as articulated by Coke, was to extend the direction of property ownership downward: "Land hath also, in its legal signification, an indefinite extent upwards as well as downwards." *See* William Blackstone, 2 Commentaries on the Laws of England 14 (Wayne Morrison ed., 2001). The phrase itself ("*cujus est solum ejuts est usque ad coelom*") originates with thirteenth-century Roman law scholar Accursius. *See* Hersch Lauterpacht, The Function of Law in the International Community 301–02 (1933).

17. The World Intellectual Property Organization (WIPO) provides a definition of "Traditional Knowledge":

> "Traditional knowledge," as a broad description of subject matter, generally includes the intellectual and intangible cultural heritage, practices and knowledge systems of traditional communities, including indigenous and local communities . . . . In other words, traditional knowledge in a general sense embraces the content of knowledge itself as well as traditional cultural expressions, including distinctive signs and symbols associated with traditional knowledge. In international debate, "traditional knowledge" in the narrow sense refers to knowledge as such, in particular the knowledge resulting from intellectual activity in a traditional context, and includes know-how, practices, skills, and innovations. Traditional knowledge can be found in a wide variety of contexts, including: agricultural knowledge; scientific knowledge; technical knowledge; ecological knowledge; medicinal knowledge, including related medicines and remedies; and biodiversity-related knowledge, etc.

Definition of "Traditional Knowledge", World Intell. Prop. Org., http://www.wipo.int/tk/en/resources/glossary.html#49 (last visited Mar. 21, 2014); *see also* Coenraad Visser, *Making Intellectual Property Laws Work for Traditional Knowledge*, *in* Poor People's Knowledge: Promoting Intellectual Property in Developing Countries 207, 234 (J. Michael Finger & Philip Schuler eds., 2004) (detailing the various definitions of the phrase "Traditional Knowledge" in a series of different sources of international law, which are not necessarily mutually exclusive). Traditional Knowledge can include learned practices and the development of technology, such as cross-pollination of flowers to encourage certain medicinal characteristics, or ascertaining when the rainy season is approaching by the timing of certain blooming flora. Traditional Knowledge further includes any

word "traditional" is not meant to describe this knowledge as rudimentary or dated, but rather as rooted in a community's traditions and incrementally refined over time. This knowledge is generally collective—it is the common heritage of the community as a whole, and is not individually owned—and it is used by indigenous societies to sustain their cultural practices.[18] In other words, "Traditional Knowledge" refers to an inventory of natural resources, including species of local flora and fauna, and an understanding that certain combinations of plant and animal extracts may yield certain effects when administered to a patient in a particular way. In practical terms, "Traditional Knowledge" might refer to the way shamans in an indigenous culture have ascertained over time that certain plants have special properties.[19] It is to this collection of knowledge that certain legal protections could be applied.

III. THE SHUAR NATION OF ECUADOR AND THE LAND QUESTION

The Shuar[20] are an indigenous[21] community of more than 40,000[22] people who live in a stretch of territory in southeastern Ecuador proximate to the upper

system of secular or spiritual beliefs with significance to a group's health, economic well-being, and relationship to nature. *See generally* Charles McManis, Biodiversity and the Law: Intellectual Property, Biotechnology and Traditional Knowledge (2007).

18. *See* Definition of "Traditional Knowledge", *supra* note 17.

19. *See, e.g.*, Sarah Laird, Biodiversity and Traditional Knowledge: Equitable Partnerships in Practice 6 (2002) (stating that ethnobiologists might study plants and animals by examining "local innovations, traditional knowledge and practices . . . [and] [t]his local knowledge may be documented to preserve or share within the community or beyond it"); *see also* Eric Chivian & Aaron Bernstein, *How Is Biodiversity Threatened by Human Activity*, *in* Sustaining Life: How Human Health Depends on Biodiversity 42 (Eric Chivian & Aaron Bernstein eds., 2008) (explaining the dangers of overharvesting plant germplasm with medicinal qualities and citing examples, such as the Rosy Periwinkle plant of Madagascar).

20. The word "Shuar" (also "*šuarä*" or "*šiwar*") can be variously translated to mean "man," "men," or "people" in the Shuar language. *See* Michael J. Harner, The Jivaro: People of the Sacred Waterfalls 14 (1973).

21. The term "indigenous" is a notably murky one from the standpoint of the international community. For example, according to the World Bank's Operational Directive 4.20 on Indigenous Peoples:

> "[I]ndigenous peoples," "indigenous ethnic minorities," "tribal groups," and "scheduled tribes" . . . describe "social groups with a social and cultural identity distinct from the dominant society that makes them vulnerable to being disadvantaged in the development process." . . . *Since no single definition can capture all these groups*, the OD [Operational Directive] describes social groups to be covered as those that "can be identified in particular geographical areas by the presence in varying degrees of the following characteristics: (a) a close attachment to ancestral territories and to the natural resources in these areas; (b) self-identification and identification by others as members of a distinct cultural group; (c) an indigenous language, often different from the national language; (d) presence of customary social and political institutions; and (e) primarily subsistence-oriented production.

See World Bank, *Implementation of Operational Directive 4.20 on Indigenous Peoples: An Evaluation of Results*, ¶ 1.8 & n.5, Rep. No. 25754 (Apr. 10, 2003) (emphasis added) (citation omitted). In an attempt to reconcile various definitions of indigenous groups, Dr. Erica-Irene A. Daes, former Chair and Special Rapporteur of the U.N. Working Group on Indigenous Populations, set out four criteria designed to ascertain if a group could be classified as indigenous:

mountains of the Andes, in the Amazon Basin. Members of the Shuar leadership estimate that the society has resided in the same part of the Ecuadorian rainforest for more than four thousand years.[23] They have retained cultural beliefs and practices notwithstanding the increasing proliferation of non-Shuar influences. The traditional territory of the Shuar is one of Earth's most precious resources of biodiversity;[24] the Shuar experience underlines the legal complexity that indigenous peoples must navigate, often without legal advice or representation.

A. A Trend Appraisal of Shuar Land Entitlements Under the Law

In the early 1960s, the Shuar organized the political foundations of the nation along the lines of a federal, democratic form of internal governance; they founded the

> (a) Priority in time, with respect to the occupation and use of a specific territory; (b) The voluntary perpetuation of cultural distinctiveness, which may include the aspects of language, social organization, religion and spiritual values, modes of production, laws and institutions; (c) Self-identification, as well as recognition by other groups, or by State authorities, as a distinct collectivity; and (d) An experience of subjugation, marginalization, dispossession, exclusion or discrimination, whether or not these conditions persist.

Chairperson-Rapporteur on the Concept of Indigenous People, *Standard-Setting Activities: Evolution of Standards Concerning the Rights of Indigenous People*, Comm'n on Hum. Rts., U.N. Doc. E/CN.4/Sub.2/AC.4/1996/2, at 69 (June 10, 1996) (by Erica-Irene A. Daes). *See generally* Douglas E. Sanders, The Formation of The World Council of Indigenous Peoples (1977); S. James Anaya, Indigenous Peoples in International Law (2004); Ken Coates, A Global History of Indigenous Peoples: Struggle and Survival (2004); Handbook of Critical and Indigenous Methodologies (Norman K. Denzin et al. eds., 2008); Indigenous Peoples and Poverty: An International Perspective (Robyn Eversole et al. eds., 2006); Political Theory and the Rights of Indigenous Peoples (Duncan Ivison et al. eds., 2000); Paradigm Wars: Indigenous Peoples' Resistance to Globalization (Jerry Mander & Victoria Tauil-Corpuz eds., 2006); Bradley Reed Howard, Indigenous Peoples and the State: The Struggle for Native Rights (2003); Patrick Thornberry, Indigenous Peoples and Human Rights (2002); Indigenous Knowledge and Education: Sites of Struggle, Strength, and Survivance (Malia Villegas et al. eds., 2008); Alexandra Xanthaki, Indigenous Rights and United Nations Standards: Self-Determination, Culture and Land (2007).

22. Estimates of the total population of the Shuar vary. *See* Theodore Macdonald, *Amazonian Indigenous Views on the State: A Place for Corporate Social Responsibility?*, 33 Suffolk Transnat'l L. Rev. 439, 445 (2010) (estimating the Shuar population to be between 30,000 and 40,000). *But see* Betty J. Meggers, Amazonia: Man and Culture in a Counterfeit Paradise 56 (1971) (estimating the Shuar population to be about 20,000); Harner, *supra* note 20, at 14 (citing a Summer Institute of Linguistics house count conducted in 1956–57 which estimated that the Shuar population was about 7,830).

23. Nic Paget-Clarke, *Interview with Dr. Luis Macas of CONAIE (The Confederation of Indigenous Nationalities of Ecuador)*, In Motion Mag. (June 6, 2008), http://www.inmotionmagazine.com/global/lm_int_eng.html#Anchor-Thousands-44867 ("The Quechua, we have been here for four thousand years; the Chachis; the Shuar, they are in Amazonía, in the forest area: this historic process has made us into a people, a nation."); *see also* David J. Wilson, Indigenous South Americans of the Past and Present: An Ecological Perspective 170 (1998) (estimating that people have been living in the Amazon Basin for over 11,000 years).

24. Approximately 90% of the world's remaining biodiversity is concentrated in tropical and subtropical regions within developing countries, mostly located in the southern hemisphere. *See* Global Exchange, Biopiracy: A New Threat to Indigenous Rights and Culture in Mexico (2001), *available at* http://www.globalexchange.org/countries/americas/mexico/biopiracy.pdf.

Federacíon Interprovincial de Centros Shuar (the "Federation"),[25] which was officially recognized by the government of Ecuador in 1964.[26] The Federation is charged with overseeing "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" to an elected body known as the Shuar *directiva* (the "Directive"), which acts in executive and administrative capacities.[27] Central to the Shuar's well-being, survival, and cultural interests is the confirmation of the juridical title to their lands, which have never been subject to alien conquest or control.[28]

Today, as never before, there is "intense pressure and competition to [extinguish] the Shuar culture to . . . marginalize its political leadership" and gain absolute control over the resources that comprise the Shuar territory.[29] These resources include mineral resources and petroleum, as well as ethnobotanical resources in the form of Traditional Knowledge about how to put the flora and fauna of the rainforest to good use.[30] The Shuar now defend their territory with determination and an unyielding commitment to maintain control over their cultural identity, economic patrimony, and political future.[31]

The current concern for the control of the Shuar lands has been implicated by the gross and malicious dereliction of responsibility by foreign petroleum interests that are polluting the Amazon Basin as a normal aspect of oil prospecting and production.[32] Staggering levels of ecological damage are being inflicted on indigenous communities by irresponsible corporate behavior.[33] Evidence suggests that adverse health impacts have been felt throughout the region.[34] The Shuar are thus skeptical

25. *See* Winston P. Nagan et al., *Misappropriation of Shuar Traditional Knowledge (TK) and Trade Secrets: A Case Study on BioPiracy in the Amazon*, 15 J. Tech. L. & Pol'y 9, 45 (2010).

26. *Id.* at 45–46.

27. *Id.* at 46.

28. *Id.* at 12–13.

29. *Id.*

30. *Id.* at 13.

31. *See id.* at 12, 46.

32. *See id.* at 12.

33. *See, e.g.*, Dan Collyns, *Oil Industry 'Devastating' for Amazon Communities, Warns UN Rapporteur*, The Guardian (Dec. 20, 2013, 12:11 EST), http://gu.com/p/3ycnf/tw (reporting on findings of the U.N. Special Rapporteur on Indigenous Rights that extractive industries—oil in particular—are causing serious environmental problems in the Amazon Basin, which is adversely affecting indigenous peoples and the land on which they reside).

34. *See, e.g.*, David Hill, *Indigenous Peruvians Protest State Oil Company Taking Over Their Land*, The Guardian (June 7, 2013, 9:20 EDT), http://gu.com/p/3gc93/tw (exploring indigenous concerns about extractives concessions and their impact in the northern Peruvian Amazon); Annie Murphy, *Toll of Oil Drilling Felt in Peru's Amazon Basin*, Nat'l Pub. Radio (June 22, 2010, 12:00 AM), http://www.npr.org/templates/story/story.php?storyId=127992348 (exploring the possible adverse health effects of oil extraction on indigenous communities in the Peruvian Amazon); Miguel San Sebastián & Juan Antonio Córdoba, "Yana Curi" Report: The Impact of Oil Development on the Health of the People of the Ecuadorian Amazon (1999), *available at* http://texacotoxico.org/wp-content/uploads/2013/01/yanacuri_eng_1999.pdf (arguing that an oil extraction operation in San Carlos, Ecuador has had a negative impact on the health of people in the community).

of the presence of corporate actors in and near their territory, particularly in light of the adverse impacts of so many concessionary agreements, which have affected indigenous communities in the region.

B. The Civil Law and the Shuar's Land Ownership

In the civil law tradition—the legal foundation across Latin America[35]—the concept of ownership (*dominium*) of a thing is, from a comparative law perspective, a concept that resists the fractionalization of property interests.[36] Historically, the patrician class maintained its status as a political class because of the economic foundation that supported it. That foundation was land. As such, the expropriation of land, or interests in land, served as an effective method through which the executive authority was able to weaken potential, and actual, political opponents. The civil law therefore embodied a strong concept of ownership, and only grudgingly permitted the splintering or fractionalizing of interests in a thing (*res*).[37] Indeed, this concept of ownership in the civil law has been called absolutist or "inviolable."[38] This absolutism or inviolability is reflected in a Roman law maxim: *Nemo plus iuris transferre potest quam ipse habet* ("No one can transfer a greater right than he himself has"). Put another way, *nemo dat quod non habet* ("no one gives what he does not have").

The civil law often provided an indication of the completeness of ownership through the notion that one has rights *ius utendi fruendi abutendi* ("the right to use and enjoy the fruits of [owned property]"). This, at least, provides an indication of how far one might exercise one's "right" of ownership. The concept of "title" in civil law, a matter of vital importance to Shuar land ownership rights, is thought to be absolute. In practice, this means that the Shuar's right of ownership is not only better than any competing right, but that it is the best and only right of its kind. Regarding the concept of ownership in classical civil law, Barry Nicholas, a leading Oxford authority on Roman law, concluded:

> The absoluteness of Roman ownership can, perhaps, be better seen in what we have called its inviolability—in the principle that a man cannot lose ownership without his consent, with its corollary that a man cannot pass a better title than he has. We have seen that the only exception to this principle of inviolability was prescription, and that even that was a very limited exception . . . .[39]

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35. *See generally* John Henry Merryman, The Civil Law Tradition: An Introduction to the Legal Systems of Western Europe and Latin America (3d ed. 2007).

36. *See* J. Coleman, *Property and Poverty*, *in* The Cambridge History of Medieval Political Thought c.350–c.1450, at 614 (J.H. Burns ed., 1988) (discussing civil law concept of *dominium*, including its indivisibility and superiority to rights had by lesser parties).

37. *See* Adam Smith, *Of Wages and Profit in the Different Employments of Labour and Stock*, *in* An Inquiry into the Nature and Causes of the Wealth of Nations, at I.10.67 (Edwin Cannan ed., 5th ed. 1904) ("The property which every man has in his own labour, as it is the original foundation of all other property, so it is the most sacred and inviolable.").

38. *See id.*

39. *See* Barry Nicholas, An Introduction to Roman Law 157 (1962).

Richard William Leage, another authority on the civil law, explained the foundations of the concept of ownership, or *dominium*, in the classical civil law:

> Ownership is an idea that seems to be natural in social man and one that law will recognize and protect. It is a relationship between a person and a thing—the relationship that is expressed in terms of "mine" and "yours" ("*meum*" and "*tuum*"). In an early community what a man captures or land that he clears and cultivates will be accepted as his, and until society grows more complex he has more to fear from naked aggression than from mistakes or secret takings. When it does become more complex, the law has to lay down criteria for recognizing ownership and protecting it. For recognition the law will insist upon some ground (or title, as lawyers would say) for ascribing ownership to the claimant—e.g. capture, transfer on sale, gift, inheritance. As will be seen, however, the law will always tend to presume ownership in the person who is in actual control of the property, and so ownership will usually come into question before the law in claims of property which another possesses.[40]

It is clear that the civil law was developed to protect *dominium*, to protect the *potestas* ("power") of the *dominus* ("master").

Central to the problem of the title to ownership of the Shuar territory is the history of colonization of the territory itself. First, the territory did not succumb to naked aggression; it was never colonized. Hence, the questions of whether and how state law was justly constituted and how civil law applies, remain. Second, although the state and other actors have attempted secret deals and subterfuge to deprive the Shuar of their ownership rights, those efforts have never succeeded. The Shuar have consistently occupied their traditional lands and have never conceded those lands to anyone else. In short, nothing diminishes the *dominium* of the Shuar over lands they have possessed and occupied for over four thousand years.

The Ecuadorian government claims that the Shuar have no *dominium* and only possess occupancy rights to the land's surface under the civil law.[41] All resources under the ground, the government claims, belong to the state.[42] But no constitutional provision for this notion existed in Ecuador's 1830[43] or 1998 Constitution.[44] Moreover, there is no legislative enactment, nor any specific administrative decree lawfully promulgated, that makes such a claim. Indeed, the only legal basis for such a claim rests on an assumption that the civil law divides *dominium* between interests above the ground and those under it.

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40. Richard William Leage, Roman Private Law 157 (1961).

41. *See* Kristin Hite, *Back to the Basics: Improved Property Rights Can Help Save Ecuador's Rainforest*, 16 Geo. Int'l Envtl. L. Rev. 763, 781 (2004).

42. *See* U.S. Dep't of State Bureau of Econ. & Bus. Affairs, 2013 Investment Climate Statement—Ecuador (2013), *available at* http://www.state.gov/e/eb/rls/othr/ics/2013/204634.htm.

43. *See* Constitución Política de la República de Ecuador de 1830, Sept. 23, 1830 [hereinafter 1830 Constitution], *available at* http://pdba.georgetown.edu/Constitutions/Ecuador/ecuador30.html.

44. *See* Constitución Política de la República de Ecuador de 1998, June 5, 1998 [hereinafter 1998 Constitution], *available at* http://pdba.georgetown.edu/constitutions/Ecuador/ecuador98.html.

Anthony Honoré, Regius Professor of Roman Law Emeritus at the University of Oxford and a Fellow of All Souls College, provides the following opinion of a modern juris consult:

> The civil law does not distinguish so far as ownership of land is concerned between what is above and below ground. The operative phrase is "*quae solo continentur*" (D.6.1.1.1), which includes what grows on the land (trees, crops) and what is found beneath it. However many states either through the constitution or a practice in making grants of land or a statute reserve to themselves or to a body controlled by them mineral rights. There must, however, be a specific instrument that does this. Of course contracts often confer mineral rights on a specified person or corporation. Such rights must be exercised with due regard for the rights of the surface owner. But such rights cannot be derived from the civilian common law on its own. The owner of land owns it *usque ad caelum* and *usque ad inferos* (to the sky and the underworld).[45]

In light of the fundamental principles of ownership in the civil law, particularly the well-established principles of absolutism and inviolability, there is no assumption or practice that permits the encroachment on the civil law concept of *dominium*. There is no legislation or constitutional basis (nor any other lawful statement) which holds, in contrast to the mandate of the civil law, that the state owns the subsurface resources located under the Shuar territory.

C. The Legal Position of the Shuar Under the 1998 and 2008 Constitutions

The 1830 Constitution of Ecuador codified a paternalistic pupilage model, which meant that the Shuar would have inchoate rights in theory, but no rights in practice. As a matter of constitutional law, this was thoroughly hypocritical and deceptive. The 1830 Constitution provided the moral cover for this deception; it subordinated the constitutional and legal status of the Shuar to parish priests who were to serve as their "tutors" and "fathers."[46]

However, as later constitutions were promulgated, this strictly paternalistic pupilage model changed. For example, the 1998 Constitution guaranteed collective rights for indigenous peoples, including the right to ownership and management of their ancestral lands.[47] The 1998 Constitution also entrenched the right to equality under the law[48] and required the state to protect such rights.[49] The 1998 Constitution further stipulated that ordinary law may not restrict the exercise of constitutional rights and guarantees,[50] which included a general recognition of ownership rights.[51] It should also be noted that

45. Document on file with author.

46. 1830 Constitution, *supra* note 43, art. 68.

47. 1998 Constitution, *supra* note 44, art. 84.

48. *Id.* arts. 1–2.

49. *Id.* art. 16.

50. *Id.* arts. 18, 23(6).

51. *Id.* art. 30.

the 1998 Constitution did not include any provision for expropriation or the division of property interests above and below the ground.[52] Even the 1830 Constitution stipulated: "[N]o one shall be deprived of his property, nor his property be subject to any public use without his consent and without receiving just compensation as judged by the standard of a good man."[53] This provision, in its own terms, did not provide any indication that the "pupils," their "tutors," or their "fathers" could be precluded from constitutional protection. Indeed, this provision is so fundamental, and so consistent with a natural law tradition, that it is unlikely that such an explicit protection applied to only some of the citizens of Ecuador and not to the indigenous people and their tutors. As such, the term "no one" in the 1830 Constitution must be read as inclusive in the absence of any other objective meaning to the contrary. Of course, the phrase "no one" would have to be reconciled with other articles of the 1830 Constitution, which treated indigenous people as being in a state of pupilage with church guardians.[54] Yet even in light of the denigrating nature of this model, it cannot be assumed that under both the natural law tradition and the values of the Catholic Church that either the guardians or their indigenous pupils are to be excluded from the phrase "no one."

The rights of attached *dominium* of indigenous and Afro-Ecuadorians are further developed in the 1998 Constitution in a section entitled "Collective Rights." Collective *dominium* over traditional lands and the lands of Afro-Ecuadorians was further strengthened by the stipulation that such lands cannot be acquired by outsiders on the basis of acquisitive prescription.[55] This is established in modern civil law systems, and was integrated into the 2008 Constitution in a section entitled "Rights of Communities, Peoples and Nations."[56]

Critically, the 1998 and 2008 Constitutions enhanced the indivisibility and inviolability of *dominium* over traditional lands through their specific use of the classical Roman law approach.[57] In fact, the classical Roman law approach asserting the absolutism of *dominium* is not only applied by these constitutions, it is actually extended. Under their provisions, traditional lands are exempt from property tax and can be transferred without any charges.[58] Indeed, these constitutional provisions support the strongest possible view of the inviolability and absoluteness of the *dominium* of the Shuar. More than that, this legal construction, building upon the classical Roman law of the indivisibility of *dominium*, demolishes any asserted claim that the state or Ecuadorian law actually permits or promotes the divisibility of

52. *See generally id.*

53. 1830 Constitution, *supra* note 43, art. 62.

54. *Compare id.* art. 62, *with id.* arts. 9–13.

55. 1998 Constitution, *supra* note 44, art. 84(2)–(3).

56. Constitución Política de la República de Ecuador de 2008, Oct. 20, 2008, art. 57 [hereinafter 2008 Constitution], *available at* http://pdba.georgetown.edu/Constitutions/Ecuador/english08.html.

57. *See* 1998 Constitution, *supra* note 44, art. 84; 2008 Constitution, *supra* note 56, art. 57.

58. *See generally* 1998 Constitution, *supra* note 44; 2008 Constitution, *supra* note 56.

dominium. Such a claim regarding the Shuar territory is clearly without foundation under both the law of Ecuador and the civil law tradition on which it is founded.

This does not deny the power of the state (*imperium*) to declare a right of public utility over parts of indigenous lands, which is enshrined in both the 1998 and 2008 Constitutions.[59] Moreover, the corpus of Ecuadorian civil law holds that the state has interests in all lands within the boundaries of Ecuador if that land does not have another owner (i.e., if that land is *terra nullius*).[60] However, indigenous ownership of traditional lands is "unalienable, immune from seizure and indivisible" under the 2008 Constitution.[61] Thus, in light of the public health and environmental consequences of extracting natural resources, the question remains as to where a constitutionally compliant expropriation threshold should be.[62]

Other sources of Ecuadorian law may help to clarify the actual scope of Shuar ownership of their traditional lands in light of the looming threat of expropriation by the state. In addition to the Ecuadorian civil law,[63] the right to ownership of indigenous land is also governed by special laws; these include the Law on Uncultivated Land and Settlement,[64] and two laws that provide some protections to the Shuar: the Mining Law of 1991[65] and the Environmental Regulations for Mining Activities.[66]

The Law on Uncultivated Land and Settlement is important because it defines "*tierras baldías*" ("uncultivated land"), and describes what ownership entails, including ownership by indigenous communities.[67] Under this law, "[c]ommunitarian land of ancestral possession of indigenous people who define themselves as 'nations' of ancestral roots . . . as well as communities that form part of these collectivities . . . shall not be considered as uncultivated land (*Tierras Baldías*)."[68] Anything else may be considered

59. *See* 1998 Constitution, *supra* note 44, art. 84(2); 2008 Constitution, *supra* note 56, art. 323.

60. *See* 2008 Constitution, *supra* note 56, art. 264; *see also, e.g.*, Decreto Supremo No. 2172, Ley de Tierras Baldías y Colonización [Law on Uncultivated Land and Settlement], Registro Oficial [R.O.], 28 Sept. 1964; Decreto Supremo No. 2753, Ley de Tierras Baldías y Colonización [Law on Uncultivated Land and Settlement], Registro Oficial [R.O.], 6 Jan. 1966; Decreto Supremo No. 196, Ley Especial Para Adjudicación de Tierras Baldias en la Amazonia [Special Law on Adjudicating Uncultivated Land in the Amazon Rainforest], Registro Oficial [R.O.], 17 Feb. 1972; Decreto Supremo No. 2091, Ley de Colonización de la Región Amazonica [Law on the Settlement of the Amazon Rainforest], Registro Oficial [R.O.], 12 Jan. 1978 [collectively hereinafter Supreme Decrees].

61. 2008 Constitution, *supra* note 56, art. 57(4).

62. *See infra* Part IV.B; 2008 Constitution, *supra* note 56, arts. 424–25 ("The Constitution is the supreme law of the land and prevails over any other legal regulatory framework.").

63. *See, e.g.*, Supreme Decrees, *supra* note 60; 2008 Constitution, *supra* note 56.

64. Ley No. 2004–03, Codificación de la Ley de Tierras Baldías y Colonización [Codification of the Law on Uncultivated Land and Settlement], Registro Oficial [R.O.], 16 Apr. 2004 [hereinafter 2004 Codification].

65. Ley No. 126, Ley de Mineria [Mining Law], Registro Oficial [R.O.], 31 May 1991.

66. Decreto Ejectutivo No. 625, Reglamento Ambiental Para Actividades Mineras [Environmental Regulations for Mining Activities], Registro Oficial [R.O.], 12 Sept. 1997.

67. *See generally* 2004 Codification, *supra* note 64.

68. *Id.* art. 1(4).

"uncultivated land" such that ownership would fall to the country's National Institute of Agricultural Development (INDA) and more generally, to the state.[69]

Under the Law on Uncultivated Land and Settlement, if ownership of *tierras baldías* was transferred or acquired under the governing law of the 1920s and 1930s, or through any other manner, that ownership may be extinguished and, as a result, the INDA may dispose of such lands freely.[70] While this law qualifies the meaning of "extinction of ownership" rights, it also indicates which activities do not constitute "cultivation," thus creating the possibility that a previously existing right of ownership may be extinguished.[71] Before ownership of certain lands is extinguished, the law provides the owner with the opportunity to present its ownership title.[72] Notably, however, these procedures and mechanisms are administrative; there is no mention of a court of law.[73]

These procedures arguably represent a prima facie political objective to oust the normal courts of law from the process, thus increasing the chance that any abuse will go unpunished. As such, the procedural mechanisms instituted by the Law on Uncultivated Land and Settlement reflect the state's effort to circumvent the 1998 and 2008 Constitutions, which importantly provide that the constitution takes precedence over any other law or regulation produced at any level of government in the event of a conflict among sources of legal authority.[74]

The 1998 and 2008 Constitutions add that "the courts, tribunals, judges and administrative authorities are compelled to apply the pertinent norms of the Constitution, even if the interested party does not expressly invoke the Constitution."[75] Clearly, any legislation or administrative action contrary to the Ecuadorian Constitution and which undermines the rule of law under the constitution is invalid on its face.[76] While this does not directly impact the *dominium* of the Shuar, it is important to note that the 1998 and 2008 Constitutions operate to specifically mandate and compel the protection of the *dominium* over traditional lands.

When examining the question of the *dominium* of indigenous people over their traditional lands, two facts are without dispute. First, the Ecuadorian Constitution

69. *Id.*

70. *Id.* arts. 1(2)–(3).

71. *Id.* arts. 2–3.

72. *Id.* arts. 34–35.

73. *See id.*

74. 1998 Constitution, *supra* note 44, art. 272; 2008 Constitution, *supra* note 56, art. 425 ("The order of precedence for the application of the regulations shall be as follows: the Constitution; international treaties and conventions; organic laws; regular laws; regional regulations and district ordinances; decrees and regulations; ordinances; agreements and resolutions; and the other actions and decisions taken by public authorities. In the event of any conflict between regulations from different hierarchical levels, the Constitutional Court, judges, administrative authorities and public servants, it shall be settled by the application of the standard of higher order of precedence.").

75. 1998 Constitution, *supra* note 44, art. 273; 2008 Constitution, *supra* note 56, art. 426.

76. *See* 1998 Constitution, *supra* note 44; 2008 Constitution, *supra* note 56.

protects the ownership of such land and recognizes the inviolability and absoluteness of the Shuar's *dominium*. Second, despite legislative efforts to weaken the ability of the Shuar to protect their ownership rights in courts of law, Ecuadorian legislation specifically affirms these rights. In fact, the legislature has tried to make it more difficult for corrupt administrators to undermine the constitutional and economic rights of indigenous people. It has passed new legislation that entrenches indigenous land rights in constitutional terms and declares the supremacy of the constitution.[77] By its terms, this legislation should curtail the unlawful expropriation of indigenous land. Yet the new legislation threatens the Shuar's rights by leaving the key term "cultivation" undefined and ambiguous. Which activities constitute cultivation and which do not? Is the right to own land now dependent on its "cultivation"? Can the owner no longer deal with his property as he wishes? Does the concept of *dominium* (as expressed in Article 618 of the Ecuadorian Civil Code) still have the same meaning or has it been watered down?

In sum, the protection provided by the Ecuadorian Constitution is not absolute; through ingenious mechanisms, creeping or disguised expropriation are real possibilities. These efforts are driven by the economic value that the Shuar land and the land of other indigenous communities hold—their rich biodiversity provides not only mineral wealth but also the basis for Traditional Knowledge in healing and cultural medicine.

D. International Law and the Traditional Lands of the Shuar

In 1977, the Republic of Ecuador ratified the American Convention on Human Rights.[78] As a result, Ecuador is legally bound to respect and promote the rights codified in this instrument.[79] In *Mayanga Awas Tingni Community*, the Inter-American Court of Human Rights ruled that the provisions of the Convention directly applied to Nicaragua because Nicaragua ratified the Convention.[80] The court also focused upon the question of the land rights of the Mayanga Awas Tingni community, and the extent to which state infringement of those rights would be a violation of human rights law under the Convention.[81] Thus, this decision makes it clear that the Convention's obligations concerning indigenous communities' title to and ownership of the land are human rights obligations.

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77. *Compare* 2008 Constitution, *supra* note 56, arts. 57, 83–85 (granting indigenous land rights in constitutional terms and declaring the supremacy of the Constitution), *with* 2004 Codification, *supra* note 64, art. 1(4) (considering indigenous lands as part of the Instituto Nacional de Desarrollo Agrario [National Institute of Agricultural Development]).

78. American Convention on Human Rights, *opened for signature* Nov. 22, 1969, 1144 U.N.T.S. 143, O.A.S.T.S. No. 36 (entered into force July 18, 1978).

79. *See id.*

80. Mayagna (Sumo) Awas Tingni Cmty. v. Nicaragua, Merits, Reparations, and Costs, Judgment, Inter-Am. Ct. H.R. (ser. C) No. 79 (Aug. 31, 2001).

81. *Id.*

These obligations are treaty obligations and are binding on all states that are a party to the treaty. Article 21 of the Convention stipulates that:

> 1. Everyone has the right to the use and enjoyment of his *property*. The law may subordinate such use and enjoyment to the interest of society.
> 2. No one shall be deprived of his *property* except upon payment of just compensation, for reasons of public utility or social interest, and in the cases and according to the forms established by law.
> 3. Usury and any other form of exploitation of man by man shall be prohibited by law.[82]

The provisions protecting property are self-evident. Notably, the word "property" is not preceded by the word "private," and such an omission is not made elsewhere in the Convention. This was ostensibly a deliberate omission. Instead, the Convention's drafters established that everyone has the right to use and enjoy his property.[83] While the state may subordinate such use to the social interest, omitting the "private" aspect of property in this context was meant to denote all property—not just private interests.

The Inter-American Court of Human Rights held that Article 21 of the Convention "protects the right to property in a sense which includes, among others, the rights of members of indigenous communities within the framework of communal property."[84] As discussed below, traditional property is protected and recognized in the Constitution of Ecuador.[85] It is clear that the hard law of human rights of the Inter-American system clearly provides specific protection for the traditional title and ownership rights of the Shuar people in their land.[86]

In 1989, the International Labor Organization (ILO) adopted the Indigenous and Tribal Peoples Convention No. 169, but was not effective until 1991.[87] This treaty was designed to consolidate preexisting ILO instruments and developments in international human rights law for the specific purpose of protecting and enhancing the political, cultural, economic, and territorial rights, titles, and resources of the indigenous peoples of the world.[88] The Republic of Ecuador ratified this treaty in

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82. American Convention on Human Rights, *supra* note 78, art. 21 (emphasis added).

83. *See id.*

84. *Mayagna (Sumo) Awas Tingni Cmty.*, Inter-Am. Ct. H.R. (ser. C) No. 79, ¶ 148.

85. *See infra* Part III.E.

86. *See* Report on the Situation of Human Rights in Ecuador, Inter-Am. Comm'n H.R., OAS.Ser.L/V/II.96, doc. 10, rev. 1, chap. IX (Apr. 24, 1997), *available at* http://www.cidh.org/countryrep/ecuador-eng/index%20-%20ecuador.htm.

87. *See* Convention (No. 169) Concerning Indigenous and Tribal Peoples in Independent Countries, June 27, 1989, 1650 U.N.T.S. 383 [hereinafter ILO Convention 169].

88. *See* Special Rapporteur on the Situation of Human Rights and Fundamental Freedoms of Indigenous People, *Promotion and Protection of All Human Rights, Civil, Political, Economic, Social and Cultural Rights, Including the Right to Development*, Hum. Rts. Council, U.N. Doc. No. A/HRC/9/9, at 11 (Aug. 11, 2008) (by S. James Anaya) ("A momentous step in the consolidation of the contemporary international regime on indigenous peoples, Convention No. 169 provides significant recognition of indigenous peoples' collective rights in key areas, including cultural integrity; consultation and

1998.[89] Unfortunately, state officials found a word in the treaty that could be used to disparage the rights of the First Nations of Ecuador, including the Shuar. That word was "consult" as found in Article 15 of the treaty, which states:

> 1. The rights of the peoples concerned to the natural resources pertaining to their lands shall be specially safeguarded. These rights include the right of these peoples to participate in the use, management and conservation of these resources.
>
> 2. In cases in which the State retains the ownership of mineral or sub-surface resources or rights to other resources pertaining to lands, governments shall establish or maintain procedures through which they shall *consult* these peoples, with a view to ascertaining whether and to what degree their interests would be prejudiced, before undertaking or permitting any programmes for the exploration or exploitation of such resources pertaining to their lands. The peoples concerned shall wherever possible participate in the benefits of such activities, and shall receive fair compensation for any damages which they may sustain as a result of such activities.[90]

This provision requires the government to *consult* indigenous peoples before attempting to exploit their subsurface natural resources. But the Ecuadorian Constitution gives complete title to the indigenous people of Ecuador. Moreover, the constitution does nothing to change the civil law basis of the First Nations' titles to their territory. The civil law maintains that title to land is inviolable.[91] As a consequence, the government has no right to consult regarding the *dominium* that the Shuar and other indigenous peoples hold over their traditional lands. The Ecuadorian government cannot enter into concessionary agreements, contracts, or similar arrangements. These powers are vested only in the political authority of the communities that may be affected by such an undertaking.

Article 15 of the treaty also addresses the right of indigenous peoples to participate in the use, management, and conservation of their natural resources through specific reference to "their lands."[92] This provision requires that "their lands" be "specially safeguarded," and refers to cases in which states claim that they retain "ownership" over mineral or subsurface resources.[93] The provision dictates that, in those circumstances,

participation; self-government and autonomy; land, territory and resource rights; and non-discrimination in the social and economic spheres.").

89. *Ratification of C169—Indigenous and Tribal Peoples Convention, 1989*, Int'l Lab, http://www.ilo.org/dyn/normlex/en/f?p=1000:11300:0::NO:11300:P11300_INSTRUMENT_ID:312314 (last visited Mar. 26, 2014).

90. ILO Convention 169, *supra* note 87, art. 15 (emphasis added).

91. *See* Dig. 6.1.1.1 (Ulpian, Ad Edictum 16).

92. ILO Convention 169, *supra* note 87, art. 15(1).

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

such a claim is limited.[94] Thus, the government can only use, manage, or conserve these resources by respecting indigenous peoples' right to participate in those activities.[95]

In addition, this treaty provision only refers to those lands in which the government has *legal* title to subsurface resources. But as discussed above, there is nothing in Ecuadorian law that gives the government any legal title to the subsurface resources of any of the Shuar's or other First Nations' traditional lands.[96] In 1998, the notion that the state could rely on this treaty provision to claim the right to expropriate subsurface rights over traditional territories of all the First Nations of Ecuador is completely inconsistent with the clear text and purpose of Article 15 and the treaty itself. However, this treaty maintains the government's obligation to protect indigenous communities and their lands from exploitation and spoliation, and to ensure the survival and development of these communities in an ecologically responsible manner. The government must do this in partnership with the communities themselves. In fulfilling these obligations, the state must establish clear procedures to protect against theft or capricious governmental action to expropriate the rights of First Nations. One way to do this would be to establish procedures in accordance with the American Convention on Human Rights.[97]

In 1977, Ecuador ratified the American Convention on Human Rights without reservation and the government recognized it as a legitimate instrument of international law.[98] Article 2 of the Convention provides:

> Where the exercise of any of the rights or freedoms referred to in Article 1 is not already ensured by legislative or other provisions, the States Parties undertake to adopt, in accordance with their constitutional processes and the provisions of this Convention, such legislative or other measures as may be necessary to give effect to those rights or freedoms.[99]

This provision is designed to ensure the availability of an effective legal remedy to all persons under a state's jurisdiction who claim a violation of their fundamental rights, the nonexistence of which clearly violates the Convention. Further, it is insufficient that a state establishes, in its constitution or laws, a basic procedure to seek redress; the procedure "must be truly effective in determining whether there has been a violation of human rights and [in] providing the means to remedy it."[100] In developing these procedures, a state may not interpret any treaty provision in a manner that would allow any person "to suppress the enjoyment or exercise of the

94. *Id.*

95. *See id.* art. 15(1).

96. *See supra* Part III.B–C.

97. *See* American Convention on Human Rights, *supra* note 78.

98. *Ecuador*, Org. of Am. States, http://www.oas.org/dil/treaties_B-32_American_Convention_on_Human_Rights_sign.htm#Ecuador (last visited Mar. 26, 2014).

99. American Convention on Human Rights, *supra* note 78, art. 2.

100. Cantoral-Benavides v. Peru, Merits, Reparations, and Costs, Judgment, Inter-Am. Ct. H.R. (ser. C) No. 69, ¶ 164 (Aug. 18, 2000).

rights and freedoms recognized in this [Convention] or to restrict them to a greater extent than is provided" by the Convention.[101] According to the Inter-American Court of Human Rights, this precludes a restrictive interpretation by any state that would dilute the rights of members of indigenous communities within the framework of traditional property.[102]

The court also recognized that, among First Nations, there is a traditional form of collective property ownership that is the center of the community as a whole.[103] Further, the court explained that indigenous "relations to the land are not merely a matter of possession and production but a material and spiritual element which they *must fully enjoy*, even to preserve their cultural legacy and transmit it to future generations."[104] These principles reflect international norms of interpretation regarding indigenous property rights, and any state action that would infringe upon or dilute these rights is expressly forbidden by the Convention.[105] Concessionary agreements with unscrupulous corporations and exploitative contracts simply do not comport with these principles and seek to diminish the *dominium* of the Shuar over their land. International law and human rights protect the right of ownership of Shuar traditional lands by the Shuar and for the Shuar.

E. Sources of Shuar Law and Shuar Land Ownership

In 2002, the Shuar Federation adopted a Bill of Fundamental Rights that clarified their rights to their lands, properties, and other related interests.[106] The Shuar's Bill of Fundamental Rights was based on four notions embodied by the text of the Declaration of the Rights of Indigenous Peoples, namely that: (1) its clarifications were unequivocal; (2) they owned the land; (3) they owned everything

101. American Convention on Human Rights, *supra* note 78, art. 29(b).

102. *See, e.g.*, Pueblo Saramaka v. Suriname, Merits, Reparations, and Costs, Judgment, Inter-Am. Ct. H.R. (ser. C) No. 172 (Nov. 28, 2007); Sawhoyamaxa Cmty. v. Paraguay, Merits, Reparations, and Costs, Judgment, Inter-Am. Ct. H.R. (ser. C) No. 146 (Mar. 29, 2006); Yakye Axa Cmty. v. Paraguay, Merits, Reparations, and Costs, Judgment, Inter-Am. Ct. H.R. (ser. C) No. 125 (June 17, 2005); Moiwana Cmty. v. Suriname, Merits, Reparations, and Costs, Judgment, Inter-Am. Ct. H.R. (ser. C) No. 124 (June 15, 2005); Mayagna (Sumo) Awas Tingni Cmty. v. Nicaragua, Merits, Reparations, and Costs, Judgment, Inter-Am. Ct. H.R. (ser. C) No. 79 (Aug. 31, 2001).

103. *Mayagna (Sumo) Awas Tingni Cmty.*, Inter-Am. Ct. H.R. (ser. C) No. 79, ¶ 149.

104. *Id.*

105. *See, e.g.*, Declaration on the Rights of Indigenous Peoples, *supra* note 1, art. 8(2)(b) ("States shall provide effective mechanisms for prevention of, and redress for: . . . Any action which has the aim or effect of dispossessing [indigenous peoples] of their lands, territories or resources"); *id.* art. 27 (concerning independent, impartial processes for recognition and adjudication of rights pertaining to land and resources); International Covenant on Civil and Political Rights art. 27, *opened for signature* Dec. 19, 1966, 999 U.N.T.S. 171 (entered into force Mar. 23, 1976) ("In those States in which ethnic, religious or linguistic minorities exist, persons belonging to such minorities shall not be denied the right, in community with the other members of their group, to enjoy their own culture, to profess and practise their own religion, or to use their own language."); Anni Äärelä & Jouni Näkkäläjärvi v. Finland, Hum. Rts. Comm., Communication No. 779/1997, U.N. Doc. CCPR/C/73/D/779/1997 (Oct. 24, 2001).

106. Bill of Fundamental Rights (2002) (Shuar Fed'n, Ecuador).

above and below the land; and (4) they owned their Traditional Knowledge and culture.[107] To ensure that none of these resources could be stolen, the Shuar created the Shuar National Corporation. By vesting these rights in the Corporation, the Shuar Federation sought to assure the Shuar people that their assets could not be taken away from them on the basis that the state did not know what the Shuar's rights of ownership really were.

The document declaring the fundamental rights of the Shuar must be read in light of the full analysis of the legal principles applicable to the ownership rights of the Shuar presented above.[108] Recall that the historic title to the Shuar land vests in the Shuar.[109] The civil law provides the Shuar with additional protection by requiring the protection and inviolability of the Shuar's ownership over their historic lands.[110] The 1830 Constitution, although describing the First Nations of Ecuador as miserable, nonetheless did not expropriate Shuar land and, in fact, provided a certain degree of natural law protection for it under the tutelage of the Catholic Church.[111] Finally, the 1998 and 2008 Ecuadorian Constitutions provide stronger protection for the fundamental rights of the Shuar to maintain lawful title and ownership of their land.[112]

The relationship between indigenous peoples and their patrimonial land ownership is crucial for indigenous communities and their partners; it provides insight as to how broader issues of group dominance and group subjugation in the Latin American indigenous context may be confronted.[113] Moreover, the recognition and observation of that relationship necessarily presents an opportunity to attempt to achieve a more accurate understanding of what "indigeneity" actually means.[114] As

107. *See generally id.*

108. *See supra* Part III.A–D.

109. *See supra* Part III.A–D.

110. *See supra* Part III.B.

111. *See supra* Part III.C.

112. *See supra* Part III.C.

113. *See* Myres McDougal, Harold Lasswell & Lung-chu Chen, Human Rights and World Public Order 521–60 (1980). For useful analyses of group deprivations, see Winston P. Nagan & Vivile F. Rodin, *Racism, Genocide, and Mass Murder: Toward a Legal Theory About Group Deprivations*, 17 Nat'l Black L.J. 133 (2004); Daniel Ryan Koslosky, *Sexual Identity as Personhood: Towards an Expressive Liberty in the Military Context*, 84 N.D. L. Rev. 175 (2008).

114. For a lengthy period, one working understanding of "indigeneity" stood out above the rest: that of José Martínez Cobo, a special rapporteur appointed in 1971 by the U.N. Working Group on Indigenous Populations. *See* U.N. Dep't of Econ. & Soc. Affairs, State of the World's Indigenous Peoples (2009). This definition of "indigenous" was essentially comprised of four monothetic characteristics: (1) descendants of the original inhabitants, (2) of conquered territories, (3) possessing a minority culture, and (4) recognizing themselves as such. *See id.* at 4–5. More specifically, Special Rapporteur Martínez Cobo set out the following criteria, which became the U.N. Working Group on Indigenous Populations' working definition of "indigenous" until the late 1990s:

> 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

indicated, important and long-awaited inroads have been made. In 2007, the launch of the U.N. Declaration of Indigenous Peoples' Rights provided a new global platform for international collaboration between indigenous peoples, national governments, and international organizations. These international organizations include traditionally apolitical development organizations, some of which have changed course from a "do no harm" approach to a more proactive "do good" approach in regional and local operations that impact indigenous peoples and their ownership of patrimonial land.[115]

IV. THE SHUAR NATION, THE QUESTION OF INTELLECTUAL PROPERTY, AND THE REALITIES OF BIOPROSPECTING

Further complicating the Shuar's land ownership concerns are incursions onto their patrimonial land for biodiversity prospecting, or "bioprospecting." Bioprospectors' interest in the Amazon Basin, particularly the territory of the Shuar, stems from the continuing lack of holistic data concerning Amazonian biota. They are thus drawn to opportunities to "discover" novel compounds or organisms that have potential pharmacological or biotechnological use and the Traditional Knowledge of indigenous societies concerning the identification, use, and medicinal effect of these compounds or organisms. The Shuar consider the biodiversity of their territory to be vitally important to their cultural heritage, with particular regard to the accumulated Traditional Knowledge possessed and still used by the Shuar to heal the sick, cultivate

> 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 systems.

See Special Rapporteur on Indigenous Populations, *The Study of the Problem of Discrimination Against Indigenous Populations*, Comm'n on Hum. Rts, U.N. Doc. E/CN.4/Sub.2/1986/7/Add.4 (Mar. 11, 1986) (by José Martínez Cobo). By now, it is known that the Shuar have lived on largely the same territory in southeastern Ecuador for millennia and are descendants of the original inhabitants of the geography they currently inhabit (between the upper mountains of the Andes and the Amazonian lowlands between the Pastaza and Marañón Rivers), but what if they had only arrived in their current location in relatively recent history, like the Maasai people, an indigenous group in East Africa which was forcibly evicted by British colonial forces from much of their patrimonial land a century ago? *See* Maa Speaking Communities of Kenya, Memorandum on the Anglo-Maasai Agreements: A Case of Historical and Contemporary Injustices and the Dispossession of the Maasai Land, Presentation to the Office of the President of the Republic of Kenya et al. (Aug. 13, 2004) (on file with authors). Does geographic relocation, which renders the descendancy criterion moot, somehow render indigeneity forfeit? Plus, the Shuar are among the only indigenous groups in Latin America which have not been conquered by national forces or outside colonial powers. *See* Steven Rubenstein & Alejandro Tsakimp: A Shuar Healer in the Margins of History 52 (2002). What does being conquered have to do with being indigenous? It is an unfortunate and common phenomenon, but certainly not a meaningful descriptive criterion. Further efforts to improve upon these criteria were made by a subsequent Chairperson-Rapporteur of the U.N. Working Group on Indigenous Populations, Professor Erica-Irene A. Daes, who, despite advising against the use of set criteria, did consider some to be conceptually relevant to defining indigeneity. *See supra* note 21.

115. *See* World Bank Operations Evaluation Dep't, Implementation of Operational Directive 4.20 on Indigenous Peoples: An Independent Desk Review 2–3 (2003) (reviewing projects developed under the guidelines of Operational Directive 4.20, a recommendation of which was to "distinguish clearly between the safeguard (do no harm) aspects of the [Operational Directive] and its do good aspects").

certain plant species, bring about religious epiphanies, and much more.[116] The Shuar have been targeted by bioprospectors because their Traditional Knowledge is invaluable for targeting plants and plant combinations that have led to the identification of new and diverse compounds with pharmaceutical, and therefore medical and commercial, value.[117]

While the term "bioprospector" is relatively new, the phenomenon it describes is not.[118] Medical researchers and practitioners, particularly pharmacologists and pharmacognosists, have long been in the business of deriving therapeutic agents from rainforest biota; more than 120 pharmaceutical products currently on the market include primary active agents derived from plants, half of which came from rainforest botanicals, and more than 75% of which were discovered by studying plants used by indigenous societies in traditional medicine.[119] While these products have certainly helped countless people, it is also important to recognize that the marketing and selling of plant-derived pharmaceuticals is a lucrative business. It has been estimated that the top twenty best-selling pharmaceuticals on the market today are derived from tropical plants, and are worth up to $6 billion in yearly sales.[120] By 2000, global sales of naturally derived or herbal medicines were also estimated at $30 billion per year.[121] For these reasons, certain individuals are motivated to search for biodiverse genetic material in nature; these are the bioprospectors.[122] From Christopher Columbus to Richard

116. *See generally* John Perkins et al., Spirit of the Shuar: Wisdom from the Last Unconquered People of the Amazon (2001).

117. *See generally* Craig Hammer, Juan-Carlos Jintiach & Ricardo Tsakimp, *Practical Developments in Law, Science, and Policy: Efforts to Protect the Traditional Group Knowledge and Practices of the Shuar, an Indigenous People of the Ecuadorian Amazon*, 46 Pol'y Sci. 125, 125–41 (2013) [hereinafter *Practical Developments*].

118. *See* Calestous Juma, The Gene Hunters: Biotechnology and the Scramble for Seeds 38 (1989).

119. *See* Norman R. Farnsworth et al., *Medicinal Plants in Therapy*, 63 Bull. World Health Org. 965, 965–81 (1985).

120. *See* Michael Blakeney, *Intellectual Property Aspects of Traditional Agricultural Knowledge*, *in* Economic and Social Issues in Agricultural Biotechnology 43 (Robert E. Evenson et al. eds., 2002) ("[I]n 1995 the estimated market value of pharmaceutical derivatives from indigenous peoples' traditional medicine was US$43 billion worldwide."); *see also* Marcy J. Balunas, *Drug Discovery from Medicinal Plants*, 78 Life Sci. 431, 431–41 (2005) (estimating that the twenty best-selling pharmaceuticals are derived from tropical plants and sell for a combined total of approximately $6 billion per year); Judith Gradwohl et al., Saving the Tropical Forests 50–51 (1988) ("In 1980, the estimated value of plant-derived prescription drugs in the United States was $8 billion."); *Bioprospecting/Biopiracy and Indigenous Peoples*, ETC Group (Dec. 26, 1995), http://www.etcgroup.org/content/bioprospectingbiopiracy-and-indigenous-peoples (citing Rural Advancement Found. Int'l, Conserving Indigenous Knowledge: Integrating Two Systems of Innovation (1994)) ("RAFI estimates that medicinal plants and microbials from the South contribute at least $30 billion a year to the North's pharmaceutical industry.").

121. Karan Vasisht & Vishjavit Kumar, Trade and Production of Herbal Medicines and Natural Health Products (2002); *see also* Steven R. King et al., *Issues in the Commercialization of Medicinal Plants*, *in* Responding to Bioprospecting: From Biodiversity in the South to Medicines in the North 77, 84 (Hanne Svarstad & Shivcharn S. Dhillion eds., 2000).

122. *See* Carla Mattix, *The Debate over Bioprospecting on the Public Lands*, 13 Nat'l Res. & Env't 528 (1999) (referring to bioprospecting as "the search for genetic and biochemical resources in nature"); Edgar Asebey & Jill Kempenaar, *The Intellectual Property Perspective on Biodiversity: Biodiversity Prospecting:*

Schultes,[123] various personalities have been drawn to bioprospecting out of curiosity, a sense of adventure, but primarily for fame and fortune. Unfortunately, efforts to protect this knowledge have been challenging. The international community has only recently started to develop protections for Traditional Knowledge, and there is a long way to go.

A. The Shuar's Traditional Knowledge: A Primer

Traditional Knowledge is a tightly controlled aspect of Shuar culture.[124] The particular Traditional Knowledge that serves as the blueprint for countless plant-derived cures and treatments is highly valued and entrusted only to a small number of powerful members of the Shuar indigenous community: shamans.[125] Ricardo Tsakimp, Chief Shaman for the Shuar Nation and President of the Shaman's Association of the Andes, explains that the Shuar's Traditional Knowledge has been preserved, cultivated, and transmitted from shaman to shaman—or otherwise from shaman to particularized members of the Shuar community—for thousands of years.[126] To Tsakimp, a Shuar shaman's encyclopedic understanding of the medicinal quality of the surrounding biodiversity is something of an organic tool that has been refined and honed over generations. He states that the training necessary to become a Shuar shaman is rigorous; it implicates material, psychological, and spiritual awareness and understanding. He explains that in the Shuar culture, shamans diagnose ailments that have physiological, psychological, and mystical causes, including what the Shuar understand to be energy imbalances in patients. To execute their responsibilities, shamans spend years cultivating their knowledge of thousands of plant species endemic to the rainforest to learn precise combinations and dosages to treat or cure scores of human ailments. They additionally develop what are otherwise known (in Western societies) as comprehensive psychiatric evaluative skills, after which they undergo an arduous vetting process to further become a guide in all ways spiritual.

From the point of view of the Shuar, their very survival is contingent on their ability to sustain their cultural practices; they believe that their survival is inextricably linked to their dependence on their land and resources because they are crucial components of Shuar beliefs, institutions, spiritual well-being, as well as social and economic integrity.[127] This connectivity between people and land has been variously described in recent

Fulfilling the Mandate of the Biodiversity Convention, 28 Vand. J. Transnat'l L. 703, 704 n.2 (1995) (referring to bioprospecting as "the search for bioactive compounds contained in natural sources").

123. *See Richard Evans Schultes*, Encyclopaedia Britannica, http://www.britannica.com/EBchecked/topic/761765/Richard-Evans-Schultes (last visited Mar. 26, 2014).

124. *See Practical Developments*, *supra* note 117, at 127–28.

125. *See* Harner, *supra* note 20, at 116–25.

126. *See Practical Developments*, *supra* note 117, at 127.

127. *See id.*

decades as a "land ethic,"[128] "environmentalism,"[129] and "land stewardship,"[130] among other designations. The Shuar phrase for this is "*nunka iistin wainkiatin*," which roughly translated means "to take care of our world."[131] In short, a key goal of the Shuar is to develop workable strategies that promote continued, sustainable management and protection of Shuar land and resources by members of the Shuar community. On the macro level, Shuar leaders and shamans[132] have expressed their goal of renewing efforts between the Shuar, other indigenous communities, and the international community at large to better integrate cultural, spiritual, and social values into environmental policymaking.[133] In practice, however, the Traditional Knowledge of the Shuar—like that of so many other indigenous cultures—faces the critical threat of erosion through globalization. As urban-industrial sectors continue to grow and impede on Shuar patrimonial land, and mass communication technology becomes increasingly sophisticated, Shuar community and spiritual leaders are increasingly concerned about protecting their Traditional Knowledge not only from being pirated, but also from being forgotten over time.[134] Accordingly, another ostensible goal of the Shuar is for them to be able to protect their Traditional Knowledge from outside incursion and from degradation over time as a result of globalization. Importantly, the Shuar are not

128. *See generally* Aldo Leopold, *The Land Ethic*, *in* A Sand County Almanac 237 (1966).

129. *See generally* John Muir, The Yosemite (1912); Robert Paehlke, Environmentalism and the Future of Progressive Politics (1989); Rachel Carson, The Silent Spring (1962).

130. *See, e.g.*, Christopher Bamford, The Heritage of Celtic Christianity: Ecology and Holiness (1982); Albert Schweitzer, Reverence for Life (1969); Julian Burger et al., The GAIA Atlas of First Peoples: A Future for the Indigenous World (1990).

131. "*Wainkiatin*" approximates the concept of protection or safeguarding, and "*nunka*" refers to the natural world or Earth.

132. The Shuar word for shaman is "*uwishin*."

133. *See Practical Developments, supra* note 117.

134. *See* First Global Ministerial Environment Forum, Malmö, Swed., May 29–31, 2000, *Malmö Ministerial Declaration*, para. 18 (May 31, 2000), *available at* http://www.unep.org/malmo/malmo_ministerial.htm ("We must pay special attention to threats to cultural diversity and traditional knowledge, in particular of indigenous and local communities, which may be posed by globalization."); *see also* Angela Riley, *'Straight Stealing': Towards an Indigenous System of Cultural Property Protection*, 80 Wash. L. Rev. 69, 113–16 (2005) (stating that the culture of indigenous peoples is threatened by globalization); Robert Porter, *Pursuing the Path of Indigenization in the Era of Emergent International Law Governing the Rights of Indigenous Peoples*, 5 Yale Hum. Rts. & Dev. L.J. 123, 130 (2002) (discussing the danger posed by "extraordinary forces of assimilation" which, for example in the context of the United States, could lead to the "complete absorption of Indigenous peoples into American society"). Ethnobotanist Mark Plotkin explains:

> There are two major threats to indigenous people of the rainforest. The first is acculturation—the draw to western culture, the city, and things of that nature. For example, someone may be Mundurucu Indian in genetic terms, but they don't speak the language, know the legends, or know the plants. In short they are not likely to perpetuate the culture. Secondly, it's the destruction of the environment. How can you have a rainforest Indian if there's no rainforest for them to live in? So this idea of "we've got to preserve the culture" *or* "we have to preserve the rainforest" is missing the boat. In the interest of preserving the rainforest, [Indians] need to preserve cultural diversity. The best way to protect ancestral rainforests is . . . [for] Indians [to] hold on to their culture, and the best way . . . [for] them hold onto their culture is . . . [for] them [to] protect the rainforest.

exclusively interested in protectionism, particularly since there is increasing recognition among the international community of the practical value of Traditional Knowledge for humanity as a whole.[135] Shuar political and spiritual leaders are mindful of the significant beneficial implications of their Traditional Knowledge on the macro level; they, like many other indigenous communities, very much want to contribute to humanity as they seek to protect their intellectual property rights over the knowledge itself.[136] This might include the development of rules governing access to the Shuar's Traditional Knowledge, which could create a process for granting permission to enter Shuar land to sample and potentially remove genetic material.

As mentioned above, the Shuar's general goals are elegantly articulated by the Bill of Fundamental Rights adopted by the Shuar Federation's Grand Assembly in 2002.[137] The Bill reiterates the goals long held by the Federation, including protecting human rights of current and future generations, preserving Shuar identity, advancing Shuar community interests such as health care, civil rights, and responsible infrastructure development, providing for the inclusion of minority groups, protecting Shuar economic self-sufficiency, protecting Shuar land and the environment, and combating exclusion,

See Rhett A. Butler, *An Interview with Ethnobotanist Dr. Mark Plotkin: Indigenous People Are Key to Rainforest Conservation Efforts Says Renowned Ethnobotanist*, Mongabay (Oct. 31, 2006), http://news.mongabay.com/2006/1031-interview_plotkin.html.

135. The practical value of Traditional Knowledge has featured in a variety of international agreements and declarations, including the Convention on Biological Diversity and the Rio Declaration, as well as studies undertaken by institutions including the Food and Agriculture Organization of the United Nations, the World Intellectual Property Organization, the World Health Organization, the International Labor Organization, U.N. Educational, Scientific and Cultural Organization, U.N. Development Programme, the U.N. Commission on Human Rights, the World Bank, the International Monetary Fund, and many other international organizations. For example, the preamble of the U.N. Declaration on the Rights of Indigenous Peoples recognizes that "respect for indigenous knowledge, cultures and traditional practices contributes to sustainable and equitable development and proper management of the environment." *See* Declaration on the Rights of Indigenous Peoples, *supra* note 1, pmbl.; *see also* Secretariat of the U.N. Conference on Trade and Development (UNCTAD), *The Sustainable Use of Biological Resources: Systems and National Experiences for the Protection of Traditional Knowledge, Innovations and Practices*, U.N. Doc. TD/B/COM.1/38 (Jan. 12, 2001) ("[I]t has been recognized that [Traditional Knowledge] plays a key role in the preservation and sustainable use of biodiversity."). *See generally* U.N. Conf. on Trade & Dev., Protecting and Promoting Traditional Knowledge: Systems, National Experiences and International Dimensions (Sophia Twarog & Promilia Kapoor eds., 2004), *available at* http://unctad.org/en/docs/ditcted10_en.pdf; World Comm'n on Env't & Dev., Our Common Future, ch. 3, para. 74 (1987), *available at* http://www.un-documents.net/our-common-future.pdf ("[Indigenous] communities are the repositories of vast accumulations of traditional knowledge and experience that links humanity with its ancient origins. Their disappearance [would be] a loss for the larger society, which could learn a great deal from their traditional skills in sustainably managing very complex ecological systems.").

136. For example, Article 45 of the Charter of the Indigenous and Tribal Peoples of the Tropical Forests states that "Since we highly value our technologies and believe that our biotechnologies can make important contributions to humanity, including 'developed' countries, we demand guaranteed rights to our collective intellectual property in both national and international law, and control over the development and manipulation of this knowledge." Indigenous and Tribal Peoples of the Tropical Forests Charter art. 45, Feb. 15, 1992, *available at* www.international-alliance.org/documents/charter_eng.doc.

137. Bill of Fundamental Rights (2002) (Shuar Fed'n, Ecuador).

marginalization, exploitation, and political oppression.[138] In the context of protecting their biodiversity and Traditional Knowledge, the interests of most any individual Shuar do not differ from those of any other responsible individual: power, wealth, enlightenment, respect, well-being, skill, rectitude, and affection.[139] The Shuar Directive has indicated its profound desire to not only safeguard Shuar land and culture, but to also protect their loved ones.[140] They have also indicated a willingness to leverage Shuar Traditional Knowledge and cultural practices to help others in certain circumstances.[141] This Shuar goal might be understood as a wish to promote the basic values of well-being and enlightenment by, for instance, combating the accelerating obsolescence of pharmaceutical drugs, particularly those constructed around inorganic chemical compounds, by tapping into the Shuar's Traditional Knowledge, which could give better clues to the potential of certain forms of genetic material in a responsible, respectful, and sustainable way. According to members of the Shuar Directive, this could include the eventual development of provisions for benefit sharing[142] arising out of the collaborative collection or use of certain approved materials collected from Shuar land, perhaps including financial or in-kind compensation.[143] This could enable collaboration between Shuar representatives and contracted researchers, developers, and advocates of any resultant resources or products.

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138. *Id.*

139. *See* Myres S. McDougal & Harold D. Lasswell, *The Identification and Appraisal of Diverse Systems of Public Order*, 53 Am. J. Int'l L. 1 (1953), *reprinted in* International Rules: Approaches from International Law and International Relations 113, 126–36 (Robert J. Beck et al. eds., 1996); *see also* Mark C. Murphy, Natural Law and Practical Rationality 96 (2001) (stating that there are ten basic human goods: "life, knowledge, aesthetic experience, excellence in play and work, excellence in agency, inner peace, friendship and community, religion, and happiness," each of which "is a fundamental reason for action, and together they exhaust all of the fundamental reasons for action"). *See generally* Harold D. Lasswell & Abraham Kaplan, Power and Society (1950). In the context of indigenous peoples, Plotkin sums it up nicely:

> People like to talk about how different indigenous peoples are than us as westerners but people are often really much the same at the end of the day. What do they want? They want a good life. They want a decent life for their kids. They want clean air and water. And if you tell them, okay you can have more money in your pocket but all this other stuff is going to disappear—potable water, your medicine, your food, your sacred sites—it becomes a pretty obvious choice . . . . The loss of indigenous knowledge and culture is of a form of impoverishment . . . .

See Butler, *supra* note 134.

140. *See Practical Developments*, *supra* note 117, at 127–28.

141. *See id.*

142. Articles 1 and 8(j) of the Convention on Biological Diversity encourage the practice of sharing of benefits, including profits realized from the use of Traditional Knowledge and of the use of genetic materials derived therefrom, as well as technological advancements, or products that were developed using the Traditional Knowledge or the resources. *See* Convention on Biological Diversity arts. 1, 8(j), *opened for signature* June 5, 1992, 1760 U.N.T.S. 79 (entered into force Dec. 29, 1993) [hereinafter CBD].

143. Article 15 of the Convention on Biological Diversity requires parties to arrive at fair and mutually agreed upon terms before access is provided to indigenous genetic resources or technology is transferred. *See id.* art. 15.

B. Bioprospecting: The Shuar and the "Green Rush"

Bioprospectors' attention has been fixed on the biodiversity of the Amazon Basin for decades. Richard Schultes, a mid-twentieth-century ethnobotanist and something of a patron saint for bioprospectors, spent years among indigenous communities throughout the South American rainforest and collected more than 24,000 plant specimens.[144] Two points are clear: bioprospectors' interest in rainforest specimens will last as long as there is a steady demand, and scientific research on rainforest biodiversity is intensifying.[145] In what is sarcastically referred to as the "green rush,"[146] bioprospectors are converging on the Amazon Basin in particular because of the many millions of plant and animal species with potential pharmaceutical value that await appropriation and examination.[147] The term "bioprospector" applies to freelance consultants, government agencies, development organizations, and multinational corporations equally. Bioprospectors are routinely referred to as "biopirates," "bioimperialists," and "biocolonialists," not necessarily without good reason.[148] This is particularly problematic because the lure of the Amazon for today's bioprospectors may be stronger than ever. According to science and technology policy professor Charles Weiss and chemical ecology professor Thomas Eisner,

144. *See Richard Evans Schultes*, *supra* note 123.

145. *See* K.N. Ninan, The Economics of Biodiversity Conservation: Valuation in Tropical Forest Ecosystems 2 (2006).

146. *See, e.g.*, Gavin Stenton, *Biopiracy Within the Pharmaceutical Industry: A Stark Illustration of Just How Abusive, Manipulative and Perverse the Patenting Process Can Be Towards Countries of the South*, (1)2 Hertfordshire L.J. 30, 32–35 (2003) (setting out four well-known examples of the "green rush" across four continents).

147. *See* Edward O. Wilson, The Diversity of Life 132–33 (1992) (explaining that the precise number of plant and animal species is unknown and may be as high as 100 million, although a more realistic estimate is around 12 million); Robert Mendelsohn & Michael J. Balick, *The Value of Undiscovered Pharmaceuticals in Tropical Forests*, 49 Econ. Botany 223, 224–25 (1995) (identifying forty-seven chemical derivatives from tropical flowering plants with significant pharmaceutical potential, and further surmising that at least three hundred more pharmaceutically relevant derivatives, worth an estimated $147 billion, remain to be discovered in tropical regions of the world).

148. The Oxford English Dictionary defines "bioprospecting" to mean "[t]he action or process of searching for living organisms, (now) spec. [sic] for plant or animal species from which commercially valuable genetic material, biochemical, medicinal drugs, etc., can be obtained. Cf. Biopiracy." *Bioprospecting Definition*, Oxford Eng. Dictionary, http://www.oed.com/view/Entry/251068?redirectedFrom=Bioprospecting#eid (last visited Mar. 26, 2014); *see also* Laurie Anne Whitt, *Indigenous Peoples, Intellectual Property and the New Imperial Science*, 23 Okla. City U. L. Rev. 211 (1998) (referring to bioprospectors' techniques as "biocolonialism"); Christopher J. Hunter, Comment, *Sustainable Bioprospecting: Using Private Contracts and International Legal Principles and Policies to Conserve Raw Medicinal Materials*, 25 B.C. Envtl. Aff. L. Rev. 129, 139 (1997); Michael I. Jeffrey, *Bioprospecting: Access to Genetic Resources and Benefit-Sharing Under the Convention on Biodiversity and the Bonn Guidelines*, 6 Sing. J. Int'l & Comp. L. 747, 755 (2002) (referring to bioprospecting as "the search of biodiversity for valuable genetic and biochemical information"); Erik B. Bluemel, *Separating Instrumental From Intrinsic Rights: Toward an Understanding of Indigenous Participation in International Rule-Making*, 30 Am. Indian L. Rev. 55, 119 (2005) (referring to bioprospecting as "the search for biodiverse genetic or biochemical information in the wild for the purpose of commercial exploitation"); John R. Adair, Comment, *The Bioprospecting Question: Should the United States Charge Biotechnology Companies for the Commercial Use of Public Wild Genetic Resources*, 24 Ecology L.Q. 131 (1997) (referring to bioprospecting as "the search for wild diversity for valuable genetic information").

> Biotechnology is advancing so rapidly, and researchers are producing so many new ideas for possible new products, that there is no effective limit on the number of bioprospecting targets. The market for new products is expanding much faster than the rate at which developing countries are likely to be entering the market.[149]

Bioprospectors are generally aware that the majority of the world's biodiversity is concentrated in developing countries.[150] The worldwide loss of biodiversity is indeed accelerating as a result.[151] Notably, Conservation International has designated all of the Shuar's land a "biodiversity hotspot."[152] In other words, the Tropical Andes, of which Shuar land is a part, and which collectively comprises less than 1% of Earth's land surface area, is home to one-tenth of all plant life.[153] In addition, the National Cancer Institute (NCI) and other medical research organizations have discovered promising rainforest plant compounds with anticancer and anti-HIV/AIDS properties, among various other specimens with the potential to fight or cure other devastating human ailments.[154] Less than 1% of rainforest plant species have been examined for their medicinal value.[155]

Throughout the last several decades, exploitative techniques have been increasingly levied against indigenous societies in the Amazon Basin to access this Traditional Knowledge. This may not be surprising in light of the breadth of rainforest biota, a significant percentage of which could yield valuable extracts with pharmaceutical potential. Toward the end of the twentieth century, exclusive scientific reliance on the synthesis of new chemicals—not from nature—for pharmaceutical drugs was starting to wane, particularly after potent anticancer agents in plants, such as taxol and turmeric, were discovered. More medical research organizations and government institutions have turned to the Amazon Basin with conspicuous interest.[156] This explains the increasing interest among bioprospectors in the plant germplasm within

149. *See* Charles Weiss & Thomas Eisner, *Economics of Biodiversity*, Issues in Sci. & Tech. Online, http://www.issues.org/15.4/forum.htm (last visited Mar. 26, 2014).

150. *See* Ninan, *supra* note 145, at 2.

151. *See* Thomas Lovejoy, *Biodiversity: Dismissing Scientific Process*, Sci. Am., Jan. 2002, at 70.

152. *See Tropical Andes—Overview*, Conservation Int'l, http://www.conservation.org/where/priority_areas/hotspots/south_america/Tropical-Andes/Pages/default.aspx (last visited Mar. 26, 2014).

153. *See Tropical Andes—Species*, Conservation Int'l, http://www.conservation.org/where/priority_areas/hotspots/south_america/Tropical-Andes/Pages/biodiversity.aspx (last visited Mar. 26, 2014).

154. *See, e.g.*, Michael J. Balick & Paul Alan Cox, Plants, People, and Culture: The Science of Ethnobotany (1996); James A. Duke & Rodolfo Vasquez, Amazonian Ethnobotanical Dictionary (1994); Richard Evans Schultes & Robert F. Raffauf, The Healing Forest: Medicinal and Toxic Plants of the Northwest Amazonia (1990); James L. Castner et al., Field Guide to Medicinal and Useful Plants of the Upper Amazon (1988).

155. *Facts About Rainforests*, Nature Conservancy, http://www.nature.org/rainforests/explore/facts.html (last visited Mar. 26, 2014); *see also* Donald D. Jackson, *Searching for Medicinal Wealth in Amazonia*, Smithsonian Mag., Feb. 1989, at 95–103.

156. *See* Abena Dove Osseo-Asare, Bitter Roots: The Search for Healing Plants in Africa 32 (2014) ("By the late 1980's, the world was witnessing a massive 'green rush' as new laboratory techniques allowed for more rapid screening of plants to discover improved medicines, crops, and industrial chemicals.").

the Shuar territory, particularly since early efforts at locating useful plants and animals without reference to Traditional Knowledge were notoriously unsuccessful. For example, between 1956 and 1981, the NCI regularly searched for new compounds in rainforest plant and animal life, including in Ecuador. During that time, its "plant discovery" program randomly collected and tested more than 35,000 species of plants for antitumor activity.[157] Funding for this program dried up in late 1981.[158]

Norman Farnsworth, a fairly prolific (and colorful) professor of pharmacognosy who advocates the use of Traditional Knowledge to identify plants containing potential pharmaceutical agents, offers an explanation as to why the NCI program failed:

> One could argue that this approach of "blind" screening any and all plants available in sufficient quantity for testing is entirely unscientific and too costly to be continued. Perhaps these are reasons for the NCI's canceling its program on anti-tumor plants. Surely a program that fails to produce a useful drug after 25 years of testing more than 35,000 species of plants must be examined to determine what went wrong![159]

This extended lack of success also spawned a further short-lived trend: for a brief period, the NCI's researchers focused exclusively on synthetic chemicals. However, by 1986 its plant discovery program was back in business, with a new arsenal of strategies—including use of Traditional Knowledge—to "discover" usable agents. The NCI has since identified approximately two thousand plant species endemic to the rainforest that have potential anticancer properties.[160]

The recognition that the Traditional Knowledge of indigenous societies could be a direct route to useful plant and animal extracts with valuable pharmaceutical potential hit bioprospectors the world over like a ton of bricks. This was a monumental trend to face; bioprospectors could actually mitigate the risk of turning over tens of thousands of plant specimens to pharmaceutical researchers from which no valuable agents might be discovered. The medical and academic communities started to advocate for the use of Traditional Knowledge to locate and collect samples of biodiversity that might yield valuable extracts from which new drugs might be developed. Interesting corroborative statistics came to light: it was estimated that 80% of developing countries rely on traditional medicine derived from Traditional Knowledge for the primary health care needs of as many as four billion people, and 85% of this traditional medicine makes use

157. Norman R. Farnsworth & William D. Loub, *Information Gathering and Databases That Are Pertinent to the Development of Plant-Derived Drugs*, *in* Plants: The Potentials for Extracting Protein, Medicines, and Other Useful Chemicals 181 (Office of Tech. Assessment 1983).

158. *See id.*

159. *See id.*

160. *Facts About Rainforests*, *supra* note 155. The National Cancer Institute (NCI) is currently testing upward of 80,000 plant and animal extracts for cancer fighting agents. *See Drug Discovery at the National Cancer Institute*, Nat'l Cancer Inst., http://www.cancer.gov/cancertopics/factsheet/NCIdrugdiscovery (last visited Mar. 26, 2014). The NCI's use of plant compounds in its drug research is only one example of many. Merck, for example, has also long had a natural products division, which has isolated various agents for its pharmaceutical drug development, such as its cholesterol-lowering drug Mevacor, which is derived from a species of fungus.

of plant-extracted compounds.[161] It was also estimated that random, or "blind," screening has a success rate of about 1 in 10,000 specimens.[162] However, when testing is combined with the Traditional Knowledge of an indigenous group, the success rate can be as high as 1 in 2 specimens.[163] Farnsworth further explains the challenge:

> [I]n my opinion, future programs of drug development from higher plants should include a careful evaluation of historical as well as current claims of the effectiveness of plants as drugs from alien cultures. Such information is rapidly disappearing as our own culture and ideas permeate the less developed countries of the world where there remains a heavy dependence on plants as sources of drugs.[164]

It followed that the idea caught on that the Traditional Knowledge of indigenous societies could represent beliefs and practices that make use of particular plants, and that where this knowledge is unique to a particular cultural group, it may have been refined over vast expanses of time, such as centuries or even millennia. Bioprospectors have apparently seized on this approach to search for new and better ways to find usable biological specimens. In short, the results were much improved from "blind" screening.

The first task of the bioprospector is thus to target the richest possible geographical overlap of Traditional Knowledge and biodiversity, which maximizes the chance of collecting valuable specimens of biodiversity. The geographical targets are typically areas with robust biodiversity, inhabited by indigenous societies with well-preserved cultural practices, which have not been substantially altered by the effects of globalization or otherwise diluted by a dominant culture.[165] In other words, bioprospectors generally seek cultures that possess credible Traditional Knowledge that is intimately tied to the biodiverse ecosystem in which they live or to which they are proximate.

In terms of bioprospectors' identifications and expectations, the process of bioprospecting seems to be informed by an "us versus them" mentality, either implicitly or explicitly.[166] Farnsworth sums up the process in a less-than-artful way:

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161. *See* Norman R. Farnsworth & Djaja Doel Soejarto, *Potential Consequences of Plant Extinction in the United States on the Current and Future Availability of Prescription Drugs*, 39 Econ. Botany 231, 231–40 (1985).

162. *See Bioprospecting/Biopiracy and Indigenous Peoples*, ETC Group (Dec. 26, 1995), http://www.etcgroup.org/content/bioprospectingbiopiracy-and-indigenous-peoples.

163. *See id.*; *see also* Visser, *supra* note 17, at 213 ("Many . . . instances of the appropriation and exploitation of traditional knowledge . . . involve the use of both genetic resources and traditional ecological knowledge about the properties of such resources.").

164. *See* Norman R. Farnsworth, *Screening Plants for New Medicines*, *in* Biodiversity 95 (Edward O. Wilson ed., 1988).

165. *See* John Mohawk, *Subsistence and Materialism*, *in* Paradigm Wars, *supra* note 21, at 26–29.

166. *See* Carl Coon, One Planet, One People: Beyond "Us vs. Them" 30 (2004) (discussing the ethical implications of how a global society develops, functions, and regulates conflict, and noting that "the 'us versus them' syndrome is an essential element of [any community]"). For more on the "us versus them" phenomenon, including in the context of propaganda, see Harold D. Lasswell, *The Function of the Propagandist*, 38 Int'l J. Ethics 258 (1928); Harold D. Lasswell, *The Theory of Political Propaganda*, 21 Am. Pol. Sci. Rev. 627 (1927); Winston P. Nagan & Craig Hammer, *Communications Theory and World Public Order: The Anthropomorphic, Jurisprudential Foundations of International Human Rights*, 47 Va. J. Int'l L. 725, 750–54 (2007) (discussing the philosophical and psychological underpinnings of how certain individuals are included in the symbolic "we," and how certain individuals are included in the symbolic enemy, the "other").

> What really seems to be the problem is that most pharmaceutical firms, as well as decision-making offices in government agencies, lack personnel who have a full understanding and appreciation of the potential payoff in this area of research [dealing with gaining access to Traditional Knowledge to identify valuable specimens of biodiversity]. For example, new programs in drug development are usually initiated by the presentation of a proposal by a research staff member before a group of peers and research administrators. Following is one possible scenario: Dr. E.Z. Greenleaf prepares his arguments for a new drug development program at the ABC Pharmaceutical Corporation in which he proposes to study plants as a source of new drugs. His approach to the program is to examine written medicinal folklore to obtain information on plants allegedly used by primitive peoples for certain specified diseases. He might even be brave enough to suggest that the ABC Pharmaceutical Corporation hire one or two physicians to travel to Africa, Borneo, New Caledonia, or other exotic areas to live with the people for a year or so. During this period, Drs. U. Canduit and I.M. Reliant would observe the witch doctors treating patients and then would make their own diagnoses of each patient and conduct follow-up observations on outcome. When improvement is noted, they would record which plants had been used to treat the patients. These plants would then be collected and sent to the Research Laboratory of the ABC Pharmaceutical Corporation located in Heartbreak, Colorado, for scientific studies. Total cost of such a 5-year program would be less than the cost of a new jet fighter.[167]

With this in mind, and from the point of view of bioprospectors, the Shuar are apparently superlative candidates: they are indigenous to one of the world's richest biodiversity hotspots and the development of their Traditional Knowledge in relation to this biodiversity has been steady and generally uninterrupted for a vast expanse of time. For example, the Shuar use more than one hundred plant species to treat gastrointestinal ailments alone.

C. Threshold Considerations: Traditional Knowledge, Biodiversity, and Intellectual Property Protections

A thorough review of case studies of similar appropriations indicates that bioprospectors typically attempt to justify[168] their actions—the extraction of plant genetic resources without compensation or the institution of benefit-sharing regimes—

167. *See* Farnsworth, *supra* note 164, at 96; *see also*, Diane Jukofsky, *Medicinal Plant Research Leads Scientists to Rain Forests*, Drug Tropics, Apr. 22, 1991, at 26; Fiona Godlee, *Medicinal Plants: Another Man's Poison*, 305 Brit. Med. J. 1583 (1992); Leslie Roberts, *Chemical Prospecting: Hope for Vanishing Ecosystems?* 256 Science 1142 (1992); Tracy Dobson, *Loss of Biodiversity: An International Environmental Policy Perspective*, 17 N.C. J. Int'l L. & Com. Reg. 277 (1992).

168. Of course, there may be bioprospectors whose goals relate to the preservation of rainforest biota. Indeed, there are thousands of governmental and nongovernmental organizations dedicated to environmental, anthropological, ethnological, botanical, and other forms of preservation out of respect for indigenous societies, recognition of the intrinsic value of the natural world, or good, old-fashioned altruism. One of them, Mark Plotkin, reminds us that "conservation should not be about what's in it for us. We shouldn't just save the forest because it might offer the cure to AIDS, hemorrhoids, or pancreatic cancer. There are spiritual and ethical aspects to conservation that are often overlooked." *See* Butler, *supra* note 134.

by arguing that knowledge about biodiversity represents the "common heritage of the humankind."[169] In other words, biodiversity and knowledge about it are new forms of property under international law: *res extra commercium* ("a thing outside commerce"). This designation does not allow for the property or territory (*res*) to be appropriated by a state or indigenous population in a territorial sense, rather it means that all resources contained therein or value derived therefrom are the property of all mankind.[170] This designation has also been ascribed to Earth's moon and its seabed.[171]

When viewed through the lens of neoclassical economics, property theory is decidedly utilitarian. Law professor Carol Rose has argued that the development of property rights is a societal outcome designed to maximize the collective welfare.[172] Property theory is thought to offer certain protections for scarce resources as well, such as providing the individuals and groups who own the resources with incentives to leverage them to benefit society; avoiding the so-called "tragedy of the commons" whereby resources subject to communal or "un-owned" use are exhausted because of the human tendency toward overuse when ownership rights are not devolved to individuals; reducing "rent dissipation," which refers to the exploitation of resources belonging to other groups or communities; and encouraging efforts to sustain the resource to promote commerce.[173]

Bioprospectors are thus pointing to the emergence of authority in constituting a new fundamental power arrangement—where authority is also understood as having a normative element—from which they claim to have the power to act. These important understandings condition the extent to which bioprospectors might lawfully access

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169. *See* Aldo Armando Cocca, *The Principle of the 'Common Heritage of All Mankind' as Applied to Natural Resources from Outer Space and Celestial Bodies*, *in* Proceedings of the Sixteenth Colloquium on the Law of Outer Space 172 (Mortimer D. Schwartz ed., 1974) (introducing the concept of *res communis humanitatis*, "the common heritage of mankind"); Paul Gepts, *Who Owns Biodiversity, and How Should the Owners Be Compensated?*, 134 Plant Physiology 1295, 1295–1307 (2004); Edgar Asebey & Jill Kempenaar, *Biodiversity Prospecting: Fulfilling the Mandate of the Biodiversity Convention*, 28 Vand. J. Transnat'l L. 703, 707–08 (1995) (discussing the "common heritage" concept as it relates to plant biodiversity); Rebecca Margulies, *Protecting Biodiversity: Recognizing International Intellectual Property Rights in Plant Genetic Resources*, 14 Mich. J. Int'l L. 322, 330 (1993) (generally discussing the "common heritage" concept); Nico Schrijver, *Permanent Sovereignty Over Natural Resources Versus the Common Heritage of Mankind: Complementary or Contradictory Principles of International Economic Law*, *in* International Law and Development 87, 95–101 (1998) (discussing the "common heritage" concept). *But see* Kemal Baslar, The Concept of the Common Heritage of Mankind in International Law 307 (1998) (excerpting a quote from Diana Ponce Nava at the proceedings of an American Society of International Law conference on international land use law in 1993, rejecting the notion that Mexico's tropical biodiversity is the common heritage of mankind: "This [biodiversity] is not a common heritage of mankind; it is a heritage of Mexicans—Mexican generations, present and future. We are not ready to give away these resources, which, according to the principle of sovereignty over natural resources, belong to the Mexican nation").

170. *See, e.g.*, Glenn H. Reynolds & Robert P. Merges, Outer Space Problems of Law and Policy 94 (1997).

171. *See id.*

172. *See generally* Carol M. Rose, Property and Persuasion: Essays on the History, Theory, and Rhetoric of Ownership (1994).

173. *See id.* at 164.

plant biota on the sacred land of the Shuar, and perhaps even the Traditional Knowledge necessary to identify active, valuable compounds in these plants.

There are multiple sources of law[174] that either bioprospectors or indigenous communities might cite to provide authoritative support, but which should control? Of key consideration are the rights addressed in sources of conventional international law,[175] customary international law, certain persuasive judicial decisions,[176] and the

174. In the instant circumstances, the appropriation represents a one-way flow of biodiversity from the biologically diverse "South" to the technologically advanced "North." The "North" is replete with advanced research facilities and long-established mechanisms of patent protection, which protect any research and discoveries derived from the ethnobotanicals in question. The "North" can thus encroach onto the historical, culturally traditional, and venerable relationship between the ethnobotanicals in question and indigenous groups such as the Shuar. This encroachment violates the Convention on Biological Diversity (CBD), which supports the "South's" sovereignty over its ethnobotanical and genetic resources and seeks to prevent their exploitation by "Northern" corporations and organizations, such as the bioprospectors at issue. *See* discussion *infra* notes 180–82. The United States—the source of the bioprospectors at issue—has signed but not ratified the CBD, which means that it is a persuasive, but not controlling, source of law. Ecuador has signed and ratified it. The argument would thus follow that the bioprospectors' actions contravened Article 2 of the CBD, which stipulates that the "[c]ountry of origin of genetic resources" (i.e., "the country which possesses those genetic resources in in-situ conditions") has sovereign ownership of any "Genetic resources" (i.e., "genetic material of actual or potential value"), "Biological resources" (which "includes genetic resources, organisms or parts thereof, populations, or any other biotic component of ecosystems with actual or potential use or value for humanity"), or any other "Domesticated or cultivated species" (i.e., "species in which the evolutionary process has been influenced by humans to meet their needs"). *See* CBD, *supra* note 142, art. 2. If the government of Ecuador recognizes the Shuar's sovereignty over the territory from which the ethnobotanical resources were removed, and if the Shuar Federation's Charter speaks to the Shuar's ownership of the resources in Shuar-owned territory (or if the Bill of Fundamental Rights addresses bioprospecting), the CBD would be relevant.

175. There are various sources of conventional international law which concern the protection of intellectual property, including the CBD and the World Trade Organization Trade Related Intellectual Property Rights Agreement (the "TRIPS Agreement"), among other sources. CBD, *supra* note 142; Agreement on Trade-Related Aspects of Intellectual Property Rights, Apr. 15, 1994, 1869 U.N.T.S. 299, 33 I.L.M. 1197 [hereinafter TRIPS Agreement]. Article 3 of the CBD sets out that states have sovereign rights over their natural resources. CBD, *supra* note 142, art. 3. Article 8(j) of the CBD recognizes the rights of indigenous communities, such as the Shuar, and their Traditional Knowledge and practices. *Id.* art. 8(j). Specifically, it states:

> Subject to its national legislation, [contracting parties shall] 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. In short, it can be argued that Article 8(j) vests the Shuar with three rights. First, the CBD acknowledges the Shuar cultivators' and farmers' traditional rights over their biological resources. Second, it requires that any outside use or application of the Shuar cultivators' and farmers' Traditional Knowledge, innovations, and practices always be subject to the Shuar's approval and involvement. Third, it requires that any ensuing benefit (derived from the appropriated resource) be shared with the Shuar. The Bonn Guidelines further establish a link between specimens of biodiversity and Traditional Knowledge in the obligation it places on seekers of indigenous traditional knowledge and related specimens of biodiversity to acquire explicit informed consent from the indigenous society. Under the Bonn Guidelines, the indigenous community should have the right to deny outside access to both the

domestic law of Ecuador[177] and the United States.[178] Moreover, well over fifty countries have developed, or are in the process of promulgating, legal and regulatory regimes that govern access to Traditional Knowledge and benefit sharing with indigenous

biodiversity and the traditional knowledge. *See generally* Secretariat of the Convention on Biological Diversity, Bonn Guidelines on Access to Genetic Resources and Fair and Equitable Sharing of the Benefits Arising out of Their Utilization (2002) [hereinafter Bonn Guidelines], *available at* http://www.cbd.int/doc/publications/cbd-bonn-gdls-en.pdf. TRIPS can be construed to provide certain measures of protection against the commercial exploitation of indigenous knowledge. For example, Article 27(2) sets out that signatory states are permitted to exclude an invention from patent protection in order to prevent "commercial exploitation" of the invention, so long as it is necessary to protect "public order or morality." *See* TRIPS Agreement, *supra*, art. 27(2).

176. Salient and interesting case law has come out of the United States and Australia in particular. *See, e.g.*, Cherokee Nation v. Georgia, 30 U.S. (5 Pet.) 1 (1831); Worcester v. Georgia, 31 U.S. (6 Pet.) 515 (1832) (determining that Native American tribes were sovereign nations at the time of first contact, which means they retain their sovereign rights in any circumstance where these rights were not explicitly ceded by a treaty or otherwise abrogated by an act of Congress; the arguments in these cases have been used by some indigenous communities in the United States to argue that federal intellectual property regimes hold no sway over indigenous practices and Traditional Knowledge); *Foster v. Mountford* (1976) 29 FLR 233 (Austl.) (prohibiting the publication of a book detailing an aboriginal community's Traditional Knowledge on the basis that it disclosed culturally and spiritually significant information that had been supplied to the author—an anthropologist—in confidence, and to disseminate this information in any way constituted a breach of this confidentiality); *Yumbulul v. Reserve Bank of Australia* (1991) 21 IPR 481 (Austl.) (discussing an indigenous community's collective rights over certain culturally significant artistic designs); *Neowarra v. Western Australia* (2004) FCA 1092 (Austl.) (examining whether Traditional Knowledge of biodiversity can be subject to protection under intellectual property law); *Milpurrurru v. Indofurn Pty. Ltd.* (1994) 54 FCR 240 (Austl.) (considering the issue of traditional indigenous culturally significant artistic designs as intellectual property).

177. Ecuador promulgated a new constitution in 1998, which abrogated the 1830 Constitution. *See* 1998 Constitution, *supra* note 44. The 1998 Constitution additionally obliges the state to safeguard these rights, and allows for no restriction on their exercise, subject to other provisions on, for example, eminent domain. *See id.* arts. 16, 18, 23, 33. This constitution also addresses collective ownership, such as by an indigenous community, and can only be adversely possessed by the state in the case of public utility. *See id.* art. 84 (2)–(3). Collectively owned lands are exempt from *predial* taxation and can be transferred free of charge, though ownership is inalienable, unencumbered, and indivisible. *Id.* Under these provisions on collective ownership, the constitution empowers the state to institute regimes that substantiate the rights and prohibitions set out by the constitution itself. *Id.*

178. Through the prism of U.S. law, assuming an appropriate venue could be ascertained, there might be a persuasive exception to the general statute of limitations rule to allow plaintiffs to "reach back" and win damages for the entire duration of an alleged violation, even where some infringements occurred outside of the three-year statute of limitations period. *See* Taylor v. Meirick, 712 F.2d 1112 (7th Cir. 1983). Judge Posner's opinion in *Taylor* outlines the "fraudulent concealment" test, which has two prongs: 1) successful concealment of the infringement, and 2) intent to conceal the infringement. *See id.* at 1118 (citing Prather v. Neva Paperbacks, Inc., 446 F.2d 338, 341 (5th Cir. 1971)). The *Taylor* court applied this rule and found that the defendant fraudulently concealed the infringement. *See id.* at 1119. The court thus held that the plaintiff's recovery for defendant's infringements should be allowed for *all* acts, including those infringements that occurred *outside* of the three-year statutory limitations period, so long as at least one act of infringement occurred within the three-year statutory period. *See id.* at 1112, 1119. The court additionally held that allowing recovery for all infringing acts (within and outside the three-year statutory limitations period) was consistent with the goals of the statute of limitations. To further justify this conclusion, the court pointed to the occurrence of the defendant's fraudulent concealment of his infringement, which would have "tolled" the running of the statutory limitations period (i.e., prevented the time for filing suit from running). *See id.* at 1119.

societies, including *sui generis* protections.[179] These various sources of law provide persuasive guidance on issues including prior informed consent[180] and benefit sharing[181] arising out of the collection and use of material from Shuar land, including financial or in-kind compensation.[182] They also provide guidance on collaboration between Shuar representatives and contracted researchers, developers, and advocates of any resulting resources or products, including the development licensing processes and agreements governing disclosures. Of course, analysis of how the law of copyright, patents, trade secrets, and intellectual property more generally might be construed to apply to indigenous peoples' circumstances and Traditional Knowledge is hardly a novel

179. *See* Andean Community of Nations, *Decision No. 391—Common Regime on Access to Genetic Resources* (July 2, 1996), *available at* http://www.wipo.int/wipolex/en/details.jsp?id=9446; *see also* Kerry ten Kate & Sarah A. Laird, *Bioprospecting Agreements and Benefit Sharing with Local Communities*, *in* Poor People's Knowledge: Promoting Intellectual Property in Developing Countries, *supra* note 17, at 138, 156 (setting out a partial list of countries which have developed or are developing policies related to access to Traditional Knowledge and benefit sharing).

180. Article 15(4) of the Convention on Biological Diversity governs instances where an outside party has access to the indigenous party's resources. *See* CBD, *supra* note 142, art. 15(4). It requires that any outside access be governed by "mutually agreed terms." *Id.* This means that informed negotiations must occur between the indigenous party (the Shuar) and any potential user before resources are appropriated. It is important to note that this must be sufficiently addressed by national legislation. Arguably, access-to-resource agreements executed by the parties can only be valid if they are implemented through the sovereign party's official channel, which ensures that community interests are not jeopardized. *See id.*

181. Articles 1 and 8(j) of the Convention on Biological Diversity encourage the practice of sharing benefits, including profits realized from the use of Traditional Knowledge and of the use of genetic materials derived therefrom, as well as technological advancements, or products that were developed using the Traditional Knowledge or the resources. *See id.* arts. 1, 8(j). Article 15(7) details how any benefits which arise from research, development, or commercial utilization of the indigenous party's genetic resources must be shared. *See id.* art. 15(7). Specifically, Article 15(7) states that:

> Each contracting party shall take legislative, administrative or policy measures . . . with the aim of sharing in a fair and equitable way [and on "mutually agreed terms"] the results of research and development and the benefits arising from the commercial and other utilization of genetic resources, with the Contracting Party providing such resources.

Id. This provision might lend persuasiveness to arguments for an exception to the typical treatment of the statutory period under the federal Copyright Act. It is extremely difficult for indigenous communities in the "South" to become aware of and monitor activities of corporations and organizations in the "North," to say nothing of an indigenous community's ability to precisely predict the extent of future benefits which might be derived from the "North's" use of resources appropriated from the "South." *See id.* arts. 1, 8(j).

182. Article 15 of the Convention on Biological Diversity requires parties to arrive at fair and mutually agreed upon terms before access is provided to indigenous genetic resources or technology is transferred. *See id.* art. 15.

183. *See, e.g.*, World Intell. Prop. Org. [WIPO], *Matters Concerning Intellectual Property and Genetic Resources, Traditional Knowledge and Folklore*, at 3, WIPO Doc. WO/GA/26/6 (Aug. 25, 2000); WIPO, Intellectual Property Needs and Expectations of Traditional Knowledge Holders (2001); WIPO Roundtable on Intellectual Property and Traditional Knowledge, Geneva, Switz., Nov. 1–2, 1999, *Report*, WIPO Doc. WIPO/IPTK/RT/99/7 (May 4, 2000); WIPO Intergovernmental Committee on Intellectual Property and Genetic Resources, Traditional Knowledge and Folklore, *The Protection of Cultural Expressions/Expressions of Folklore: Overview of Policy Objectives and Core Principles*, WIPO Doc. WIPO/GRTKF/IC/1/13 (Aug. 20, 2004); WIPO Intergovernmental Committee on Intellectual Property and Genetic Resources, Traditional Knowledge and Folklore, Geneva, Switz., June 13–21, 2002,

undertaking; there has been a great deal of authoritative reporting[183] and scholarship[184] by an array of experts and practitioners.

Third Session Report, WIPO Doc. WIPO/GRTKF/IC/3/17 (June 21, 2002); WIPO Intergovernmental Committee on Intellectual Property and Genetic Resources, Traditional Knowledge and Folklore, Geneva, Switz., July 7–15, 2003, *Fifth Session Report*, WIPO Doc. WIPO/GRTKF/IC/5/15 (Aug. 4, 2003); WIPO Intergovernmental Committee on Intellectual Property and Genetic Resources, Traditional Knowledge and Folklore, *Traditional Cultural Expressions/Expressions of Folklore, Legal and Policy Options*, WIPO Doc. WIPO/GRTKF/IC/6/3 (Dec. 1, 2003); Special Rapporteur on Prevention of Discrimination and Protection of Minorities, *Study on the Protection of the Cultural and Intellectual Property of Indigenous Peoples*, Comm'n on Hum. Rts., U.N. Doc. E/CN.4/Sub.2/1993/28 (July 28, 1993) (by Erica-Irene A. Daes); Special Rapporteur on the Protection of the Heritage of Indigenous People, *Final Report on the Protection of the Heritage of Indigenous Peoples*, Comm'n on Hum. Rts., U.N.Doc. E/CN.4/Sub.2/1995/26 (June 21, 1995) (by Erica-Irene A. Daes).

184. *See, e.g.*, Keith Aoki, *Neocolonialism, Anticommons Property, and Biopiracy in the (Not-So-Brave) New World Order of International Intellectual Property Protection*, 6 Ind. J. Global Legal Stud. 11 (1998); Christophe Antons, Traditional Knowledge, Traditional Cultural Expressions and Intellectual Property Law in the Asia-Pacific Region (2009); Olufunmilayo B. Arewa, *TRIPS and Traditional Knowledge: Local Communities, Local Knowledge, and Global Intellectual Property Frameworks*, 10 Marq. Intell. Prop. L. Rev. 155 (2006); Graeme W. Austin, *Re-Treating Intellectual Property? The WAI 262 Proceeding and the Heuristics of Intellectual Property Law*, 11 Cardozo J. Int'l & Comp. L. 333 (2003); Josephine Axt et al., Biotechnology, Indigenous Peoples, and Intellectual Property Rights (1993); Bryan Bachner, Intellectual Property Rights and China: The Modernization of Traditional Knowledge (2008); S. Biber-Klemm & T. Cottier, Rights to Plant Genetic Resources and Traditional Knowledge: Basic Issues and Perspectives (2006); Michael F. Brown, Who Owns Native Culture? 45 (2003); Stephen B. Brush & Doreen Stabinsky, Valuing Local Knowledge: Indigenous People and Intellectual Property Rights (1996); F. Burhenne-Guilmin & S. Casey-Lefkowitz, *The Convention on Biological Diversity: A Hard Won Global Achievement*, 3 Y.B. Int'l Envtl. L. 43, 51 (1992); David A. Cleveland & Stephen C. Murray, *The World's Crop Genetic Resources and the Rights of Indigenous Farmers*, 38 Current Anthropology 477 (1997); Rosemary J. Coombe, The Cultural Life of Intellectual Properties: Authorship, Appropriation and the Law (1998); Thomas Cottier & Marion Panizzon, *Legal Perspectives on Traditional Knowledge: The Case for Intellectual Property Protection*, 7 J. Int'l Econ. L. 371 (2004); Shelton H. David et al., Traditional Knowledge and Sustainable Development: Proceedings of the 1993 United Nations International Year of the World's Indigenous Peoples (1995); David R. Downes, *Comments on Rights of Indigenous Farmers in Crop Genetic Resources*, 38 Current Anthropology 498 (1997); David R. Downes, *How Intellectual Property Could Be a Tool to Protect Traditional Knowledge*, 25 Colum. J. Envtl. L. 253 (2000); Graham Dutfield & Darrell Addison Posey, Beyond Intellectual Property: Toward Traditional Resource Rights for Indigenous Peoples (1996); Graham Dutfield, Intellectual Property, Biogenetic Resources and Traditional Knowledge (2004); Graham Dutfield, *TRIPS-Related Aspects of Traditional Knowledge*, 33 Case W. Res. J. Int'l L. 233 (2001); Rebecca S. Eisenberg, *Genes, Patents, and Product Development*, 257 Science 903 (1992); Leanne M. Fecteau, *The Ayahuasca Patent Revocation: Raising Questions About Current U.S. Patent Policy*, 21 B.C. Third World L.J. 69 (2001); Poor People's Knowledge: Promoting Intellectual Property in Developing Countries (J. Michael Finger & Philip Schuler eds., 2004); Johanna Gibson, Community Resources: Intellectual Property, International Trade and Protection of Traditional Knowledge (2005); Johanna Gibson, *Intellectual Property Systems, Traditional Knowledge, and the Legal Authority of Community*, 26 Eur. Intell. Prop. Rev. 280 (2004); M.A. Gollin, *An Intellectual Property Rights Framework for Biodiversity Prospecting*, *in* Biodiversity Prospecting: Using Genetic Resources for Sustainable Development 159 (Walter V. Reid et al. eds., 1993); Stephen A. Hansen & Justin W. VanFleet, Traditional Knowledge and Intellectual Property (2003); Frederick Hendrickx et al., *Access to Genetic Resources: A Legal Analysis*, *in* Biodiplomacy: Genetic Resources and International Relations 139 (Vicente Sanchez & Calestous Juma eds., 1994); Jean Raymond Homere, *Intellectual Property Rights Can Help Stimulate the Economic Development of Least Developed Countries*, 27 Colum. J.L. &

Many point to the reality that the international community has only recently started to develop protections for Traditional Knowledge. In 1981, the World Intellectual Property Organization (WIPO) and the U.N. Educational, Scientific, and Cultural Organization (UNESCO) set out a model law that afforded some protection for indigenous folklore. In 1989, following a years-long disagreement concerning the accessibility of plant genetic resources by all mankind, the Food and Agriculture Organization of the United Nations resolved that national sovereignty was a deciding factor as it pertained to farmers' rights to ownership of plant genetic resources, which provided a measure of support for indigenous people to manage resources on their land.[185] In 1992, the Convention on Biological Diversity (CBD) laid foundational protections for Traditional Knowledge, and two years later, in 1994, the World Trade Organization Trade Related Intellectual Property Rights Agreement (the "TRIPS Agreement") was negotiated at the end of the Uruguay Round of the General Agreement on Tariffs and Trade, which set a new global standard for intellectual property protections.[186]

The CBD vests developing countries with great opportunities to conserve their biological diversity. Typically, outcomes are a function of interpreting national legislation and CBD provisions and mechanisms to implement and enforce the treaty. While the CBD provides that states have sovereign rights over their natural resources,

Arts 277 (2004); Michael J. Huft, *Indigenous Peoples and Drug Discovery Research: A Question of Intellectual Property Rights*, 89 Nw. U. L. Rev. 1678 (1995); Feifei Jiang, *The Problem with Patents: Traditional Knowledge and International IP Law*, Harv. Int'l Rev. (Dec. 19, 2008, 9:01 PM), http://hir.harvard.edu/global-education/the-problem-with-patents; Evanson C. Kamau & Gerd Winter, Genetic Resources, Traditional Knowledge and the Law: Solutions for Access and Benefit Sharing (2009); Paul Kuruk, Legal Protection for Heritage Rights: Traditional Knowledge, Folklore and Genetic Resources (2002); Laird, *supra* note 19; Charles McManis, Biodiversity and the Law: Intellectual Property, Biotechnology and Traditional Knowledge (2007); John Mugabe, Intellectual Property Protection and Traditional Knowledge (1999); Accessing and Sharing the Benefits of the Genomics Revolution (Peter W.B. Phillips & Chika B. Onwuekwe eds., 2007); Sandra L. Pinel & Michael J. Evans, *Tribal Sovereignty and the Control of Knowledge*, *in* Intellectual Property Rights for Indigenous Peoples: A Source Book (1994); Ronald Sackville, *Traditional Knowledge, Intellectual Property, and Indigenous Culture, Legal Protection of Indigenous Culture in Australia*, 11 Cardozo J. Int'l. & Comp. L. 711 (2003); Lakshmi Sarma, *Biopiracy: Twentieth Century Imperialism in the Form of International Agreements*, 13 Temp. Int'l & Comp. L.J. 107 (1999); Vandana Shiva, The Plunder of Nature and Knowledge (1997); Sivashree Sundaram, *Battling Bills, Beans and Biopiracy*, 15 Alb. L.J. Sci. & Tech. 545 (2005); Indigenous Heritage and Intellectual Property: Genetic Resources, Traditional Knowledge, and Folklore (Silke von Lewinski ed., 2003); Silke von Lewinski, *Traditional Knowledge, Intellectual Property, and Indigenous Culture: The Protection of Folklore*, 11 Cardozo J. Int'l. & Comp. L. 747 (2003); Indigenous Heritage and Intellectual Property: Genetic Resources, Traditional Knowledge and Folklore (Silke von Lewinski ed., 2d ed. 2008); Michael Woods, *Food for Thought: The Biopiracy of Jasmine and Basmati Rice*, 13 Alb. L.J. Sci. & Tech. 123 (2002); Farhana Yamin, The Biodiversity Convention and Intellectual Property Rights (1995).

185. *See* U.N. Food & Agric. Org., Tenure of Indigenous Peoples Territories and REDD+ as a Forestry Management Incentive: The Case of Mesoamerican Countries 7–35 (2012), *available at* http://www.fao.org/docrep/018/i2875e/i2875e.pdf.

186. *See generally* CBD, *supra* note 142; TRIPS Agreement, *supra* note 175; *see also Overview: The TRIPS Agreement*, World Trade Org., http://www.wto.org/english/tratop_e/trips_e/intel2_e.htm (last visited Mar. 26, 2014).

it also recognizes the rights of indigenous communities, such as the Shuar, and their Traditional Knowledge and practices.[187] Specifically, it states:

> Subject to its national legislation, [contracting parties shall] 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[.][188]

In short, it can be argued that the CBD vests the Shuar with three rights. First, the CBD acknowledges the Shuar cultivators' and farmers' traditional rights over their biological resources.[189] Second, it requires that any outside use or application of the Shuar cultivators' and farmers' Traditional Knowledge, innovations, and practices always be subject to the Shuar's approval and involvement.[190] Third, it requires that any ensuing benefit (derived from the appropriated resource) be shared with the Shuar.[191] The (voluntary) Bonn Guidelines further establish a link between specimens of biodiversity and Traditional Knowledge by obligating seekers of Traditional Knowledge and related specimens of biodiversity to acquire explicit informed consent from the indigenous society.[192] Under the Bonn Guidelines, the indigenous community should have the right to deny outside access to both their land's biodiversity and their Traditional Knowledge.

The TRIPS Agreement is the most comprehensive source of conventional law on intellectual property;[193] it sets minimum standards for intellectual property protections for nationals of all World Trade Organization (WTO) members (which include Ecuador and the United States), so that the intellectual property laws of WTO member countries must rise to meet these standards in the name of spreading harmonized protections for goods and services around the globe.[194] As a result, approximately one hundred countries (of the WTO's current membership of 159 countries) have now developed, or are in the process of promulgating, domestic legal and regulatory regimes that specify types of intellectual property protections.[195] There is a substantial body of

187. *Compare* CBD, *supra* note 142, art. 3, *with id.* art. 8(j).

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

189. *Id.*

190. *Id.*

191. *Id.*

192. *See* Bonn Guidelines, *supra* note 175.

193. *See Overview: The TRIPS Agreement*, *supra* note 186.

194. *See id.*

195. *See Frequently Asked Questions About TRIPS in the WTO*, World Trade Org., http://www.wto.org/english/tratop_e/trips_e/tripfq_e.htm#Transition (last visited Mar. 26, 2014).

research on the extent to which these formal intellectual property protections might apply to Traditional Knowledge.[196]

Such sui generis protection regimes could govern access to the Shuar's Traditional Knowledge and guide prior informed consent and benefit sharing requirements, possibly including financial or in-kind compensation. They could also provide guidance on the development of licensing processes and agreements governing disclosures.

D. Workable Strategies for the Shuar to Benefit from Products Developed Using Their Traditional Knowledge

The increasing proliferation of multinational corporate operations in the Amazon Basin has put several indigenous societies, including the Shuar, in the precarious position of seeking to simultaneously protect their land, resources, and Traditional Knowledge from the influence of or theft by external actors as quickly as possible, particularly since most authoritative sources of international law afford them little or no explicit protection. However, as mentioned above, there has been an increasingly widespread conceptual acknowledgement of the importance of benefit sharing with indigenous groups, at least among certain nonpharmaceutical commentators, when products are developed using Traditional Knowledge.[197] Accordingly, a potentially workable alternative is the eventual mainstreaming of certain forms of reciprocity—immediate-term, medium-term, and long-term—into legally binding *convenios*, which set out research, development, pharmaceutical, and other agreements between outside actors and indigenous peoples, including the Shuar.[198]

An immediate-term legal agreement would reflect the continuing needs of many indigenous communities, including the Shuar. It could take the form of a participatory process between the outside organization and community leadership, as well as community members, which would isolate critical needs that could be satisfied by the outside organization as an initial form of compensation for the benefits derived from its partnership with the indigenous community.[199]

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196. *See* sources cited *supra* notes 183–84.

197. Policy positions to this effect have been set out by the American Anthropological Association, the International Society of Ethnobiology, and the Society of Economic Botany, among others. *See* Stephen B. Brush, *Indigenous Knowledge of Biological Resources and Intellectual Property Rights: The Role of Anthropology*, 96 Am. Anthropologist 653, 653 (1993); *About the Society for Economic Botany*, Soc'y for Econ. Botany, http://www.econbot.org/index.php?module=content&type=user&func=view&pid=2 (last visited Mar. 26, 2014); *Who We Are*, Int'l Soc'y of Ethnobiology, http://ethnobiology.net/about/ (last visited Mar. 26, 2014).

198. This projection mirrors an approach taken by a pharmaceutical organization called Shaman Pharmaceuticals. *See* Donald E. Bierer et al., *Shaman Pharmaceuticals: Integrating Indigenous Knowledge, Tropical Medicinal Plants, Medicine, Modern Science and Reciprocity into a Novel Drug Discovery Approach*, Network Sci., http://www.netsci.org/Science/Special/feature11.html (last visited Mar. 26, 2014).

199. Bierer et al. provide several fascinating examples of what might comprise immediate-term forms of compensation based on accurate appraisals of community needs, such as the building a much-needed airstrip for an indigenous community, the organization of community-based public health workshops, technical assistance with forest conservation, the development of a system to provide a community with

A medium-term legal agreement could also be forged to allow the indigenous community to realize certain benefits from partnering with the outside organization before the actual profit sharing begins. These benefits would accrue while any products are undergoing the monitoring and evaluation processes, subsequent testing and further data gathering, and the time-consuming approvals processes by national pharmaceutical regulatory agencies. These medium-term benefits might take the form of grassroots capacity building or infrastructural development activities.[200]

A long-term legal agreement might exclusively focus on providing the indigenous community with a percentage of the proceeds realized by the sale and marketing of the final product, or could include longer-term capacity building or infrastructure development based on the community's articulation of its priorities. In addition to financial remuneration, long-term legal agreements might additionally reference certain moral and relational benefits, such as formal recognition or attribution of the role of the indigenous community's Traditional Knowledge in publications related to the development of the product.

One or more of these frameworks might draw inspiration from the "capability approach" elegantly articulated by Nobel Prize-winning economist Amartya Sen.[201] Various indigenous communities are keen for some form of development, but not at the cost of their culture, Traditional Knowledge, or patrimonial land and resources.[202] When an authoritative international body comprised *of* indigenous peoples is established *for* indigenous peoples, state-centrism will cease to inform any advisory services it provides in the name of effective development policies and human rights protections for member cultures. This might include the further ratification of ILO Convention 169, which affords indigenous peoples certain protections, such as requiring the state to consult with indigenous communities prior to searching for natural resources.[203]

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potable water, and the provision of direct medical care to an indigenous community that was dying from a strain of malaria for which Shaman Pharmaceuticals provided drug treatment. *See id*.

200. Bierer et al. provide medium-term examples that include scaling up the indigenous community's research capabilities, such as providing community members with scientific training and equipment, perhaps to devolve some components of the data and specimen-gathering processes to the communities themselves, as opposed to relying on outside experts time and again. They further suggest that bringing in outside experts to work with indigenous communities is an effective way for these communities to benefit from shared knowledge in advance of receiving profits from the eventual sale of the final product. *See id*.

201. *See generally* Amartya Sen, *Capability and Well-Being*, *in* The Quality of Life 30 (Martha Nussbaum & Amartya Sen eds., 1993).

202. *Id*.

203. ILO Convention 169, *supra* note 87, art. 15(2) ("In cases in which the State retains the ownership of mineral or sub-surface resources or rights to other resources pertaining to lands, governments shall establish or maintain procedures through which they shall consult these peoples, with a view to ascertaining whether and to what degree their interests would be prejudiced, before undertaking or permitting any programmes for the exploration or exploitation of such resources pertaining to their lands."). However, it is important to note that ILO Convention 169 fails to address indigenous peoples' recognition as "peoples," nor does it address protection for indigenous territory, and it does not vest indigenous peoples with consent or control.

These approaches collectively comprise only one potential development which might be witnessed in the fullness of time. Broader perspectives on indigenous priorities are increasingly reaching the light of day,[204] which demonstrates that while some indigenous communities may accurately be described as antiglobalization or anticapitalist, others are not. Within the confines of certain environmental protections and adherence to particular cultural practices, indigenous groups might be more open to forming partnerships with outside actors where there had been none before. The above approaches to legally binding reciprocity might someday be seriously considered by outside actors to build trust and productive, continuing relationships with those indigenous groups that are open to partnering.

V. CONCLUSION

Approximately 10,000 years ago, humans developed an elegant approach to exploit biodiversity: agriculture. Over time these processes were refined, which resulted in continued growth of human settlements, which in turn resulted in further exploitation of biodiversity, exponentially accelerating the extraction of natural resources. The number of human beings has reached seven billion,[205] all of whom are dependent on continued access to natural resources—plants, animals, and microorganisms—for the production of food, fuel, fertilizer, timber, and medicines.[206] Experts with the U.N. Millennium Ecosystem Assessment[207] have ascertained that the human impact on biodiversity is dire; even at the current rate of exploitation, to say nothing of the exponentially growing demand that comes with explosive population growth, ecosystems may not be able to meet the needs of future generations.[208] Climate change, which authoritative evidence suggests is at least partly due to certain human activities, has also jeopardized the future of many forms of biodiversity.[209]

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204. *See supra* Part III.A.

205. *See International Programs*, U.S. Census Bureau, http://www.census.gov/population/international/ (last visited Mar. 26, 2014).

206. *See* Hans Hoogeveen, *Reflections on COP-6*, CBD News, Special Edition 2004, at 29, *available at* http://www.cbd.int/doc/publications/CBD-10th-anniversary.pdf ("We depend largely on our natural resources; on our animals, plants, and micro-organisms for the production of food and medicine and for the intrinsic value of biological diversity. They are the basis of our existence. They form our vital world, in which life is really on the line.").

207. *See* Millennium Ecosystem Assessment, Ecosystems and Human Well-Being (2005), *available at* http://www.millenniumassessment.org/documents/document.356.aspx.pdf (setting out a general outline of ecosystem services and discussing the interrelatedness of human well-being and environmental protection).

208. There is an assessment that human beings induced the increase of species-extinction rates by as much as 1,000 times the typical historical background rates as inferred from fossil records. *See* Ahmed Djoghlaf, *The Bonn Biodiversity Summit: Birthplace of a "Globale Naturallianz" for Life on Earth*, U.N. Env't Programme, http://www.cbd.int/doc/speech/2008/sp-2008-05-naturallianz-en.pdf (last visited Mar. 26, 2014).

209. Secretariat of the Convention on Biological Diversity, Sustaining Life on Earth: How the Convention on Biological Diversity Promotes Nature and Human Well-Being 5 (2000), *available at* http://www.cbd.int/doc/publications/cbd-sustain-en.pdf.

The sustained existence of Earth's natural resources, particularly its biodiversity, is of critical importance to human survival, and efforts to safeguard these resources can be understood as a form of self-preservation. Commentators have noted that biodiversity "provide[s] important services to humans—such as . . . structure, food and bio-molecules that can be used for the development of drugs or alternative fuels—that increase in value with their richness."[210] The World Bank has stated that:

> Biodiversity is the foundation and mainstay of agriculture, forests, and fisheries, soil conservation and water quality. Biological resources provide the raw materials for livelihoods, sustenance, trade, medicines, and industrial development. Genetic diversity provides the basis for new breeding programs, improved crops, enhanced agricultural production, and food security. Natural habitats and ecosystems provide services—such as water flow, flood control, and coastal protection—that reduce human vulnerability to natural hazards, including drought, floods, tsunamis and hurricanes. Forests, grasslands, freshwater and marine habitats provide benefits of global value such as carbon sequestration, nutrient and hydrological cycling, and biodiversity conservation. Careful ecosystem management provides countless streams of benefits to, and opportunities for, human societies, while also supporting and nurturing the web of life.[211]

It is therefore no surprise that biologist and natural theorist Edward O. Wilson has famously written in *The Diversity of Life* that loss of biodiversity is the "scientific problem of great[est] immediate importance for humanity."[212] In the context of attempted expropriation of Shuar land for commercial extraction of resources and the bioprospecting of plant life from Shuar territory by outside agents who also appropriate the Shuar's Traditional Knowledge, these mind-boggling macro-level considerations are certainly at play.

One of the important challenges for a law influenced by human dignity is that it has to fill vacant spaces and gaps in a way that is characteristic of how lawyers define problems and purport to solve them. This means that lawyers have had to use the human factor to better understand and manipulate both the temporal and spatial dimensions of the legal event manifold. What is important is that the human factor does seek to fill the gaps, and we see this historically from the operational uses of the Roman civil law *ius gentium* ("law of nations") to the modern law of human rights in the global system.

The vast regime of national and international law, including international human rights bodies, each with varying processes and procedures which cater to particular

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210. *See Global Biodiversity Map to Guide Plant Conservation*, Botanical Garden Conservation Int'l (Mar. 22, 2007), http://www.bgci.org/worldwide/news/0339/.

211. World Bank, Mountains to Coral Reefs: The World Bank and Biodiversity 1 (2006), *available at* http://siteresources.worldbank.org/INTBIODIVERSITY/Resources/M2CRs-web2.pdf.

212. *See* Wilson, *supra* note 147, at 254; *see also* Michel Loreau et al., *Diversity Without Representation*, 442 Nature 245 (2006) (remarking on how biodiversity is widely undervalued despite its significant importance to humanity); Dobson, *supra* note 167, at 279 ("Evidence of the value of biodiversity and human dependence on its existence is mounting as its current rate of loss escalates.").

groups, might not be capable of effectively meting out these indigenous-specific protections because such law is not tailored to the issues facing indigenous peoples. This lack of a contextually appropriate international body for indigenous peoples to pursue particularized claims presents substantive and procedural limitations on the international human rights implementation system's ability to address these claims. Some argue that for indigenous peoples to realize their common goal of sustainable self-determination, an indigenous-specific framework that provides normative and procedural guidance on juxtaposing human rights with culturally sensitive capacity-building must be developed.[213]

This article does not seek to provide an authoritative gloss on efforts undertaken to collaborate with the Shuar to help them fend off incursions. It is also not a timely or complete commentary on the Shuar's efforts to protect their Traditional Knowledge or their patrimonial land and resources from appropriation—the steps described above comprise one small cog in a very large machine. Rather, this article seeks to explore opportunities that emerge from a progressive vision of law, which may provide techniques to respond to important challenges generated by the legal vacuum that earlier law provided for consigning vital indigenous interests. In sum, the issues concerning the economic patrimony of indigenous peoples implicate a great deal of legal complexity. This requires an interdisciplinary emphasis and a creative use of law informed by a modern and flexible jurisprudential outlook. Effective and competent lawyers are needed, now more than ever, to engage in the protection of the vital interests of the world's indigenous populations.

213. *See* Declaration on the Rights of Indigenous Peoples, *supra* note 1, pmbl. (affirming "the fundamental importance of the right to self-determination of all peoples").