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Intellectual Property Rights and Ethnobiology: An Update on Posey's Call to Action

Jacob Golan^{1*}, Simone Athayde², Elizabeth Anne Olson³, and Alex McAlvay⁴

Abstract. Following the 1988 International Congress of Ethnobiology, at which the Belém Declaration had been adopted, Darrell Posey published a global call to action for researchers and policy makers to address outstanding issues related to the protection of Indigenous and local knowledge (ILK) (1990a). ILK protections are today largely treated as a matter of intellectual property rights, a field whose global political landscape has undergone intense regulation and critical scrutiny since the time at which Posey was writing. This paper provides an update on the state of intellectual property policy as it relates to the “just compensation” of Indigenous and local communities, while also addressing how global bodies and various national governments have grappled with Posey's suggestions. Additionally, we highlight how the shortcomings of national and international policy to address outstanding issues related to intellectual property have affected cultural, ecological, and biological conservation. In conclusion, an update to Posey's suggestions is offered in light of the Belém +30 Congress (August 7–10, 2018) and of ongoing developments in intellectual property policy.

Keywords: intellectual property, Darrell Posey, Declaration of Belém, FPIC, Indigenous rights

Introduction

In 1990, the *Journal of Ethnobiology* published an article by the ethnobiologist Darrell Posey (1990a), a renowned researcher of Indigenous traditional knowledge, titled “Intellectual Property Rights: What is the Position of Ethnobiology.” Posey's work resulted from the First International Congress of Ethnobiology, held in Belém, Brazil, in 1988, when the International Society of Ethnobiology (ISE) was formed and the Declaration of Belém was composed (ISE 1988). The Declaration explicitly states the responsibilities of researchers and practitioners to address the needs of Indigenous Peoples and local communities¹, and to recognize the critical role of these cultural groups in biodiversity conservation and global planning. This was also the first time that an international scientific organization recognized a basic obligation that “procedures be developed to compensate native

peoples for the utilization of their knowledge and their biological resources” (ISE 1988:Statement 4).

In order to prevent the further loss of “cultural, ecological and biological diversity of this planet” (Posey 1990a:97), Posey laid out five suggestions for the safeguarding of the intellectual property of Indigenous and local communities. In addition, the 1988 Declaration and Posey's call to action sent a message to those working in the governmental, professional, and business sectors, outlining goals for the achievement of intellectual property protections for Indigenous Peoples and Local Communities (IPLC). Policy makers and legislators were called upon to give economic value to the living forest and to natural habitats through the valorization of “natural products.” At the same time, they were urged to recognize that Indigenous and other local Peoples hold the key to understanding the rational use and management

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of these living natural areas, and to develop legal and practical mechanisms for the “just compensation” of Native Peoples’ traditional knowledge (Posey 1990a).

Posey’s pioneering suggestions have significantly contributed to international institutions taking action and to the signing of multilateral agreements addressing ILK as a matter of intellectual property rights (Greene 2004). The Earth Summit that met in Rio de Janeiro in 1992 resulted in 150 national parties signing the Convention on Biological Diversity (CBD) (see Table 2). The convention promised to develop national strategies not only for the sustainable use and conservation of biological diversity, but also for the “fair and equitable sharing of the benefits arising out of

the utilization of genetic resources” (CBD 1992:Article 1)². Shortly after, several international treaties and working groups focusing on Indigenous Peoples emerged, including the United Nations’ Declaration on the Rights of Indigenous Peoples (UNGS 2007; see Table 2) and the World Intellectual Property Organization (WIPO) Intergovernmental Committee on Intellectual Property and Genetic Resources, Traditional Knowledge and Folklore (IGC 2006). On the other hand, Posey’s work has sparked much debate among scholars and policy makers, as part of broader disputes concerning the international regulation of intellectual property. As such, several areas covered by Posey’s suggestions have remained unaddressed.

Table 1. Acronyms used throughout the paper.

Acronym	Full Form
AOC	Appellation d’origine contrôlée
COP	Conference of the Parties
FAO	Food and Agricultural Organization
FPIC	Free Prior Informed Consent
GI	Geographical Indications
HAP	Herbal Anthropology Project
IGO	Intergovernmental Organization
ILK	Indigenous and Local Knowledge
IP	Intellectual Property
IPINCH	Intellectual Property Issues in Cultural Heritage
IPLC	Indigenous Peoples and Local Communities
IPR	Intellectual Property Rights
ISE	International Society of Ethnobiology
NCAB	National Commission Against Biopiracy of Peru
NGO	Non-Governmental Organization
TCE	Traditional Cultural Expression
TK	Traditional Knowledge
TKDL	Traditional Knowledge Digital Library
TRIPS	Trade-Related Aspects of Intellectual Property Rights
UNESCO	United Nations Educational, Scientific and Cultural Organization
UNPFII	United Nations Permanent Forum on Indigenous
WHO	World Health Organization
WIPO	World Intellectual Property Organization
WTO	World Trade Organization

Table 2. Major international treaties and organizational bodies whose provisions relate, in part, to protecting the intellectual property of Indigenous Peoples and local communities.

Instrument	Acronym	Year	Contribution(s)	Notes
Patent Cooperation Treaty	PCT	1970	Harmonizes patent law requirements at an international and national level	
Indigenous and Tribal Peoples Convention		1989	Discourages assimilationist policies by countries toward Indigenous peoples	
Convention on Biological Diversity	CBD	1992	Promotes sustainable use and conservation of biological diversity and benefit sharing from use of genetic resources	No formal language on rights of Indigenous Peoples or integration of ILK within national and international intellectual property regimes
Trade-Related Aspects of Intellectual Property Rights	TRIPS	1994	Establishes intellectual property related regulation of international trade	Just compensation not included in initial agreement
Patent Law Treaty	PTL	2000	Coordinates patent law requirements nationally and internationally	
Intergovernmental Committee on Intellectual Property and Genetic Resources, Traditional Knowledge and Folklore	IGC	2000	Protects intellectual property in the form of genetic resources, traditional knowledge, and traditional cultural expressions. Provides international monitoring and resources to IPLCs	Leaves IPLCs vulnerable as biopiracy and unequal benefit sharing are only prosecutable on a national level
Doha Declaration		2002	Helps align TRIPS with CBD	
International Treaty on Plant Genetic Resources for Food and Agriculture	ITPGRFA	2004	Regulates food and agricultural resources as well as associated access to benefits	Limited FPIC procedures in dealing with local communities
United Nations' Declaration on the Rights of Indigenous Peoples	UNDRIP	2007	States how Indigenous and local communities should be treated both nationally and internationally	Does not mention intellectual property specifically
Nagoya Protocol		2010 (Enact. 2014)	Addresses gaps in the CBD and ITPGRFA, and establishes mechanisms for signatories to gain access to genetic resources and associated ILK. Emphasizes benefit sharing and FPIC	Inconsistently applied and enforced, legal ambiguity

This paper provides an update on developments in the state of intellectual property policy and strategies as they relate to Posey's five suggestions. In addition, it shows how the shortcomings of national and

international policy to address outstanding issues of intellectual property have affected cultural, ecological, and biological conservation. Finally, it recommends an update to Posey's five suggestions in light of the

recent Belém +30 Congress (August 7–10, 2018) and of the rapidly changing landscape of international intellectual property regulation.

Posey's Suggestion 1: Support an International Call, through Its Members in All Countries that Participate in United Nations Activities, for UN Action on the Question of Intellectual Property Rights

The Convention on Biological Diversity

Shortly after Posey's publication in 1990(a), the United Nations Conference on Environment and Development (UNCED), more commonly referred to as the Rio Earth Summit (held in 1992), brought 178 nations together in Rio de Janeiro, Brazil. The purpose of the summit was to foster international discussions on economic development, in light of a growing urgency to protect the environment and nonrenewable resources. Arguably the most lasting effect of the Rio Earth Summit, with respect to intellectual property, was the signing of the Convention on Biological Diversity (CBD) (Table 2), which shapes international discussion and debates regarding intellectual property rights and ILK to date (CBD 1992). In addition to sounding a global call to conserve biodiversity and promote the sustainable use of biological resources, the CBD explicitly demands the fair and equitable sharing of benefits arising from the utilization of genetic resources (CBD 1992:Articles 15, 16, and 19). Moreover, Article 8(j) specifically mentions the need to "respect, preserve and maintain knowledge, innovations and practices of Indigenous and local communities." The CBD treats the protection of Indigenous and local knowledge (ILK) as only one of the many aspects needed to promote sustainable development and environmental preservation. Though being an important first step towards protecting genetic resources and Indigenous Peoples' rights, the CBD did not implement any formal language recognizing the rights of Indigenous Peoples, nor

any that easily facilitated the integration of ILK within national and international intellectual property regimes (Curci 2010).

The Nagoya Protocol

It would be another 18 years before further UN action would specifically address these latter two issues. This was done through a supplementary text to the original CBD: The Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from their Utilization to the Convention on Biological Diversity, or simply the Nagoya Protocol (Table 2). The Protocol establishes roles and mechanisms by which signatories can gain access to genetic resources and associated ILK, while also supporting the fair and equitable sharing of benefits for their utilization (SCBD 2011). The Protocol entered into force on October 12, 2014. It currently has 105 parties (with the United States notably absent), 92 of whom are signatories, committed to implementing national-level benefit sharing policies (Parties to the Nagoya Protocol). While Article 16 of the CBD recognizes the impact of intellectual property policy on access to benefit sharing, detailed mention of intellectual property is surprisingly absent from the Nagoya Protocol. Nonetheless, the Protocol does require signatories to formulate fair and non-arbitrary procedures for access to genetic resources, as well as guidelines when applying policy related to Free, Prior, and Informed Consent (FPIC, see below) within the context of trade deals and permit applications (UNCTAD 2014).

The International Labor Organization (ILO)

The 169th ILO convention concerning Indigenous and Tribal Peoples in Independent Countries (1989) constitutes another important example of a supranational agreement that specifically addresses Indigenous and local communities' FPIC. While the central goal of the convention was to provide agency to Indigenous and local

communities with regards to access to their lands, resources, ILK, and labor-related issues, Article 4.1 relates specifically to such groups' intellectual property by stating: "special measures shall be adopted as appropriate for safeguarding the person, institutions, property, labor, cultures and environment of the peoples concerned" (ILO 1989:Article 4.1). Although intellectual property is not specifically mentioned, the 169th ILO convention established an early framework by which FPIC could be internationally administered. However, the "special measures" suggested by Article 4.1 are nowhere specified in the original document, and actualizing such measures at the national level, across the ILO's current 187 member states, has remained inconsistent.

An important aspect of the 169th ILO Convention is safeguarding the right of Indigenous and Tribal Peoples to be consulted on projects, policies, or actions affecting their lands, resources, knowledge, and/or livelihoods. As McGee (2010) highlights, FPIC is not just about the right to be consulted and to participate in the decision-making process, but also an opportunity to prevent unwanted development. Although the right to FPIC has remained under dispute in many countries, its upholding on the part of the 169th ILO Convention has been invoked by many Indigenous and local communities, as well as by some judiciaries. For example, the Community Referenda is one such instrument that provides "a measure of the position of local voters on a given proposed project, through a democratic process that promotes fair and informed debate, and provides an avenue for communities to express their consent or refusal of a specific project" (McGee 2010:162). Likewise, "Consultation Protocols" developed by some Indigenous groups and local communities in Brazil and other Latin American countries outline specific procedures that government officers are required to follow so as to respect traditional systems of socio-political organization and decision-making (Garzón et al. 2016).

Despite the CDB, the Nagoya Protocol, the 169th ILO Convention, and other international agreements, critics often point out the lack of one international standard regulating the implementation of FPIC, which for the most part is enforced differently by each nation. For example, Brazil's *Conselho de Gestão do Patrimônio Genético* requires that two "competent authorities" issue authorization of access to genetic resources, while, in the Philippines, more autonomy is granted to the local community (Hirakuri and Tobin 2005). Additionally, the application of the Nagoya Protocol to goods whose permit had been obtained prior to 2014 has been left to national policy, exposing a wide array of genetic resources to the possibility of unjust access to benefit sharing (UNCTAD 2014). Furthermore, ethnobiologists and other researchers have commented that the Nagoya Protocol, at times, hinders research: inconsistent implementation across countries and legal ambiguity in the document may deter researchers who are genuinely seeking to conserve local knowledge, support land rights claims, or revitalize traditional food systems (Cho 2017; Vanheusden and Van den Berghe 2017). Others criticize the Nagoya Protocol for impeding research with potential benefits to global health (Cressey 2017). Additionally, legal definitions and practical aspects of scientific research are difficult to apply uniformly across all domains of life (cf. Overmann and Scholz 2017). Because of the different pace of scientific development and policy, there is often a delay between the development of new technologies (for example, gene-editing tools), and their subsequent interpretation under the Nagoya Protocol (Wynberg and Laird 2018). Moreover, Robinson and Forsyth (2016) argue that many social aspects are still overlooked, specifically:

Power, agency, and resource allocation, the bounded nature of communities and their relationship with land or sea; the fluidity and dynamism of custom-

ary law; and challenges stemming from multiples sites of agency and the potentials of pluralism. (Robinson and Forsyth 2016:324)

International Treaty on Plant Genetic Resources for Food and Agriculture

Outside of the CBD and its supplementary protocols, the Food and Agricultural Organization (FAO) of the UN's International Treaty on Plant Genetic Resources for Food and Agriculture (ITPGRFA) (FAO 2001; Table 2) regulates access to food, agricultural resources, and benefits. Article 9.2a, on Farmers' Rights, makes specific mention of ILK and of the rights of traditional farmers to protect the genetic resources associated with food and agriculture (FAO 2001:Article 9.2a). Some countries (for example, Thailand) were reluctant to adopt ITPGRFA out of concern that it may inadvertently encourage the commoditization of Indigenous and local genetic resources, while also resulting in inadequate FPIC procedures in dealing with local communities (Robinson 2010:38). As the Nagoya Protocol was put into effect about a decade later, it virtually replaced ITPGRFA provisions.

World Intellectual Property Organization

While the CBD, the Nagoya Protocol, and ITPGRFA do not specifically address the issue of intellectual property rights within the context of ILK and genetic resources, they are key first steps taken to protect the interests of Indigenous and local communities directly following the Belém Declaration and Posey's call to action. Of the UN agencies specifically related to intellectual property, the World Intellectual Property Organization (WIPO) is currently the most prominent global player, with 191 member states (WIPO 2012). This specialized agency of the UN was created in 1970 and has since overseen the development of several global intellectual property initiatives that directly address the protection of ILK and genetic

resources. Most notably, the Intergovernmental Committee on Intellectual Property and Genetic Resources, Traditional Knowledge and Folklore (IGC) was established in 2000 as a "forum where WIPO member states discuss the intellectual property issues that arise in the context of access to genetic resources and benefit-sharing as well as the protection of traditional knowledge and traditional cultural expressions" (WIPO 2015a, 2016a). The IGC performs an important role in recognizing Indigenous and local communities' rights, even when national governments are reluctant to do so. For example, the IGC is open not only to WIPO member states, but also to accredited inter-governmental (IGO) and non-governmental (NGO) organizations. Additionally, the WIPO Voluntary Fund assists participation of Indigenous and local communities in the work of the IGC by funding their attendance to IGC sessions.

Although the IGC provides an important basis by which, for example, the objectives of the CBD can be internationally monitored, issues such as biopiracy or unjust access to benefits are typically only prosecutable at the national level, leaving the intellectual property of Indigenous and local communities still largely vulnerable (Robinson 2010). The IGC provides resources to Indigenous and local communities to document their ILK, though it is best seen as an advisory committee on international ILK policy, rather than a legal body equipped to effectively enforce national intellectual property law.

Perhaps the most dynamic WIPO program that relates to ILK and genetic resources is the Patent Cooperation Treaty (PCT 1970; Table 2), followed by the more recent Patent Law Treaty (PLT 2012). In effect, both harmonize patent law requirements at international and, to a large extent, national levels. The commitment of WIPO not only to preside over international intellectual property disputes, but also to ensure that member states are, for example, complying with the Nagoya

Protocol, creates more substantive pressure on national intellectual property offices to carefully regulate how genetic resources and ILK are protected at a national level. This is all the more true at a time when national patent offices are increasingly eager to expand uniform intellectual property regulation across borders (Reichman 2009). The specific emphasis on ILK and genetic resources makes WIPO a useful resource for ethnobiologists and other researchers. In addition to training courses and workshops, they offer services such as the Traditional Knowledge Documentation Toolkit (WIPO 2012), which presents a set of best practices for working with ILK.

Posey's call for international action on international property rights has been partially addressed by the ILO 169, CBD, and WIPO. While these are limited in their ability to directly address issues of ILK and genetic resources, they have had substantial impacts on how ethnobiological research is conducted. However, the best strategies and tools for reinforcing the intellectual property rights of Indigenous communities remain a point of continued discussion, slowing progress to better protect ILK.

Posey's Suggestion 2: Seek National Legislation to Secure Indigenous Intellectual Property Rights in All Countries Where Native Populations Exist

WIPO at the National Scale

WIPO also advises on intellectual property policy at the national level upon request. The WIPO Legislature Service describes itself as providing tailored advice on the creation of laws related to patents, trademarks, industrial designs, and geographical indications (GIs), as well as on provisions related to intellectual property enforcement, taking into account specific countries' needs and situations (WIPO 2016). The agency keeps records of member states' involvement in WIPO but does not explicitly compile which national

intellectual property programs have been designed under WIPO advisory (WIPO 2019a). This makes it somewhat difficult to evaluate WIPO's impact on national intellectual property laws concerning ILK. Nevertheless, WIPO does provide an array of freely available resources for national intellectual property strategy development (WIPO 2019b) and publishes reports of its general services for intellectual property law and policy development as they relate to ILK (such as in Jamaica [Radauer 2015], Rwanda [Mengistie 2015], and Sri Lanka [Mendes 2015]).

CBD at the National Scale

Several national governments have also enacted intellectual property laws and policies that are aimed at protecting genetic resources and ILK in line with treaties such as the CBD. These countries tend to be located in biodiverse areas and to possess a relatively large Indigenous population (for example, Peru, South Africa, and Thailand). Still, some countries have done more than other ones to protect genetic resources associated with ILK. South Africa stands out for having passed, in 2005, an amended Patent Act, whose Section 30:3B requires that patent applicants provide proof of origin and specify the intended use of an Indigenous or local biological resource. South African law also states that "bioprospecting begins once a patent application has been filed" (UNCTAD 2014:2). This provision was issued in the wake of a major international intellectual property suit involving extracts of South African endemic Rooibos (*Aspalathus linearis*) and honey bush (*Cyclopia* spp.) (Robinson 2010). These species were implicated in a series of international patents submitted by Nestlé that made commercial use of the species' anti-inflammatory properties (Robinson 2010). Evidence surfaced that Nestlé had never acquired the necessary permits under South African Law, the CBD, or the Nagoya Protocol, despite having

acquired the biological material outside the country of origin. The patent applications later failed pre-examination at WIPO, largely due to action by the South African government.

Still, the example of South Africa highlights the difficulty of enforcing the CBD's specification that genetic resources are under the sovereignty of the nation of origin (CBD 1992:Articles 3 and 15). Per the Nagoya Protocol, while the simple sale of a fruit or vegetable (for consumption) across borders does not require special permission, if these goods are later used for research purposes, then the appropriate access to benefit sharing and FPIC permits must still be submitted (UNCTAD 2014:18). The transfer of imported genetic resources from their intended use—for example, as food—to research most often represents an exceptional case for customs officials and, as a result, they are often reluctant to apply the Nagoya Protocol retroactively (UNCTAD 2014:18).

The government of Peru also has established national procedures to protect their biological resources and ILK. In 2004, the National Commission Against Biopiracy of Peru (NCAB) was established to “identify, prevent, and avoid potential cases of ‘biopiracy’” in Peru (UNCTAD 2014:71). NCAB has prioritized 35 Peruvian biological resources, many of which relate to ILK, and has campaigned successfully for the rejection, abandonment, or withdrawal of nine controversial patents involving Peruvian genetic resources and/or ILK. Examples include patents filed by the Japanese patent office for the use of Amazonian Camu Camu (*Myrciaria dubia*), cultivated for centuries but more recently found to produce high levels of vitamin C (Robinson 2010). Peruvian law makers successfully argued on an international stage against any inventive step underlying the patents, and, more substantially, demonstrated the ability of national government to police their Indigenous genetic resources at the international level.

***Sui generis* Intellectual Property Systems**

Aside from employing existing international intellectual property mechanisms to protect national genetic resources and ILK, many governments have enacted *sui generis* systems (that is, extended intellectual property categories and definitions) that better suit the unique nature of ILK. Unlike traditional intellectual property systems, ILK can rarely be attributed to a single owner, and it makes little practical sense to grant limited time rights to knowledge and resources that have existed within communities for generations. Several national and multilateral consortia have elaborated upon national *sui generis* intellectual property rights to address exceptional ILK cases. Examples include: the Andean Community's Decision 391 on Common Regime on Access to Genetic Resources (2002); the Pacific Islands Forum's on Traditional Biological Knowledge, Innovations, and Practices Act (2008); the African Regional Intellectual Property Organization's Swakopmund Protocol on the Protection of ILK and Expressions of Folklore (2010); Thailand's Act on Protection and Promotion of Traditional Thai Medicinal Intelligence, H.E. 2542 (1999); Portugal's Decree-Law No. 118/2002 (2002); and South Africa's Regulations on Bio-Propecting, Access, and Benefit-Sharing (2008) (UNCTAD 2014). *Sui generis* national laws require researchers to familiarize themselves with each country's particular implementation of intellectual property protection. As these systems are further refined, researchers will need to continue to stay abreast of new national and international developments to avoid conflicts for both themselves and Indigenous communities

Geographic Indications

National governments can also protect ILK by making use of Geographic Indications. An extension of international trademark law and loosely regulated under WIPO's Standing Committee on the Law of Trademarks, Industrial Designs, and

Geographical Indications, Geographic Indications are regulated in accordance to several multilateral treaties, most notably the Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS 1994; Table 2). Familiar examples of Geographic Indications include the famously strict use of French regions in wine names, for example, “Champagne” or “Bordeaux,” and the legal obligation that such wines be produced only within the confines of a specified geographic area (for example, the *appellation d’origine contrôlée* [AOC] designation system). From the perspective of ILK, which often involves genetic resources linked to geographic provenance, Geographic Indications can be an important mechanism by which Indigenous communities can maintain intellectual property sovereignty.

However, the employment of Geographic Indications for the purposes of ILK protection presents several shortcomings. Geographic Indications have been highly controversial as critics argue that, for example, they hinder the free market on an arbitrary geographic basis, and/or unfairly favor European nations, which have a longer history of producing traditional goods (Watson 2016). Additionally, there is a general lack of adherence to Geographic Indication regulations across international borders (mostly notably by the United States, Australia, and New Zealand). Complex Geographic Indication regulation can become a significant barrier to the communities supposedly protected. For example, Mexican Tequila production is frequently cited as a successful extra-European example of Geographic Indications; its application in this case offers ILK protection to communities in the state of Jalisco and to limited municipalities in the states of Guanajuato, Michoacán, Nayarit, and Tamaulipas (Bowen 2015). However, Mexican law related to Geographic Indications makes it difficult for new, small distillers to enter the market. Legal requirements for chemical analysis, member fees, and several quality

requirements further discourage small scale producers (Bowen 2015). At the same time, high profits from Tequila production are rapidly displacing local production methods, such as that of traditional Mezcal, and reducing agricultural diversity by spreading the cultivation of blue agave (*Agave tequilana*) at the detriment of other crops (El Benni and Reviron 2009). While there are still many examples of Geographic Indications helping to protect ILK (though mostly in Europe), national and international policymakers should ensure that the protection of communities endures in the future. Nonetheless, ethnobiologists and other researchers working with communities in defense of geographically situated ILK may choose to leverage Geographic Indications as a legal tool to provide intellectual property protections.

Posey’s Suggestion 3: Encourage Funding Agencies and Development Banks to Support Research into Traditional Knowledge, Its Practical Applications, and Ways that Native Peoples Can Be “Justly Compensated” for Their Knowledge.

“Just Compensation”

In 1990 Posey published also another paper, “Intellectual Property Rights and Just Compensation for Indigenous Knowledge” (Posey 1990b). As the title suggests, Posey discusses the impact of intellectual property rights on Indigenous communities. He also proposes what he refers to as an “eco-ethno” ethics code, according to which practitioners, anthropologists, ethnobiologists, and other researchers can work towards the “just compensation” of ILK. Under this proposed ethic, researchers should be forthcoming about the importance of Indigenous communities’ resources to promote their economic independence. While Posey never actually defines what he means by “just compensation,” he arguably implies that it can go hand in hand with intellectual property rights.

Since underscoring the oversight of Indigenous issues by intellectual property policy, several international and national treaties, and legislation have attempted to specifically outline and address the “just compensation” of ILK. However, major international treaties and agreements have only grappled with the issue of “just compensation,” as evidenced by what appears to be their intentionally vague definition of terms. Articles 15, 16, and 19 in the CBD (1992) deal explicitly with equitable sharing of benefits, as it is relevant to access to genetic resources, the transfer of technology, and the handling of biotechnology and distribution of its benefits, respectively. The CBD formulates important directives, for example, that “genetic resources shall be subject to free, prior and informed consent” (CBD 1992:Article 15.5), and “legislative, administrative or policy measures [should require the] sharing in a fair and equitable way the results of research and development and the benefits arising from the commercial and other utilization of genetic resources” (CBD 1992:Article 15.7). However, these statements apply to “Contracting Parties,” a phrase seen throughout the CBD and nowhere defined in Article 2: Use of Terms. Similar vague language continues in the Nagoya Protocol, in which ILK (“Traditional Knowledge [TK],” specifically) is mentioned at least ten times (CBD 1992:Articles 3, 5, 7, 10, 12, 13, 16, 18, 21, and 22) but only discussed within the context of contributing to “biological diversity and the sustainable use of its components” (SCBD 2011).

Apart from the CBD, which discusses intellectual property rights as one aspect of its main objective, the World Trade Organization's (WTO) Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS 1994), effective as of 1995 between all UN member states, deals specifically with international intellectual property issues. Notably, no mention of “just compensation” for ILK is made in the initial agreement. The later Doha

Declaration (WTO 2002; Table 2) somewhat reinterprets TRIPS, but only goes so far as to mention ILK as an agenda item for the WTO. Specifically, paragraph 19 of the Doha Declaration seeks to broaden the discussion surrounding the review of TRIPS Article 27.3(b) (which deals with the patent-eligibility of genetic resources) to align better with the mandates of the CBD. However, the coordination of CBD and TRIPS objectives has been subject to contentious international debate, which has dramatically hindered workable solutions (cf. Curci 2010).

Additionally, in a series of proposals issued by the TRIPS Council since 2001, “just compensation” for ILK has been addressed explicitly only in 2006. The TRIPS Disclosure Proposal (Council for TRIPS 2002a:28) obliges “members to require that an applicant for a patent relating to biological materials or to traditional knowledge provide [the appropriate] information,” such as the source of the genetic material, evidence of prior informed consent, and proof of fair and equitable benefit sharing under the relevant national government (Council for TRIPS 2002a:Paragraph 17). The proposal has yet to be formally agreed upon by WTO members, and subsequent amendments to TRIPS in 2008 (TNC 2008) and 2011 (Council for TRIPS 2002b) have yet to be fully adopted and/or mention very little by way of ILK and “just compensation.”

Voluntary Mechanisms, Data Depositories, and Funding Sources

Lacking multilateral bases whereupon to obtain or enforce “just compensation,” many Indigenous groups instead rely on differing means of “defensive intellectual property protection.” Such a strategy involves carefully documenting and/or obtaining intellectual property rights, such as to provide a legal basis that bars others from misappropriating knowledge and/or resources. For Indigenous communities, this usually comes in the form of large data-

bases or depositories (for example, India's Traditional Knowledge Digital Library [TKDL]). Several small non-profit organizations, such as Intellectual Property Issues in Cultural Heritage (IPINCH) and the Herbal Anthropology Project (HAP), have also worked to conduct defensive intellectual property protection projects. The WIPO Voluntary Fund for Accredited Indigenous and Local Communities finances individuals and organizations working with Indigenous rights and is subsidized by both national governments and private donors (WIPO 2018c). Additionally, WIPO makes available the Online Databases and Registries of Traditional Knowledge and Genetic Resources, which do not directly fund ILK and intellectual property, but serve as a hub for international repositories of ILK and can be an important documentation center for defensive intellectual property protection (WIPO 2018a). For example, WIPO compiles information from the Traditional Chinese Medicine Patents Database, the Korean Traditional Knowledge Portal (KTKP), Peru's Registers of ILK, and several other databases.

Some repositories provide a means of documenting ILK without making the knowledge widely available: The UN Voluntary Fund for Indigenous People, for example, provides financial and logistic assistance to Indigenous communities and individuals seeking to participate in the UN's Working Group on Indigenous Populations of the Sub-Commission on the Promotion and Protection of Human Rights, the Permanent Forum on Indigenous Issues (per resolution 56/140 of December 19, 2001), as well as other UN conferences (UNGS 2007:40/131). Finally, a wide array of third-party international agencies and NGOs actively fund programs related to ILK and intellectual property. These organizations include UNESCO, International Work Group for the Indigenous Affairs (IWGIA), the Swiss National Science Foundation, the Christensen Fund, and the Indigenous Peoples' Centre for Documen-

tation, Research, and Information (DOCIP). In some cases, ethnobiologists are eligible to apply for funds to establish legal protection and/or document ILK in collaboration with these organizations.

Ethnobiologists and researchers working with Indigenous Peoples and local communities can contribute to defensive intellectual property protection through documentation of ILK. As ethnobiology increasingly moves away from "laundry lists" of resource usage and towards hypothesis-driven research, basic information on the specific uses of a given species may remain unpublished. Researchers can serve an important role in intellectual property protection by connecting with relevant ILK repositories or forming new ones that can be consulted in legal disputes.

Posey's Suggestion 4: Establish a Special Working Committee to Investigate the Issues of Intellectual Property Rights in Relation to Native Rights and Report to the Society with Guidelines for International and National Legislation.

CBD Working Groups

Among the accomplishments of the CBD was the formation of working groups that specifically address ILK and Indigenous communities' intellectual property-related issues. Article 8(j) outlines that:

Each contracting Party shall, as far as possible and as appropriate: Subject to national legislation, respect, preserve and maintain knowledge, innovations and practices of Indigenous and local communities embodying traditional lifestyles relevant for the conservation and sustainable use of biological diversity and promote their wider application with the approval and involvement of the holders of such knowledge, innovations and practices and encourage the equitable sharing of the benefits arising from the utilization of such knowledge innovations and practices. (CBD 1992)

Since the CBD went into effect in 1993, 13 Conference of the Parties (COP) to the convention have addressed Article 8(j). The high proportion of COP meetings with sessions devoted to Article 8(j) demonstrates the latter's central importance to the overall objectives of the CBD.

The first COP meeting focused on Article 8(j) met in Bratislava, 1998, during which a working group was established to address the implementation of Article 8(j) and related provisions of the CBD (COP 1998:Paragraph 1). Since then, COP decisions have varied in focus: the Nagoya Protocol emerged in inchoate form at the 7th COP in Kuala Lumpur in 2004, where a working group on access and benefit sharing was established to collaborate with the earlier COP working groups (COP 2004). The most recent 13th COP adopted "voluntary guidelines for the development of mechanisms, legislation or other appropriate initiatives to ensure the 'free, prior and informed consent' or 'approval and involvement'" (COP 2016a). However, as with all COP decisions, the ultimate implementation of such guidelines is at the discretion of each national government, and the interpretation of, for example, FPIC remains subject to national laws and their level of legislative accommodation for Indigenous and local communities. While the COP regularly addresses issues related to Article 8(j), the principle limitation of such working committees is their reduced ability to influence national legislation.

United Nations Permanent Forum on Indigenous Issues

The United Nations Permanent Forum on Indigenous Issues (UNPFII) is a potentially more influential working group than those already mentioned, since member states are theoretically obliged to act in accordance with international legislation. UNPFII was established in 2000 and mandated to "deal with Indigenous issues related to economic and social development, culture, the environment,

education, health and human rights" (UNCHR 2000:Resolution 2000/22). The working group holds annual sessions, each with special themes. These include such titles as "The Doctrine of Discovery: Its Enduring Impact on Indigenous Peoples and the Right to Redress for Past Conquests" (COP 2012), and "Principles of Good Governance Consistent with the United Nations Declaration on the Rights of Indigenous Peoples: Articles 3 to 6 and 46" (COP 2016b).

However, for intellectual property-specific issues, the UNPFII defers to the UN's specialized subsidiary, WIPO. Unlike the CBD, which has created mostly ad hoc committees, and UNPFII, which addresses Indigenous rights from a broad legal perspective, WIPO's Intergovernmental Committee on Intellectual Property and Genetic Resources, Traditional Knowledge and Folklore (IGC) (Table 2) is a formal working group. Its mandate specifies its role to "undertake text-based negotiations" on international legal instruments that, using intellectual property law tools, would protect "traditional knowledge (TK), traditional cultural expressions (TCEs) and genetic resources" (WIPO 2015b). Since the establishments of the IGC in 2001, the working group has met 38 times to discuss a variety of issues pertaining to ILK and intellectual property. However, in 2014, the IGC was suspended for a year due to member states' disagreement regarding committee programming. The committee has a 2018 deadline to present to the UN General Assembly "a factual report along with the most recent texts available of its work up to that time with recommendations," and a 2019 deadline to submit the results of its work to reach "an agreement on ... international legal instrument(s)" that would protect ILK from an intellectual property perspective (WIPO 2018b).

Although the CBD and WIPO have met Posey's suggestions for the creation of working committees related to Indigenous rights and intellectual property, interna-

tional policy has yet to permeate national legislations. There are several national working committees that advocate for Indigenous rights at both the national and international level, such as Peru's NCAB, as well as those integrated within Ecuador and Bolivia's constitutions (Macinnes et al. 2017); other states that are members of both the CBD and the UN, however, are much less willing to implement said agreements' proposals for ensuring FPIC, access to benefit sharing, or just compensation for ILK. Without support from national legislatures for international working committees, their efficacy remains unclear.

Posey's Suggestion 5: Include on the Agenda of an Ethics Committee the Issues of Intellectual Property Rights in Relation to Activities of Researchers with Indigenous Populations

As described above in suggestions one through four, there are still many hurdles to overcome regarding international legislative consensus for the ethical treatment of ILK. Many infractions related to ILK and intellectual property are dealt with at the national level, owing to the lack of agreed-upon international measures to enforce, for example, just compensation and sanctions on biopiracy. Although the CBD itself states that genetic resources are national sovereignty, no forthright statement is provided by international agreements for intellectual property cases in which ILK or genetic resources are moved across borders (Robinson 2010). As a result, local and Indigenous communities continue to be excluded from the sale or export of ILK (for example, the case of Round-Up Ready Soy [*Glycine max*] production in Argentina, or the Mexican Barbasco yam [*Dioscorea mexicana*, *D. floribunda*, and *D. composita*]), and both genetic resources and cultural integrity are threatened (for example, the case of Hawaiian taro [*Colocasia esculenta*] patents PP12,361, PP12,342, and PP12,772, and the now endangered

Hoodia [*Hoodia gordonii*] plant in South Africa) (Robinson 2010:Chapter 3).

Ethics Committees

While there are many ethics committees that oversee fair and ethical treatment of Indigenous and local communities across the globe (such as UNESCO and the World Health organization [WHO]), there is a surprising lack of governing bodies that specifically deal with ethical issues related to ILK and intellectual property. At the 10th COP of the CBD, the Tkarihwaïé:ri Code of Ethical Conduct to Ensure Respect for the Cultural and Intellectual Heritage of Indigenous and Local Communities Relevant to the Conservation and Sustainable Use of Biological Diversity was adopted (COP 2010). The decision provides an outline by which national governments can develop "models of codes of ethical conduct for research, access to, use, exchange and management of information concerning traditional knowledge," though actual implementation is left to national legislatures (COP 2010).

Of the ethics committees that specifically relate to intellectual property, WIPO's IGC is perhaps the most prominent. At the IGC's 16th session in 2010, the committee explicitly stated that the ethical management of intellectual property and ILK is inherent to its mission (WIPO 2010). Several independent organizations have also formulated their ethics policy, for example, the International Society of Ethnobiology's ISE Ethics Program and Code of Conduct (the most comprehensive code of ethics for researchers working with Indigenous and local Peoples to date), and the Herbal Anthropology's intellectual property statement (HAP 2018; ISE 2018). However, concrete legal action has yet to be systematically pursued. Translating international policy to national legislation, which is at the same time enforceable, is a continuous obstacle that WIPO has been grappling with since its inception.

Unsurprisingly, ethics committees related to ILK and intellectual property have been successful in countries where the ethical treatment of Indigenous groups has been given greater priority. For example, the Australian Institute of Aboriginal and Torres Strait Islander Studies operates a Research Advisory Committee and Research Ethics Committee; Canada's Royal Commission on Aboriginal Peoples has organized a special "Ethical Guidelines for Research," under the Government of Canada Interagency Advisory Panel on Research Ethics; the Health Research Council of New Zealand has developed Guidelines for Researchers on Health Research Involving Māori; and Peru's NCAB actively polices cases of biopiracy, bioprospecting, and misuse of national genetic resources at both national and international courts.

To extend the work of the above committees and organizations, as well as to foster the creation of new ones, ethnobiologists can work with national governments to draft and refine guidelines for ethical ethnobiological research that may in turn shape policy and legislation. Researchers are uniquely positioned to ensure that intellectual property guidelines and laws are both appropriate and enforced due to their intimate knowledge and participation in Indigenous communities' activities.

Belém +30

In August of 2018, the Federal University of Pará and the Museum of Pará Emílio Goeldi, in collaboration with the International Society of Ethnobiology (ISE) and the Brazilian Society of Ethnobiology and Ethnoecology (SBEE), organized the XVI Congress of the International Society of Ethnobiology in Belém do Pará, in conjunction with the XII Brazilian Symposium on Ethnobiology and Ethnoecology. The event convened around the theme, "The Rights of Indigenous and Traditional Peoples and the Sustainable Uses of Biodiversity Three Decades after the Declaration of Belém"³.

With the leadership and participation of many Indigenous, traditional, and local groups, and more than 2,500 individuals from around the globe, the conference showcased research-informed issues related to intellectual property and ethical engagement with Indigenous and local knowledge.

A key purpose of the Belém +30 conference was to articulate an updated Declaration of Belém (ISE 1988)³. Traditional knowledge and Indigenous sovereignty remain important factors in the work of ethnobiologists, anthropologists, and other researchers, as well as in that of bioprospecting companies. With growing recognition for the sustainability and climate crises that face communities around the globe, the value and importance of Indigenous knowledge cannot be overstated (Salick et al. 2009; Turner and Clifton 2009; Wolverton 2013). Bringing Indigenous and local voices to the forefront of discussions is essential to identifying and addressing ongoing dilemmas, and will serve to shift the balance of representation.

Upon the conclusion of a series of forums at the Belém +30 conference, a revised Declaration of Belém was approved by the Congress participants; it is now in the process of being disseminated. With input from the many participating individuals and groups, the document reflects current imperatives and trends highlighted by the special forums on research, policy, and decision-making processes related to Indigenous and local knowledge, territorial rights, and consultation. The forums lasted for many hours and were a platform for listening to the many voices of Indigenous peoples, Afro-descendant groups, and others who were present and played key roles in drafting of the Belém +30 Declaration. The time invested in the forums is a testament to the importance placed by the conference organizers on updating and revisiting the 1988 Declaration of Belém. Among the main topics highlighted by the

document were: a) the call for governments to respect the right of FPIC of Indigenous peoples, as well as traditional and local communities, especially as such rights relate to research, development projects, policies, and/or actions that may affect their lands and livelihoods (including respect for their socio-political organization, consultation specificities, and/or protocols); b) the call for de-criminalization of Indigenous knowledge and practices; c) the need for respecting sacred sites and regions that may be located outside of legally protected Indigenous or community lands and reservations; and d) the need to preserve the right to access data and information collected on their knowledge, practices, and/or lands.

The Belém +30 Congress's Declaration contains a renewed assertion of the value of traditional knowledge, the importance of supporting and valuing Indigenous researchers and scholars, and the necessity to support Indigenous and local populations in their efforts to protect and retain cultural knowledge. Through this ongoing process of updating and revising the Declaration of Belém, ethnobiologists and other researchers affirm the continued need to acknowledge the leadership of Indigenous and local communities as we move forward and pursue culturally-appropriate, ethical, and scientifically rigorous avenues for the study and retention of ILK.

Looking Ahead

Although biopiracy and bioprospecting continue to seriously threaten Indigenous Peoples and local communities' sovereignty and knowledge, it must also be acknowledged that much has been accomplished since the Declaration of Belém in 1988 and Darrell Posey's (1990a) initial call to action in 1990. Since the United States' ratification of the Patent Law Treaty (PLT) in 2013, there are glimmers of hope that efforts such as those of the CBD and WIPO's IGC will receive further national and international legal backing. At the same time, ethnobiologists, anthropolo-

gists, and others working specifically with ILK and intellectual property should remain mindful of the difficulties of applying and enforcing intellectual property rights to ILK. The ancestral, communal knowledge of Indigenous groups and local communities is situated, at best, at the peripheries of the jurisdiction of modern intellectual property law, which is designed to protect "cutting-edge," proprietary knowledge held by one or several individuals. As an additional challenge, nearly all Indigenous and local communities are subject to their respective national governments, making the implementation and enforcement of any change deriving from international policy slow and difficult.

With these hurdles in mind, perhaps ethnobiologists, anthropologists, and other advocates of ILK should shift their focus to the national level. Almost thirty years after Posey's initial suggestions, and in light of the recent adoption of the Belém +30 Declaration, Posey's five suggestions could be updated (points 1 through 5) and supplemented (point 6) as follows:

1. Support, on behalf of national governments, campaigns to broaden the participation of Indigenous leaders in United Nations and World Intellectual Property Organization (WIPO) initiatives that address ILK and intellectual property rights;
2. Seek and/or develop national legislation to secure Indigenous Peoples' and local communities' intellectual property rights aligned with WIPO safeguards and standards;
3. Encourage national funding agencies and development banks to support research related to ILK, including the training of Indigenous and local researchers and provisions for "just compensation," which should be determined through transparent consultation processes and dialogue with the target communities;

4. Establish national working committees that include Indigenous and local community representatives to investigate intellectual property concerns, and to report to the national legislature with guidelines for implementing due diligence per the CBD, the Nagoya Protocol, and UNDRIP;
5. Develop national committees, with the participation of Indigenous and local community representatives, to monitor and prosecute ethical infractions to national intellectual property law as they relate to ILK.
6. Support national policies that guarantee Indigenous and local communities' rights to free, prior, and informed consent and consultation (in accordance with forms of self-organization and decision-making) in relation to research and development projects that may affect their territories and sacred places.

Ethnobiologists and other researchers with similar interests are uniquely poised to play active roles in policy that protects ILK, genetic resources, and related intellectual property, as their work is often at the interface of local knowledge and scientific discovery (Athayde et al. 2016; Wolverton 2013). In moving towards a more engaged ethnobiology, researchers can also coordinate with Indigenous organizations to form or join non-profits with the goal of defensive intellectual property protection and advocacy for Indigenous and local communities' sovereignty over their knowledge.

Notes

¹ In this paper we adopt the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (UN IPBES 2016) definition of Indigenous and traditional populations: "Indigenous and local knowledge systems are understood to be dynamic bodies of integrated, holistic, social and ecological knowledge, practices and beliefs pertaining to the relationship of living beings, including people, with one another and with their environment. Indigenous

and local knowledge is grounded in territory, is highly diverse and is continuously evolving through the interaction of experiences, innovations and different types of knowledge (written, oral, visual, tacit, practical and scientific). Such knowledge can provide information, methods, theory and practice for sustainable ecosystem management. Indigenous and local knowledge systems have been, and continue to be, empirically tested, applied, contested and validated through different means in different contexts" (UN IPBES 2016:5[a]).

² For the purposes of this paper, a "genetic resource" is defined in accordance with Article 2 of the CBD as "...any material of plant, animal, microbial or other origin containing functional units of heredity" (Schei and Tvedt 2010).

³ The Belém+30 Declaration has yet to be publicly released. The information provided here refers to updates circulated after the Belém+30 Congress. More information can be found at: <https://www.ise2018belem.com/englishversion>. Co-authors Dr. Athayde and Dr. Olson participated in the Congress, as well as on the drafting of the Belém +30 Declaration.

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