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TRIPS-Related Aspects of Traditional Knowledge

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TRIPS-RELATED ASPECTS OF TRADITIONAL KNOWLEDGE

*Graham Dutfield**

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INTRODUCTION

Towards the end of the 1980s, indigenous peoples,¹ thought by many to be doomed to extinction, finally gained broad respect for their

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¹ In this Article, 'indigenous peoples' refers to the term as defined under the International Labour Organization Convention 169 as those

peoples in independent countries who are regarded as indigenous on account of their descent from the populations which inhabited the country, or a geographical region to which the country belongs, at the time of conquest or colonization or the establishment of present state

cultural richness, sophisticated natural resource management expertise, and for their agricultural and health-related knowledge. Many conservation and development agencies began to consider the ecological knowledge of indigenous peoples and other ethnic and minority groups “embodying traditional lifestyles”² (henceforward “traditional peoples and communities”) as a hitherto barely tapped source of technologies capable of being harnessed in the pursuit of more sustainable paths of development. Although the case was sometimes overstated to the point of naïve romanticism,³ this re-evaluation was long overdue. Indeed, such views seemed to be borne out by the tremendous biodiversity-richness of those areas inhabited by traditional peoples and communities, as compared to the generally far more degraded ecosystems elsewhere, or in those same places after the traditional occupants had been subjected to policies of forced assimilation or removal. Around the same time, a growing number of ethnobiologists, anthropologists, and activists supporting the interests of traditional peoples and communities began to call for the legal protection of traditional knowledge (TK) through such existing formulations as intellectual property rights (IPRs), or since they tended to be dubious about the applicability of IPRs, more frequently through *sui generis* means like traditional resource rights⁴ and community intellectual rights.⁵

boundaries and who, irrespective of their legal status, retain some or all of their own social, economic, cultural and political institutions.

See ILO Convention 169, Convention Concerning Indigenous and Tribal Peoples in Independent Countries, June 7, 1989, art. 1(b), available at <http://www.cwis.org>.

² The 1992 Convention on Biological Diversity originated the phrase “indigenous and local communities embodying traditional lifestyles.” See generally *Convention on Biological Diversity*, United Nations Environment Programme, June 5, 1992, available at <http://www.biodiv.org/doc/legal/cbd-en.pdf>.

³ For discussion on the value of indigenous peoples’ knowledge as a source of technology, see Raymond Pierotti and Daniel R. Wildcat, *Traditional Knowledge, Culturally-based World-views and Western Science*, in CULTURAL AND SPIRITUAL VALUES OF BIODIVERSITY (Darrell A. Posey ed., 1999) (discussing Native American intellectual property), and Kent H. Redford, *The Ecologically Noble Savage*, 15 CULTURAL SURVIVAL Q. 46 (1991) (discussing various South American indigenous cultures). However, see TER ELLINGSON, THE MYTH OF THE NOBLE SAVAGE 350 (2001) (arguing that it is a “high expectation” to view the ecological knowledge of indigenous peoples as a source of technologies capable of being harnessed for further cultural development).

⁴ Traditional Resource Rights was coined by the late Darrell Posey of Oxford University. See Darrell Addison Posey, *Indigenous Peoples and Traditional Resource Rights: A Basis for Equitable Relationships?* 5 (June 28, 1995) (unpublished manuscript, on file with author).

⁵ The concept of community intellectual rights was developed and elaborated by Gurdial Nijar of the activist network Third World Network. See GURDIAL SINGH NIJAR, IN DEFENCE OF LOCAL COMMUNITY KNOWLEDGE AND BIODIVERSITY: A CONCEPTUAL FRAMEWORK AND THE ESSENTIAL ELEMENTS OF A RIGHTS REGIME 22-24 (1996).

During the early 1990s, there seemed to be an emerging consensus among many environmentalists and ethnobiologists and even pharmaceutical, personal care and herbal medicine companies, that traditional peoples and communities had important knowledge that could be used not only to develop valuable new products but also to prove that resources like standing rainforests were worth more to developing countries than the degraded croplands and pastures they were otherwise destined to become.⁶

This consensus, however, has come under attack. Prominent skeptics, such as Pat Mooney of the Canadian activist group Rural Advancement Foundation International (RAFI) and the Indian eco-feminist Vandana Shiva, who considered the interests of traditional peoples and communities and the corporations to be completely irreconcilable, became increasingly vocal in their criticisms of bioprospecting.⁷ RAFI has been particularly effective in undermining even those bioprospecting programs that seemed on their face to be the most progressive at that time.⁸ These critics as well as others, including many indigenous people working at the international level to further the rights of their own groups and of traditional peoples and communities generally, considered IPRs and the TRIPS

⁶ See BIODIVERSITY PROSPECTING: USING GENETIC RESOURCES FOR SUSTAINABLE DEVELOPMENT (Walter V. Reid et al. eds., 1993), for evidence of such a consensus. Other scholars have concurred with this view. See generally, Darrell A. Posey, *Indigenous Knowledge and Green Consumerism: Cooperation and Conflict*, in SCIENCE FOR THE EARTH: CAN SCIENCE MAKE THE WORLD A BETTER PLACE? 239 (Tom Wakeford & Martin Walters eds., 1995); FRIENDS OF THE EARTH, *THE RAINFOREST HARVEST: SUSTAINABLE STRATEGIES FOR SAVING THE TROPICAL FORESTS?* (1992).

⁷ For works by these authors that express this skepticism, see Pat Roy Mooney, *Why We Call It Biopiracy*, in RESPONDING TO BIOPROSPECTING: FROM BIODIVERSITY IN THE SOUTH TO MEDICINES IN THE NORTH 37 (Hanne Svarstad & Shivcharn S. Dhillon eds., 2000), and VANDANA SHIVA, *BIOPIRACY: THE PLUNDER OF NATURE AND KNOWLEDGE* 72-79 (1998).

⁸ Examples of programs that RAFI has been effective in undermining are the International Cooperative Biodiversity Groups, which are bioprospecting projects in developing countries jointly sponsored by the National Institutes of Health, the National Science Foundation and the United States Agency for International Development. For an overview of these projects, see Francesca T. Grifo, *Chemical Prospecting: An Overview of the International Cooperative Biodiversity Groups Program*, in BIODIVERSITY, BIOTECHNOLOGY AND SUSTAINABLE DEVELOPMENT IN HEALTH AND AGRICULTURE: EMERGING CONNECTIONS 12 (1996). RAFI questioned one of these projects, which involved bioprospecting in Chiapas, Mexico, to severe condemnation. *Id.* at 22.

Agreement⁹ to be not only a symptom of the conflict of interests, but to have actually deepened the conflict further.¹⁰

During the first half of the 1990s, participants in international discussions on IPRs for traditional peoples and communities were mostly non-governmental actors. Deliberations took place at such functions as academic ethno-biological conferences,¹¹ events organized by indigenous peoples,¹² and advocacy network gatherings, which took place independently alongside meetings of the Conference of the Parties (COP) to the Convention on Biological Diversity (CBD) and inter-governmental meetings and conferences of the U.N. Food and Agriculture Organization (FAO).

In addition, the issues surrounding traditional knowledge were formulated and driven by these non-governmental organizations (NGOs), making government involvement initially quite minimal. Indeed, traditional knowledge was a non-issue at the GATT Uruguay Round of trade negotiations.¹³ Meanwhile, the World Intellectual Property Organization (WIPO) had, for all intents and purposes, dropped its earlier

⁹ Agreement on Trade-Related Aspects of Intellectual Property Rights, Apr. 15, 1994, Annex 1C, LEGAL INSTRUMENTS- RESULTS OF THE URUGUAY ROUND, vol. 31; 33 I.L.M. 81 (1994) [hereinafter TRIPS Agreement].

¹⁰ Alejandro Argumedo of the Indigenous Peoples Biodiversity Network argues that "Biopiracy is the inevitable consequence of international agreements . . . that have no real capacity to regulate bioprospecting or to ensure benefit-sharing. . . ." News Release, Rural Advancement Foundation International, The Captain Hook Awards: Coalition Against Biopiracy (CAB) presents the much uncoveted "Hook" at the Biodiversity Convention in Nairobi (May 17, 2000), at <http://www.rafi.org/web/docus/pdfs/00may17.pdf> (last visited Oct. 10, 2000).

¹¹ An example of a non-governmental actor participating in such deliberations is the International Society of Ethnobiology (ISE). In 1988 at its first international congress, the ISE made one of the first public calls for compensation for native peoples for the utilization of their knowledge and their biological resources when it proclaimed the Declaration of Belém. See *Declaration of Belém*, Int'l Soc'y of Ethnobiology (1988), at <http://users.ox.ac.uk/~wgtrr/belem.htm> (last visited Sept. 28, 2001). Another major conference was the 1993 conference on intellectual property rights and indigenous knowledge, which took place in Lake Tahoe, California. For published copies of the papers from this conference, see VALUING LOCAL KNOWLEDGE: INDIGENOUS PEOPLES AND INTELLECTUAL PROPERTY RIGHTS (Stephen B. Brush & Doreen Stabinsky eds., 1996).

¹² For example, in 1993 the Maori tribes of Mataatua, New Zealand hosted the First International Conference on the Cultural and Intellectual Property Rights of Indigenous Peoples. See *Mataatua Declaration on Cultural and Intellectual Property Rights of Indigenous Peoples*, First International Conference on the Cultural and Intellectual Property Rights of Indigenous Peoples, available at <http://users.ox.ac.uk/~wgtrr/mataatua.htm>.

¹³ The Uruguay Round was launched in Punta del Este, Uruguay, in September 1986 and was finally concluded in Marrakech, Morocco, in April 1994. See JOHN H. JACKSON, *THE WORLD TRADING SYSTEM: LAW AND POLICY OF INTERNATIONAL ECONOMIC RELATIONS* 1 (2d ed. 1997).

interest in the closely related issue of folklore protection. While the 1992 CBD included some vague wording on protection of “traditional knowledge, innovations and practices,” this was not so much through any widespread commitment on the part of governments to protect TK in any effective manner. Instead, the wording in the CBD was the result of concerted pressure from NGOs whose influence was derived from the relatively open way the negotiating process was conducted.

Today, a growing number of governments and inter-governmental organizations are no longer detached from these debates but have come to embrace them, albeit to the discomfort of a few governments (e.g. the United States). TK is now a mainstream issue and has been one at WIPO since 1998 and at the World Trade Organization (WTO), particularly since the General Council began to prepare for the 1999 Seattle Ministerial Conference.¹⁴ Developing country governments increasingly complain about TK ‘piracy’ by transnational (usually U.S.-based) corporations, and have added this to their list of reasons to be dissatisfied with TRIPS. Several developing country governments have gone so far as to submit official proposals to both organizations, and also to the CBD COPs, for measures to be taken to protect TK legally and to prevent its misappropriation by industry through inappropriate use of patents and plant breeders’ rights. In fact, at COP meetings the word “biopiracy”, frequently invoked by developing country delegations evidencing the extent to which a term that was originally coined to inspire critical perspectives and political activism relating to the role of IPRs in determining the skewed distribution of benefits from the biotrade, has gained wide currency.¹⁵ “Biopiracy”¹⁶ was coined by Mooney as part of a counterattack strategy on behalf of developing countries that had been accused by developed countries of condoning or supporting “intellectual piracy,” but who felt they were hardly

¹⁴ In addition, the U.N. Conference on Trade and Development in 2000 held an inter-governmental ‘expert meeting’ on the subject of systems and national experiences for the protection of traditional knowledge, innovations and practices. For copies of the documents presented at the meeting, see http://www.unctad.org/trade_env/tkem.htm (last visited Sept. 28, 2001).

¹⁵ This situation is attributable, at least in part, to the fact that national delegations to the COP meetings consist largely of civil servants from environment ministries, who tend to be more concerned about conservation, sustainable development and food security than are their trade ministry counterparts.

¹⁶ Biopiracy generally refers either to the unauthorized commercial use of biological resources and/or associated TK from developing countries, or to the patenting of spurious inventions based on such knowledge or resources without compensation. *See generally*, SHIVA, *supra* note 7, at 1-5 (discussing various theories underlying the common practice of appropriation of biodiversity). Critics of such practices argue that if patent, copyright and trademark infringements are acts of intellectual piracy, then so is the failure to recognize and compensate for the intellectual contributions of traditional peoples and communities. *See id.* at 9-11.

as piratical as corporations which acquire resources and TK from *their* countries, use them in their research and development (R&D) programs, and acquire patents and other IPRs -- all without compensating the provider countries and communities. Some developing country trade negotiators at the WTO have also adopted anti-biopiracy rhetoric.

This Article will describe how the mainstreaming of TK as a TRIPS-related issue was achieved and explain why so much effort was made to achieve it. In addition, this Article will show how developing countries use of TK as an issue is likely to influence their compliance with TRIPS. TK is an interesting example of an issue formulated and promoted by NGOs, subsequently adopted by trade negotiators, and then introduced into a highly unpromising forum for achieving solutions on TK, yet the most effective forum for the pursuit of a rather different agenda: that of justifying decelerated compliance with TRIPS and perhaps even rolling back the strong IPRs it requires WTO members to provide.

Part I of this Article investigates the meaning of the term "traditional knowledge" and estimates the importance of TK to the global economy. Policymakers are more likely to grasp the economic significance of TK than its actual meaning, which turns out to be quite elusive. TK is often (and conveniently) assumed to be in the public domain. This is likely to encourage the presumption that nobody is harmed and no rules are broken when research institutions and corporations use it freely. In fact, as Part II explains, this presumption is not only false but the implications of its wide acceptance may be detrimental for traditional peoples and communities. Part III aims to answer the question of whether it is appropriate to treat protection of TK as a problem that existing IPRs can solve. This section should, on balance, cast doubt on whether TRIPS would be an appropriate forum for negotiations on TK *if securing effective protection of the rights of traditional peoples and communities over their knowledge were the sole objective*. In reality, this may not be true. As Part IV shows, rightly or wrongly many developing countries believe that TRIPS is a concession to developed countries that was made under duress and is inadequately compensated for by the efforts made so far by the latter countries to open up their markets to the former countries' goods. Finding themselves pressured to comply with TRIPS before the expiry of the permitted transitional periods and to accept the advice of the United States and the European Union as to how the rules should be interpreted, these countries have found TK to be an issue they can use strategically to deflate such pressure. The early indications are that this strategy is to some extent successful, although traditional peoples and communities are unlikely to benefit.

Before going further I should justify my extended treatment of TK, including its meaning, its economic value, the local customary rules governing its access and use, and its (in)compatibility with western IPR

formulations. How can both intellectual property and compliance scholars benefit from knowing more about such matters?

This Article should make clear that TK is a far more complex issue than it is usually depicted, and its true social, economic, cultural, and developmental significance is unlikely to be well understood by most trade negotiators. Despite this, many developing country governments have made determined efforts to promote TK protection as a TRIPS-related issue even while they generally (though with notable exceptions)¹⁷ do very little about TK at the national level. This all seems rather contradictory and requires us to think more deeply about the reasons for such interest in what was previously just “a ponytail issue”¹⁸ to most respectable diplomats.

There are four different possible explanations for developing countries pursuing this issue at the WTO. First, developing countries may have identified a problem with TRIPS, namely that it promotes the piracy of TK, and feel strongly enough about it to the extent of proposing that ways be found to eradicate this problem. Second, developing countries may actually want to do more than eradicate TK piracy; they may be genuinely seeking to have new IPR standards inserted into TRIPS in order to legally protect TK. Third, they may simply wish to exploit the issue, not out of a sense of justice on behalf of their traditional peoples and communities, or even because TK protection provides competitive trade advantages, but because they are looking for concessions on TRIPS from developed countries. Lastly, developing countries may be using the issue as a means of obtaining concessions in negotiations on other WTO agreements. Each of these possible reasons is relevant to compliance. This is because these countries know that a failure by the developed countries to treat this issue seriously can best be responded to by reducing their commitment for compliance with an agreement that most of them quite obviously do not consider to be favorable to their economic interests anyway. This Article should help us to understand what is really going on, and what it implies for compliance with TRIPS and for compliance theory more generally.

Having made these points, this is an excellent opportunity graciously provided by the editors of the *Journal of International Law* to call attention to TK as an important issue in its own right, whose resolution can be attained by the contributions of scholars working in many other areas of international law.

¹⁷ The Philippines, Peru, India and Costa Rica are notable exceptions.

¹⁸ This was a term allegedly used by a WTO official, though it is unclear whether he was referring to TK.

I. TRADITIONAL KNOWLEDGE AND ITS ROLE IN THE GLOBAL ECONOMY

A. Definitional dilemmas: what is different about traditional knowledge?

As a concept, traditional knowledge is difficult to define and to distinguish from other knowledge. One way to deal with this difficulty is to avoid a definition altogether and to say simply that TK is the knowledge held by traditional peoples and communities.¹⁹ This is not entirely helpful, however, since TK can persist and even be revived in urbanized western societies. Such societies may also adopt elements of TK systems from other societies.²⁰ Another response is to deny there is such a thing as TK; to argue essentially that there is just knowledge. This Article argues that TK *does* exist and that it has both similarities and differences with the scientific knowledge of western and westernized societies. The following is a brief description of these similarities and differences with particular reference to a sub-category of TK commonly referred to as traditional ecological knowledge (TEK).

Given that traditional peoples and communities provide most of the world's cultural diversity, it is probably inadvisable to define TK except in fairly general terms. Clearly traditional knowledges are incredibly diverse not just between different peoples, groups, and communities, but within them too. Therefore, any definition should be quite general. Anthropologist Martha Johnson's definition of traditional ecological knowledge (which she calls environmental knowledge) is helpful: "a body of knowledge built by a group of people through generations living in close contact with nature. It includes a system of classification, a set of empirical observations about the local environment, and a system of self-management that governs resource use."²¹ In this sense, TEK is systematic and empirical, and therefore, scientific. Similarly, those anthropologists and other academics who use the ethnoscience approach to studying TK relating to nature²² treat this knowledge as being divisible into western scientific fields. Thus we have ethnobiology, ethnozoology, and ethnomedicine, for

¹⁹ This is the approach adopted by the Convention on Biological Diversity. The actual phrase adopted in Article 8(j) of the CBD is "knowledge, innovations, and practices of indigenous and local communities embodying traditional lifestyles." See *Convention on Biological Diversity*, *supra* note 2, at art. 8(j).

²⁰ Acupuncture and tai chi are popular examples.

²¹ Martha Johnson, *Research on Traditional Environmental Knowledge: Its Development and Its Role*, in LORE: CAPTURING TRADITIONAL ENVIRONMENTAL KNOWLEDGE 3, 4 (Martha Johnson ed., 1992).

²² See Paul Sillitoe, *What, Know Natives? Local Knowledge in Development*, 6 SOC. ANTHROPOLOGY 203, 207-09 (1998).

example. Dividing TEK into such sub-categories is likely to lead people to consider TEK as being scientific.

But if traditional peoples and communities indeed practice science, in what ways is TEK distinguishable? Based on a literature survey, Johnson identifies several ways that TEK is generated, recorded, and transmitted, distinguishing it from western scientific knowledge.²³ Thus, TEK:

- is recorded and transmitted through oral tradition;
- is learned through observation and hands-on experience;
- is based on the understanding that the elements of matter have a life force. (All parts of the natural world are therefore infused with spirit);
- does not view human life as superior to other animate and inanimate elements: all life-forms have kinship and are interdependent;
- is holistic (whereas western science is reductionist)
- is intuitive in its mode of thinking (whereas western science is analytical);
- is mainly qualitative (whereas western science is mainly quantitative);
- is based on data generated by resource users. (As such it is more inclusive than western science, which is collected by a specialized group of researchers who tend to be more selective and deliberate in the accumulation of facts);
- is based on diachronic data (whereas western science is largely based on synchronic data);
- is rooted in a social context that sees the world in terms of social and spiritual relations between all life-forms. (In contrast, western science is hierarchically organized and vertically compartmentalized); and
- derives its explanations of environmental phenomena from cumulative, collective and often spiritual experiences. Such explanations are checked, validated, and revised daily and seasonally through the annual cycle of activities.²⁴

While these generalizations are helpful, it is important not to exaggerate the differences either. A great deal of hybridization and cross-fertilization takes place to the extent that it would be incorrect to define TK as an entirely discrete category of knowledge. As the British anthropologist

²³ Johnson, *supra* note 21, at 7-8.

²⁴ *See id.*

Paul Sillitoe explains, the same may be said for “western science”: “scientific knowledge is indisputably anchored culturally in western society, where it largely originated, although with the contemporary communications revolution and cultural globalization, hybridization is occurring and blurring distinctions between scientific and other knowledge on socio-cultural grounds.”²⁵ Use of “traditional” suggests a certain lack of novelty. Russel Barsh, an indigenous peoples scholar and representative, disagrees with such an interpretation:

...[W]hat is ‘traditional’ about traditional knowledge is not its antiquity, but *the way it is acquired and used*. In other words, the social process of learning and sharing knowledge, which is unique to each indigenous culture, lies at the very heart of its ‘traditionality.’ Much of this knowledge is actually quite new, but it has a social meaning, and legal character, entirely unlike the knowledge indigenous peoples acquire from settlers and industrialized societies. [emphasis added].²⁶

Although the Four Directions Council separates “traditional knowledge” from knowledge acquired from outsiders, this may not always be easy to do given the likely extent of cross-cultural knowledge exchange and hybridization.

In short, then, there is a category of knowledge that we may call traditional knowledge, of which traditional ecological knowledge is a sub-category, and these are different from western scientific knowledge in some fundamental respects. Nonetheless, some TK *is*, at least to some degree, scientific even if the form of expression may seem highly *unscientific* to most of us. For example, an indigenous person and a scientist may both know that quinine bark extract can cure malaria. But they are likely to describe what they know in very different ways that may be mutually unintelligible (even when communicated in the same language).²⁷

B. Where does traditional knowledge come from?

The subject of authorship in TK is more than a theoretical issue; it is a political one too. Many commentators, especially those supporting the

²⁵ Sillitoe, *supra* note 22, at 205.

²⁶ Russel Lawrence Barsh, *Indigenous Knowledge and Biodiversity, in Indigenous Peoples, Their Environments and Territories*, in CULTURAL AND SPIRITUAL VALUES OF BIODIVERSITY 73, 74-75 (Darrell A. Posey ed., 1999).

²⁷ It might be countered that, since the indigenous peoples of western Amazonia do not really understand why quinine works, their quinine-based treatment is a technology that is not science-based. If that is so, however, one could infer that many western ‘scientific’ applications ought likewise to be ‘downgraded’ to technologies, since they are not based on a complete understanding of why they work.

rights of traditional peoples and communities in the developing world, emphasize the collective nature of creative processes in traditional societies, which they contrast with the individualistic view of creativity (and of ownership in the end-product of that creativity) that prevails in western societies. This assumption will be considered further below. At this stage, however, it is important to stress that generalizations should be made with caution. The sources of much TK are difficult to trace, either because two or more peoples or communities share the knowledge, or because the author is simply unknown. And for some traditional peoples and communities it would be presumptuous to attribute authorship to a human being anyway. According to the ethnoecologist and indigenous rights activist Darrell Posey, "indigenous singers. . . may attribute songs to the creator spirit. . ."²⁸ Australian lawyer Michael Blakeney states, "[i]f the beliefs and practices of Australian indigenous peoples are any guide, authorship may reside in pre-human creator ancestors . . . Authorship is replaced by a concept of interpretation through initiation."²⁹ But for other groups, this may not be true at all. For example, many of the 10,000 "grassroots innovations" documented by the India-based Honeybee Network are attributed to *and claimed* by individuals.³⁰

C. Traditional knowledge in the global economy

TK plays an important role in the global economy. Traditional peoples and communities are responsible for the discovery, development, and preservation of a tremendous range of medicinal plants, health-giving herbal formulations, and agricultural and forest products that are traded internationally and generate considerable economic value.

TK is also used as an input into modern industries such as pharmaceuticals, botanical medicines, cosmetics and toiletries, agriculture, and biological pesticides. In most cases, corporations that can harness advanced scientific, technological, and marketing capabilities capture virtually all of the value added.

Attempts have been made to estimate the contribution of TK to modern industry and agriculture. For pharmaceuticals, the estimated market value of plant-based medicines sold in OECD³¹ countries in 1990

²⁸ Posey, *supra* note 4, at 17.

²⁹ Michael Blakeney, *The Protection of Traditional Knowledge under Intellectual Property Law*, 22 EUR. INTELL. PROP. REV. 251, 252 (2000).

³⁰ For a discussion by the Director of the Honeybee Network regarding the origin of the knowledge leading to such 'grass roots innovations,' see Anil K. Gupta, *Making Indian Agriculture More Knowledge Intensive and Competitive: The Case of Intellectual Property Rights*, 54 INDIAN J. OF AGRIC. ECON. 342, 346-52 (1999).

³¹ Organisation for Economic Cooperation and Development (OECD) is an international organization comprised of 30 member countries that share a commitment to democratic government and the market economy. The organization maintains working relationships

was \$61 billion.³² Many of the pharmaceutical companies are likely to have used TK leads in their product development, as demonstrated by biochemist Norman Farnsworth's estimate that of the 119 plant-based compounds used in medicine worldwide, 74 percent had the same or related uses as the medicinal plants from which they were derived.³³

A study of the use and value of traditional crop varieties (landraces) for rice breeding in India calculated that rice landraces acquired from India and overseas contributed 5.6 %, or an annual present value of the benefits of \$6.1 million, to India's rice yields.³⁴ There are no reliable estimates of the total contribution of landraces to the global economy. However, assuming that India's landraces contribute equally to other countries where rice is cultivated, the global value added to rice yields by use of landraces can be estimated at \$400 million per year.

But accurately estimating the full value of TK in monetary terms is impossible, because TK is often an essential component in the development of other products and because most TK-derived products never enter modern markets.³⁵ In any case, a great deal of TK is likely to have cultural or spiritual value that cannot be quantified in any monetary sense.³⁶

The industrial demand for TK should not be overestimated either. While enhanced abilities to screen huge quantities of natural products, analyze, and manipulate their DNA structures might suggest that bioprospecting will become more popular, it seems more likely that advances in biotechnology and new drug discovery approaches based, for example, on combinatorial chemistry, human genomics, and "proteomics"

with 70 other countries. NGOs and civil society, as well as produces publications and statistics to help governments tackle the economic, social and governance challenges of a globalized economy. See, OECD webpage, at <http://www.oecd.org>.

³² Peter Principe, *Economics and Medicinal Plants*, in *MEDICINAL PLANTS: THEIR ROLE IN HEALTH AND BIODIVERSITY* 42, 44-45 (Timothy R. Tomlinson & Olayiwola Akerele eds., 1998). There do not appear to be any more recent estimates.

³³ Norman R. Farnsworth, *Screening Plants for New Medicines*, in *BIODIVERSITY* 83, 83, 91 (E. O. Wilson ed., 1988).

³⁴ Robert E. Evenson, *Economic Valuation of Biodiversity for Agriculture*, in *BIODIVERSITY, BIOTECHNOLOGY, AND SUSTAINABLE DEVELOPMENT IN HEALTH AND AGRICULTURE: EMERGING CONNECTIONS* 153, 162 (1996).

³⁵ U.N. TDBOR, *Systems and National Experiences for Protecting Traditional Knowledge, Innovations and Practices: Background Note by the UNCTAD Secretariat*, Agenda Item 3, at 6, U.N. Doc. TD/B/COM.1/EM.13/2 (Aug. 22, 2000), available at www.unctad.org/trade_env/index.htm.

³⁶ See Darrell A. Posey, *Preface to CULTURAL AND SPIRITUAL VALUES OF BIODIVERSITY*, at xvii, xvii (Darrell A. Posey ed., 1999).

will in the long term *reduce* industrial interest in natural products and its associated TK.³⁷

II. WHOSE KNOWLEDGE IS IT ANYWAY?

The fact that TK is being so widely disseminated and commercially exploited with such a small proportion of the benefits flowing back to provider peoples and communities raises the question of ownership. Who owns TK according to traditional peoples and communities? And who owns TK according to most national legal systems and the international IPR regime?

Many commentators argue that traditional peoples and communities are characterized by a strong sharing ethos with respect to their knowledge and resources.³⁸ There is a great deal of truth in this, but this does not mean that *everything* is shared with *everybody*. The anthropological literature reveals that such concepts as ownership and property rights – or at least close equivalents to them – also exist in most, if not all, traditional societies.³⁹ But to assume that there is a generic form of

³⁷ The best-known company to adopt this approach in developing new drugs was Shaman Pharmaceuticals. Facing the threat of closure, however, the company left the pharmaceuticals sector and entered the market for botanical medicines. Consequently, the economic case for ethnobioprospecting has been notably weakened. For general information on the situation of Shaman Pharmaceuticals, see the company website, at <http://www.shamanbotanicals.com>.

³⁸ This is the conventional wisdom among many NGOs such as Rural Advancement Foundation International (RAFI), Third World Network (TWN), and Research Foundation for Science, Technology and Ecology. *See generally*, RAFI Mission Statement, at <http://www.rafi.org/web/about.shtml> (stating that “RAFI works in partnership with non-governmental organizations for cooperative and sustainable self-reliance within rural societies, through the provision of information on socio-economic and technological trends and alternatives . . . joint actions in community, regional, and global fora.”); TWN website on Biodiversity, Access, Indigenous Knowledge and IPRs, at <http://www.twinside.org.sg/access.htm> (describing the organization as an “independent non-profit international network of organizations and individuals involved in issues relating to development” focused on research, publication and representation of southern interests and perspectives at various international fora); Research Foundation for Science, Technology & Ecology Mission Statement, at <http://www.vshiva.net> (stating that the Foundation “works on biodiversity conservation and protecting peoples’ rights from threats to their livelihoods and environment by centralised [sic] systems of monoculture in forestry, agriculture and fisheries.”).

³⁹ *See generally* David A. Cleveland & Stephen C. Murray, *The World's Crop Genetic Resources and the Rights of Indigenous Farmers*, 38 CURRENT ANTHROPOLOGY 477, 477-96 (1997) (discussing aspects of the debate over the protection of indigenous farmers’ rights), and Tom Griffiths, *Indigenous Knowledge and Intellectual Property: A Preliminary Review of the Anthropological Literature* (July 1993) (unpublished manuscript, on file with the Working Group on Traditional Resource Rights, Oxford University) (discussing the concept of exclusive rights as it is inherent in indigenous communities regarding magical

collective intellectual property rights ignores the intricacies and sheer diversity of traditional proprietary systems. According to Russel Barsh, an indigenous peoples scholar and representative:

Indigenous peoples possess their own locally-specific systems of jurisprudence with respect to the classification of different types of knowledge, proper procedures for acquiring and sharing knowledge, and the nature of the rights and responsibilities which attach to possessing knowledge.⁴⁰

In an anthropology literature review by British anthropologist Tom Griffiths, various studies on TK suggest some interesting findings that indicate western IPR formulations are not necessarily culturally inappropriate:⁴¹

- The Shuar view shaman knowledge as an “exchangeable commodity” which can be purchased. The tangible, alienable nature of specific items of shaman knowledge is revealed by the fact that this knowledge can be bought, sold, lent, as well as be subject to theft.⁴²
- The Miskito healers of Nicaragua value their cures as “private property.”⁴³
- “Secrets turn knowledge into property that can be exchanged People throughout Melanesia swap or sell their secrets

knowledge). Shamans and other TK holder specialists may wish to restrict access to their knowledge for reasons other than because they consider it to be their property. For example, sacred knowledge – which may include knowledge of the therapeutic properties of plants – is often considered dangerous if it gets into the hands of the uninitiated. In other words, they may be concerned for the welfare of those who acquire the knowledge and try to use it. I am grateful to Darrell Posey for this insight. See also Janet Wall Hendricks, *Power and Knowledge: Discourse and Ideological Transformation Among the Shuar*, 15 AM. ETHNOLOGIST 216, 222 (1987) (discussing the importance of the completion of an apprenticeship for shamans).

⁴⁰ Barsh, *supra* note 26, at 73.

⁴¹ Griffiths, *supra* note 39, at 16-18.

⁴² Hendricks, *supra* note 39. The Shuar are an indigenous group inhabiting the Ecuadorian rainforest. Historically, the Shuar were an Amazonian society economically based on horticulture and hunting, and politically based on a balance of power among autonomous groups. *Id.*

⁴³ Philip A. Dennis, *Herbal Medicine Among the Miskito of Eastern Nicaragua*, 42 ECON. BOTANY 16, 16 (1988).

and/or their knowledge copyrights for pigs, money, and other goods.”⁴⁴

- The personalized nature of healing knowledge can induce a *de facto* private knowledge of botanical resources. For the healer, these secret plants are a symbolic extension of his secret knowledge. Langdon states that among the Siona, each shaman maintains ownership rights over his personal cultivation of *yajé*, a botanical creation used for supernatural healing. Anyone who uses the shaman’s *yajé* without his permission will be cursed by evil spirits. According to Siona shaman, *yajé* is only co-owned by the shaman’s spirit guide.⁴⁵

Evidently, customary rules governing access to and use of knowledge do not necessarily differ all that widely from western intellectual property formulations. Nonetheless, IPR regulators and courts dealing with IPR disputes have rarely paid any heed to customary law, nor seen any reason why they should do so.⁴⁶ In most countries, TK from anywhere in the world that has not been kept secret is generally treated as being the intellectual property of nobody. Therefore, this TK can be used freely by anyone who acquires it.

The case of the United States, however, requires that this generalization be qualified. According to U.S. patent law, undocumented knowledge held only in foreign countries does not form the state of the relevant art.⁴⁷ Unfortunately, this loophole is helpful only for those who

⁴⁴ LAMONT LINDSTROM, KNOWLEDGE AND POWER IN A SOUTH PACIFIC SOCIETY 119 (1990).

⁴⁵ E. Jean Langdon, *Las Clasificaciones del Yajé Dentro del Grupo Siona: Etnobotánica, Etnoquímica e Historia*, 46 AMÉRICA INDÍGENA 101, 102-04 (1986).

⁴⁶ A rare exception is a 1995 copyright case in Australia. See *Milpurruru v. Indofurn Pty. Ltd.* (1994) 130 A.L.R. 659. This case involved the unauthorized importation and sale by an Australian firm of carpets manufactured in Vietnam on which had been reproduced the designs of three living and five deceased Aboriginal artists. According to Blakeney, this case “establishe[d] the principle that where the unauthorised reproduction of such works involves a breach of copyright, customary Aboriginal laws on the subject may be taken into account in quantifying the damage which has been suffered.” Michael Blakeney, *Communal Intellectual Property Rights of Indigenous Peoples in Cultural Expressions*, 1 J. OF WORLD INTELL. PROP. 985, 988 (1998).

⁴⁷ A person shall be entitled to a patent unless -

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for patent, or

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of the application for patent in the United States . . . 35 U.S.C. §102 (1994).

would claim TK as their own invention. Thus, when a U.S. patent on the use of turmeric powder for wound healing was granted to the University of Mississippi Medical Center, the Indian government agency that challenged the patent could not have succeeded by proving that the “invention” was common knowledge in India, although this was indeed true. It was only when the agency provided published documentation to this effect that the patent was revoked.⁴⁸

Consequently, no matter how novelty and non-obviousness are defined in patent laws, researchers and companies may be tempted to misappropriate TK, especially in those jurisdictions where patent office staff are known to have insufficient time or resources to conduct thorough prior art searches and examinations.

III. WHY NOT PROTECT TK THROUGH PATENTS, COPYRIGHTS OR TRADE SECRETS?

The following question now arises: can the IPRs that TRIPS provides be used for the protection of TK? This part of the Article discusses the conceptual and practical challenges inherent to the application of copyrights, patents, and trade secrets (or undisclosed information) to TK.⁴⁹

A. Copyright

At the international level, the idea of applying copyright law to protect intangible cultural expressions, including those of traditional peoples and communities, dates back to the 1960s. The term commonly applied to such manifestations of culture was not TK but folklore, or “expressions of folklore.”⁵⁰

The possibility of protecting folklore by means of copyright was raised at the Diplomatic Conference of Stockholm in 1967 for the revision of the Berne Convention. While the issue was not fully resolved, the following – and it must be said rather unsatisfactory – provisions were

⁴⁸ PRABUDDHA GANGULI, *INTELLECTUAL PROPERTY RIGHTS: UNLEASHING THE KNOWLEDGE ECONOMY* 155-56 (2001).

⁴⁹ The scope of this Article does not consider other IPRs included in TRIPS, such as trademarks and geographical indications, since these are essentially marketing tools rather than means to protect knowledge. This is not to say that such IPRs cannot be used to protect TK-based products associated with such a mark or indication.

⁵⁰ For example, in 1982 the Model Provisions for National Laws on the Protection of Expressions of Folklore Against Illicit Exploitation and Other Prejudicial Actions were adopted by a Committee of Governmental Experts jointly convened by UNESCO and WIPO. See Paul Kuruk, *Protecting Folklore under Modern Intellectual Property Regimes: A Reappraisal of the Tensions between Individual and Communal Rights in Africa and the United States*, 48 AM. U. L. REV. 769, 815 (1999).

included in the Stockholm Act of the Convention, and retained in the most recent revision adopted in Paris in 1971:⁵¹

In the case of unpublished works where the identity of the author is unknown, but where there is every ground to presume that he is a national of a country of the Union, it shall be a matter for legislation in that country to designate the competent authority who shall represent the author and shall be entitled to protect and enforce his rights in the countries of the Union.⁵²

Countries of the Union which make such designation under the terms of this provision shall notify the Director General [of WIPO] by means of a written declaration giving full information concerning the authority thus designated. The Director General shall at once communicate this declaration to all other countries of the Union.⁵³

Over the years many traditional peoples and communities have condemned the unauthorized reproduction of their fixed and unfixed cultural expressions such as artistic works, handicrafts, designs, dances, and musical and dramatic performances. Not only do outsiders frequently neglect to ask permission to reproduce these items, but also fail to acknowledge the source of the creativity, and even pass off productions and works as authentic expressions or products when they are not. Yet, traditional peoples and communities find it difficult to prevent such practices. Could the copyright provisions of TRIPS provide a solution?

In Australia, Aboriginal artists have on a few occasions successfully sued on the basis of copyright infringement.⁵⁴ Copyright law is also being used by the Dene of Canada, as well as several other indigenous groups worldwide, to control use by others of compilations of their TK.⁵⁵ This suggests that as developing countries fully comply with the levels of enforcement required by TRIPS, more and more peoples and communities will be able to avail themselves of copyright protection.

⁵¹ See Berne Convention for the Protection of Literary and Artistic Works, Sept. 9, 1886, 828 U.N.T.S. 221 (Paris revision, July 24, 1971).

⁵² *Id.* at art. 15.4(a).

⁵³ *Id.* at art. 15.4(b).

⁵⁴ See Blakeney, *supra* note 29, at 253; Christine Haight Farley, *Protecting Folklore of Indigenous Peoples: Is Intellectual Property the Answer*, 30 CONN. L. REV. 1, 4-7 (1997); and Kamal Puri, *Preservation and Conservation of Expressions of Folklore*, COPYRIGHT BULL., Oct.-Dec. 1998 at 5, 6, 10-12.

⁵⁵ See Tom Greaves, *Tribal Rights*, in VALUING LOCAL KNOWLEDGE: INDIGENOUS PEOPLES AND INTELLECTUAL PROPERTY RIGHTS 25, 31 (Stephen B. Brush & Doreen Stabinsky eds., 1996).

Despite these successes, copyright law has some fundamental limitations in the folklore context. First, whereas copyright requires an identifiable author, the notion of authorship is a problematic concept in many traditional societies. Second, copyright has a time limit, whereas for folkloric expressions that are important elements of people's cultural identity it would be more appropriate to have permanent protection. Third, copyright normally requires works to be fixed. However, among some traditional groups, folkloric expressions are not fixed but are passed on orally from generation to generation. This normally excludes such expressions from eligibility for copyright protection.

1. Authorship is a problematic concept in many traditional societies.

This point was made earlier and was articulated very coherently in a statement issued by a group of academics and activists at a 1993 conference on "cultural agency/cultural authority, politics and poetics of intellectual property in the post-colonial era."⁵⁶ The statement, known as the Bellagio Declaration,⁵⁷ argues that IPRs, and copyright law especially, unduly emphasize the role of individuals in knowledge creation and consequently fail to reward those knowledgeable communities and collaborators that provided the intellectual raw material that formed the true basis for the copyrighted work or patented invention.⁵⁸ In other words, creative expressions and collective innovations, such as those of traditional communities, are ineligible for protection yet may legally be treated as free inputs for industrial R&D and the copyright industries. According to James Boyle of Duke University:

⁵⁶ JAMES BOYLE, *SHAMANS, SOFTWARE, AND SPLEENS: LAW AND THE CONSTRUCTION OF THE INFORMATION SOCIETY* 192 (1996).

⁵⁷ See The Bellagio Declaration, Conference on Cultural Agency/Cultural Authority, Mar. 11, 1993, *reprinted in* BOYLE *supra* note 56. According to the Declaration,

contemporary intellectual property law is constructed around the notion of the author, the individual, solitary and original creator, and it is for this figure that its protections are reserved. Those who do not fit this model - custodians of tribal culture and medical knowledge, collectives practicing traditional artistic and musical forms, or peasant cultivators of valuable seed varieties - are denied intellectual property protection.

⁵⁸ For the same view expressed in a more detailed way by people who helped to write the declaration see BOYLE, *supra* note 56; Peter Jaszi & Martha Woodmansee, *The Ethical Reaches of Authorship*, 95 *THE S. ATLANTIC Q.* 947 (1996). See also SHIVA, *supra* note 7, at 21. According to Shiva: "IPRs exploit creativity whilst killing its very source". This position did not prevent her from claiming copyright and asserting her moral rights over the book containing this phrase, suggesting a surprising degree of ambivalence about IPRs given her famously virulent anti-IPR rhetoric.

The author concept stands as a gate through which one must pass in order to acquire intellectual property rights. At the moment, this is a gate that tends disproportionately to favor the developed countries' contributions to world science and culture. Curare, batik, myths and the dance 'lambada' flow out of developing countries, unprotected by intellectual property rights, while Prozac, Levis, Grisham and the *movie* 'lambada!' flow in – protected by a suite of intellectual property laws, which in turn are backed by trade sanctions.⁵⁹

According to this view, then, copyright law is more likely to be used to undermine the interests of traditional peoples and communities than to promote them. While this is probably true, it is not a reason to discount copyright completely, since it is not essential to name an author to acquire copyright protection. Indeed, the copyright industries have -- with the help of supportive copyright legislation -- devised ways of making authors disappear. For example, this can be achieved by taking advantage of the work-for-hire doctrine⁶⁰ and, in the United Kingdom, requiring authors to waive their moral rights.⁶¹ As a result, a community or organization representing the work could likewise hold copyright over a work originating in that community whether or not there is an identifiable author.

2. Important folkloric expressions should have permanent protection.

Copyrights have time limits and most people would probably agree that it is a good thing they do. But for many traditional peoples and groups certain expressions and works are central to their cultural identity and should therefore never be fully released into the public domain, at least not to the extent that others would be free to do whatever they like with them. This is not to say that copyright protection should be permanent for culturally significant expressions and works, but that copyright law is simply not the appropriate approach.

⁵⁹ BOYLE, *supra* note 56, at 125.

⁶⁰ See Peter Jaszi, *Toward a Theory of Copyright: The Metamorphoses of "Authorship"*, 1991 DUKE L. J. 455, 485-491.

⁶¹ Moral rights include the right of authors to be identified as such, and to object to having their works altered in ways that would prejudice their reputation. See W. R. CORNISH, *INTELLECTUAL PROPERTY: PATENTS, COPYRIGHT, TRADEMARKS, AND ALLIED RIGHTS* 443-445 (4th ed. 1999).

3. The fixation requirement would exclude many folkloric expressions from protection.

Conventionally, copyright protects works and not unfixed expressions. Since communities often do not have the means of recording their cultural expressions, they cannot acquire copyright protection.

This bar to protection can be removed if the will exists to do so. Several countries have incorporated protection of folkloric expressions into their national copyright laws. These include Tunisia in 1967, Bolivia in 1968, and Kenya in 1975.⁶² Given the way copyright has been transformed to, for example, treat computer programs as literary works, it hardly seems radical to extend the definition of copyrightable subject matter to unfixed cultural expressions or even to create a new IPR based on copyright for such an end.⁶³ However, the most powerful actors in international IPR negotiations are still resistant to the idea of modifying international copyright rules to more effectively protect folklore.⁶⁴ And to date, developing country proposals to reform TRIPS to protect TK have paid little attention to copyright.

Unfixed cultural expressions can, to a limited extent, also be protected under performers' rights in cases where performances have been fixed without the authorization of the original performers. TRIPS partially incorporates the 1961 Rome Convention for the Protection of Performers, Producers of Phonograms and Broadcasting Organizations, allowing performers to prevent the recording and reproduction of their performance on a phonogram, and the broadcast and public communication of a live performance.⁶⁵ Still, neither the Rome Convention nor TRIPS makes any reference to folklore. The 1996 WIPO Performances and Phonograms Treaty does, however, define "performers" as "actors, singers, musicians, dancers, and other persons who act, sing, deliver, declaim, play in, interpret, or otherwise perform literary or artistic works or *expressions of folklore*."⁶⁶

⁶² WORLD INTELLECTUAL PROP. ORG., INTELLECTUAL PROPERTY READING MATERIAL 53 (2nd ed. 1998). See also generally Kuruk, *supra* note 50 (citing more examples from Africa).

⁶³ This point does not suggest that computer programs are unworthy of protection, but that they are hardly works of literature in the strict sense.

⁶⁴ See J.H. Reichman, *The TRIPS Agreement Comes of Age: Conflict or Cooperation with the Developing Countries?* 32 CASE W. RES. J. INT'L L. 441, 452 (2000). It may actually be quite difficult even for sympathetic western trade negotiators to understand why folklore is so important for people in developing countries. This is because folklore in western societies is no longer an integral part of most people's lives and is generally considered as archaic or quaint.

⁶⁵ TRIPS Agreement, *supra* note 9, art. 14, para. 1.

⁶⁶ WIPO Performances and Phonograms Treaty, Dec. 20, 1996, art. 2(a), WIPO Doc. CRNR/DC/95, available at <http://www.wipo.org>. (emphasis added).

It is possible that a future revision of TRIPS will incorporate this treaty.⁶⁷ Nonetheless, the current scope of protection is quite narrow.

Apart from these theoretical difficulties, there are practical obstacles, too. For example, the entity wishing to assert its copyright – or indeed to claim any other IPR – must have a legal personality. Such collective groups as rural communities and smaller groups within communities rarely have the status of being juristic persons according to a national legal system.⁶⁸

B. Patents

Michael Blakeney notes that

[t]he expression ‘Traditional Knowledge’ . . . accommodates the concerns of those observers who criticize the narrowness of ‘folklore’. However, it significantly changes the discourse. Folklore was typically discussed in copyright, or copyright-plus terms. Traditional knowledge would be broad enough to embrace traditional knowledge of plants and animals in medical treatment and as food, for example. In this circumstance the discourse would shift from the environs of copyright to those of patent law and biodiversity rights.”⁶⁹

But can patent law actually provide promising solutions? I address this question by considering the most commonly expressed objections to the patent approach and assessing their validity. The main objections are as follows:

⁶⁷ In fact the United States and the European Union have already suggested that TRIPS be revised to incorporate the Treaty. The United States is actively encouraging other countries to sign and ratify the Treaty through, for example, bilateral trade agreements containing such a requirement. The interest of the United States in a treaty on (*inter alia*) phonograms is apparently quite recent given that it has never been a party to the 1961 Rome Convention. Carlos Correa, *Reviewing the TRIPS Agreement*, in UNITED NATIONS CONFERENCE ON TRADE AND DEVELOPMENT, A POSITIVE TRADE AGENDA FOR DEVELOPING COUNTRIES: ISSUES FOR FUTURE TRADE NEGOTIATIONS 221, 232, U.N. Doc. UNCTAD/ITCD/TSB/10, U.N. Sales No. E.00.II.D.8 (2000). See also OFFICE OF THE U.S. TRADE REPRESENTATIVE, 2001 SPECIAL 301 REPORT 2 (2001), available at <http://www.ustr.gov/enforcement/special.pdf> (last visited Sept. 26, 2001). Not surprisingly, U.S. interest in the Treaty has nothing to do with folklore.

⁶⁸ See Barsh, *supra* note 26, at 75.

⁶⁹ Michael Blakeney, *What is Traditional Knowledge? Why Should it be Protected? Who Should Protect it? For Whom?: Understanding the Value Chain*, 3 WIPO Doc. WIPO/IPTK/RT/99/3 (Oct. 6, 1999), available at http://www.wipo.int/eng/meetings/1999/folklore/index_rt.htm.

- Traditional knowledge is collectively-held and generated while patent law treats inventiveness as an achievement of individuals.
 - Patent applicants must supply evidence of a single act of discovery.
 - Patent specifications must be written in a technical way that examiners can understand.
 - Applying for patents and enforcing them once they have been awarded is prohibitively expensive.
1. Traditional knowledge is collectively held and generated while patent law treats inventiveness as an achievement of individuals.

It is often asserted that because TK is collectively held and generated, patent law is fundamentally incompatible. This is because patents require that an individual inventor be identifiable. Yet while TK is merely part of the public domain, a new and non-obvious modification to this knowledge achieved by an individual can be the subject of a patentable invention.

This particular argument against the compatibility of IPRs is persuasive in the copyright context but does not fit the patent situation so easily. In the late nineteenth century, large research-based corporations were already finding the heroic inventor paradigm to be rather inconvenient. They much preferred to treat invention as a collective and routinized corporate endeavor in which individual flashes of genius were unnecessary. Through their lobbying efforts, patent law and doctrine began to accommodate the collective notion of inventorship from as early as the 1880s, first in Germany and then elsewhere.⁷⁰ By 1941, Charles Kettering of General Motors openly admitted that “a one-man invention isn’t very possible these days,” and argued that it would be unfair to reward individuals for what were basically collective endeavors.⁷¹

⁷⁰ For industry, there were two advantages. First, companies sought to accumulate massive patent holdings in order to block research by rival companies and dominate markets. This would have been more difficult to accomplish had the companies been required to demonstrate a genuine flash of genius or inventive step. Second, companies preferred to employ inventors rather than compete with them. These inventors were then required to assign their inventions to the companies. Treating inventorship as a collective activity placed each scientist in a more subordinate position than would have been the case otherwise. See GRAHAM DUTFIELD, *INTELLECTUAL PROPERTY RIGHTS AND THE LIFE SCIENCE INDUSTRIES: A TWENTIETH CENTURY HISTORY* (forthcoming 2002).

⁷¹ Larry Owens, *Patents, the “Frontiers” of American Invention, and the Monopoly Committee of 1939: Anatomy of a Discourse*, 32 *TECH. AND CULTURE* 1076, 1081 (1991).

This suggests that the collective nature of TK production and ownership need not be a bar to the acquisition of a patent. It certainly has not been for corporations.

2. Patent applicants must supply evidence of a single act of discovery.

As was indicated earlier, while there need be no demonstrable flash of genius, patent specifications must provide evidence of an inventive step or an act that would not be obvious to one skilled in the art. Applying the same criteria to TK would exclude most of it from patentability. But the same is true of western scientific knowledge, much of which is just as cumulative and equally unpatentable. So this may not be a valid objection to the patent approach.

3. Patent specifications must be written in a technical way that examiners can understand.

It would be extremely difficult for a shaman or indigenous group to complete a patent specification. While a useful characteristic of a plant or animal may be well known to such an individual or group, the inability to describe the phenomenon in the language of chemistry or molecular biology would make it almost impossible to apply for a patent, even if the fees could be afforded.⁷²

This is a situation that gives companies an advantage. Patent rules in most countries require a company to do more than describe the mode of action or the active compound to acquire a patent. Minimally, it would probably need to come up with a synthetic version of the compound or a purified extract. But in the absence of a contract or specific regulation, the company would have no requirement to compensate the communities concerned.

4. Applying for patents and enforcing them once they have been awarded is prohibitively expensive.

The lack of economic self-sufficiency of many traditional communities, the unequal power relations between them and the corporate world, and the high cost of litigation would make it very difficult for them to protect their IPRs through the patent system. In the United States, for example, it costs about \$20,000 to prepare and prosecute a patent application, including legal and filing fees.⁷³ This is well beyond the

⁷² Though one may be able to if one could describe a specific formulation, even in fairly non-technical terminology.

⁷³ John H. Barton, *Intellectual Property Rights and Innovation, in CAPITAL FOR OUR TIME: THE ECONOMIC, LEGAL, AND MANAGEMENT CHALLENGES OF INTELLECTUAL CAPITAL* 123, 127 (Nicholas Imperato ed., 1999).

financial means of most communities. Even though patent fees in some jurisdictions may be reduced for small and medium-sized enterprises, the cost of acquiring a patent is still likely to be prohibitive.

On the face of it, the use of patent law has some genuine possibilities. Among the options that might be considered are: (a) traditional peoples, communities or their representative organizations could apply for patents; (b) they could share ownership with companies who would apply on their behalf; or (c) companies could file patents, but with community members named as inventors possessing contractual rights of compensation. Nevertheless, most traditional peoples and communities seem to be fundamentally opposed to patents, and few – if any – are rushing to patent offices to submit their applications (or are likely to in the future). There are various reasons why traditional peoples and communities are skeptical that patent law can be utilized to further their interests. Some of these are practical while others are ideological. The main practical difficulty that deters traditional peoples and communities from filing patents is the expense of doing so, which includes payments to the patent attorney hired to complete the application, and the filing, prosecution, and renewal fees. Legally enforcing the patent against infringers is likely to be even more expensive.

There are other concerns about patents that have provoked condemnation by traditional peoples and communities and others. First, as we have seen, the United States does not recognize undocumented knowledge held *only* abroad as prior art. Therefore, it is legally permissible simply to copy this knowledge and apply for a patent. Second, patents with overly broad claims encompassing non-original products or processes are sometimes mistakenly awarded. Due to poverty, few if any indigenous groups could mount legal challenges to patents on the grounds that their knowledge or, say, landraces, have been fraudulently or erroneously claimed. Supporters of patents argue that you cannot patent traditional knowledge. While patent law generally supports such a defense, “the state of the art” is to some extent subjective, especially from a cross-cultural perspective. Lord Hoffman of the British House of Lords made this point in a 1995 patent case:

There is an infinite variety of descriptions under which the same thing maybe known. Things may be described according to what they look like, how they are made, what they do and in many other ways. Under what description must it be known in order to justify the statement that one knows that it exists?⁷⁴

⁷⁴ Merrell Dow Pharmaceuticals Inc and Another v. HN Norton & Co. Ltd., 33 INTELL. PROP. REP. 10, R.P.C. 76 (1996).

He went on to use the example of quinine:

The Amazonian Indians have known for centuries that cinchona bark can be used to treat malarial and other fevers. They used it in the form of powdered bark. In 1820, French scientists discovered that the active ingredient, an alkaloid called quinine, could be extracted and used more effectively in the form of sulphate of quinine. In 1944, the structure of the alkaloid molecule ($C^{20}H^{24}N^2O^2$) was discovered . . . Does the Indian know about quinine? My Lords, under the description of a quality of the bark which makes it useful for treating fevers, he obviously does. I do not think it matters that he chooses to label it in animistic rather than chemical terms. He knows that the bark has a quality which makes it good for fever and that is one description of quinine. On the other hand, in a different context, the Amazonian Indian would not know about quinine. If shown pills of quinine sulphate, he would not associate them with the cinchona bark. He does not know quinine under the description of a substance in the form of pills. And he certainly would not know about the artificially synthesised alkaloid.⁷⁵

To give a more recent example, *Phyllanthus amarus*, a medicinal plant used in India for treating various ailments including jaundice, was discovered in tests to show effectiveness against viral hepatitis-B and E. Subsequently, the Fox Chase Cancer Center was awarded a U.S. patent⁷⁶ for a pharmaceutical preparation comprising an extract of the plant.⁷⁷ While the invention was sufficiently new, useful and non-obvious to be patentable, Indian ayurvedic healers are unlikely to be as impressed as the Patent and Trademark Office examiner who granted the patent.

This evidences that, while patent law has been contoured in ways that tend to be highly supportive of corporate interests, the demands of traditional peoples and communities are rarely, if ever, taken into account when patent regulations are reformed.⁷⁸ To traditional peoples and communities this result is unjust.

⁷⁵ *Id.* at 10-11.

⁷⁶ U.S. Patent No. 4,673,575 (issued Jun. 16, 1987) (A pharmaceutical preparation comprising the methanol extractable components of *Phyllanthus niruri* L, administered to patients suffering from hepatitis B virus infection to inhibit the growth of the virus).

⁷⁷ Darshan Shankar et al., *Cultural Richness of Green Pharmacy*, COMPAS NEWSL., Oct. 1999, at 10, 10-11, available at http://www.etcint.org/COMPAS%20Newsletter/No2/Intro_2.html (last visited Sept. 26, 2001).

⁷⁸ This is demonstrated by the unwillingness of government policy makers to seriously consider proposals that patent applications, where appropriate, should contain provisions evidencing prior informed consent by indigenous peoples providing the knowledge upon which applicants' inventions are based. See Council Directive 98/44 of 6 July 1998 on The

Traditional peoples and communities see the globalization of patent regulations modeled on those of the United States and Europe as a form of neo-colonialism. Well-meaning corporate bioprospectors and patent lawyers are likely to deny vehemently – and sincerely – that they are neo-colonialists. But indigenous peoples, in particular, have framed the issues that concern them in ways they consider to be completely justified by historical experience. As far as they are concerned, the misappropriation of their knowledge and the patenting of inventions based upon this knowledge are just as colonialist as the seizure of their territories and their displacement from their homelands. To them, territories, ecosystems, folk varieties, medicinal plants, and their knowledge have always been and continue to be treated as if they are free for the taking until they are “discovered” by explorers, scientists, governments, corporations, and conservation organizations and subsequently privatized.⁷⁹

One may of course counter that, unlike territories, ecosystems, and species, new knowledge is constantly being generated and is theoretically inexhaustible. Moreover, use of knowledge by one person does not prevent its use by another. Nonetheless, the viewpoint of traditional peoples seems to accurately reflect the bitter historical experience of indigenous peoples, who tend to see western law as an imposition that negates their own custom-based regulations. After all, if traditional peoples and communities in WTO member states are required to accept the existence of patents, of which they are economically prevented from acquiring for themselves, why shouldn't their own knowledge-related regimes be respected by others? “It is perhaps this point – that one type of IPR system is being universalized and prioritized to the exclusion of all others – that causes most concern, especially among those peoples and communities that cannot benefit from what is to them an imposed system.”⁸⁰

Given the above arguments, it is hardly surprising that traditional peoples and communities are deeply reluctant to have anything to do with patents, despite their theoretical possibilities.

C. Trade secrets

While the sharing of knowledge is common in many traditional societies, healers and other specialist knowledge-holders as well as clans and lineage groups are likely to have knowledge that they will not wish to share with anyone.

Legal Protection of Biotechnological Inventions, 1998 O.J. (L213), available at LEXIS, European Union, Legislation & Regulations, EC Legislation (excluding any informed consent provision requirement).

⁷⁹ Graham Dutfield, *Rights, Resources and Responses*, in CULTURAL AND SPIRITUAL VALUES OF BIODIVERSITY, *supra* note 26, at 503, 505.

⁸⁰ Graham Dutfield, *The Public and Private Domains: Intellectual Property Rights in Traditional Knowledge*, 21 SCI. COMM. 274, 287 (2000).

Trade secret protection, however, does not necessarily require that knowledge be known only by a small number of people. According to a 1993 report of the Congressional Research Service, "if a shaman or other individual has exclusive access to information because of his status in the group, that individual or the indigenous group together probably has a trade secret. . . ."⁸¹ If a company obtains such information by illicit means, legal action may then be used to force the company to pay compensation. Conceivably, a considerable amount of TK could be protected under trade secret law.

An experimental project based in Ecuador and supported by the InterAmerican Development Bank is currently trying to protect TK as trade secrets.⁸² The project, entitled "transforming traditional knowledge into trade secrets," aims to enable traditional peoples and communities to benefit from bioprospecting through effective trade secret protection of their knowledge.⁸³ An NGO called Ecociencia is documenting the botanical knowledge of the participating indigenous groups, and registering it in closed-access databases. Checks are made to see whether each entry is not already in the public domain and whether other communities have the same knowledge. If an entry is not in the public domain, the community or communities with the knowledge have a trade secret. The trade secret can then be disclosed to companies with benefit sharing guaranteed by a standardized contract. These benefits can then be distributed among the trade secret-holding communities and the Ecuadorian government. To date, the database contains 8,000 entries provided by six participating indigenous groups. Sixty percent of the uses appear so far not to have been disclosed through publications. Already, three companies have expressed interest in accessing the database.⁸⁴

Thus, as developing countries implement the TRIPS section on undisclosed information, the possibility exists for trade secrecy to be deployed as a means to protect TK and to realize its commercial potential for the benefit of the knowledge holders and their communities.

Nevertheless, overall, TRIPS does not appear to provide many opportunities of which traditional peoples and communities can avail themselves. On the contrary, framing the issue of TK protection in the discourse of western intellectual property rights does not go very far unless it is embedded in much broader-based negotiations between traditional

⁸¹ Josephine R. Axt et al., *Biotechnology, Indigenous Peoples, and Intellectual Property Rights*, 93-478 CONG. RES. SERVICE REP. FOR CONGRESS 63 (1993) (emphasis added).

⁸² See Joseph Henry Vogel, *Bioprospecting and the Justification for a Cartel*, BULL. OF THE WORKING GROUP ON TRADITIONAL RESOURCE RIGHTS, Winter 1997, at 16, 17.

⁸³ *Id.*

⁸⁴ Information provided by Dr. Rocio Alarcon of Ecociencia at the Oxford University seminar on February 7, 2001. See Notes from the Oxford University Seminar (Feb. 7, 2001) (on file with author).

peoples and communities, national governments, businesses, and scientists in which the most fundamental concerns of these peoples and communities, such as self-determination (for indigenous peoples), territorial rights, and human rights, are openly and comprehensively addressed. But, as the next section shows, while this may be true, many governments do find it advantageous to frame TK protection as an IPR issue, and therefore one that is trade-related.

IV. THE ROLE OF TK IN INTERNATIONAL DIPLOMACY

A. TK in 'biplomacy'

Until recently, IPRs was a subject mainly for specialists, and was considered totally unrelated to international environmental law, biodiversity conservation, or to the rights of indigenous peoples and resource-poor farmers in developing countries. This placed IPR lawyers and business interest groups in a strong position to influence the development of IPR law in ways that suited their own interests. However, they are increasingly encountering determined and well-organized opposition. Two major catalysts are the CBD and the FAO negotiations relating to the International Undertaking on Plant Genetic Resources (IUPGR).

Biplomacy and intellectual property diplomacy have to some extent converged. There are various reasons for this. First, TRIPS requires IPR protection for biological material such as microorganisms and plant varieties. Second, the CBD treats biological and genetic resources as tradable commodities subject to national sovereignty rights, and whose transfer to developed countries is part of a *quid pro quo* involving technology transfers among other benefits. Finally, the CBD and the ongoing IUPGR negotiations have become entry-points for critical perspectives on IPRs to be expressed and turned into policy proposals.

1. The Convention on Biological Diversity

In contrast to TRIPS, non-business NGOs played a major role not only in encouraging governments to agree on the need for a treaty on biodiversity conservation, but also in the development of the various drafts, including the final text. The CBD came into force in 1993 and now has 180 contracting parties.⁸⁵

The CBD is the only international treaty that specifically acknowledges the role of traditional knowledge, innovations, and practices in biodiversity conservation and sustainable development, as well as the

⁸⁵ As of Sept. 30, 2001 there are 181 contracting parties. However, the European Union, one of the parties, is not a state. See Parties to the Convention on Biological Diversity, United Nations Environment Programme, June 5, 1992, at <http://www.biodiv.org/world/parties.asp> (last visited Sept. 30, 2001).

need to guarantee their protection, whether through IPRs or other means. Article 8(j) requires the parties to:

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 the 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.⁸⁶

This implies that the holders have rights over their knowledge, innovations and practices, whether or not these rights are capable of being protected by IPRs. Still, the language is vague and it is difficult to ascertain the specific legal requirements, if any, of the contracting parties.

To review implementation of the CBD, the Conference of the Parties (COP), which is composed of all contracting parties, meets periodically.⁸⁷ IPRs are most frequently discussed in deliberations on such topics as access to genetic resources and benefit sharing, technology transfer, and TK. Perhaps the strongest criticisms of TRIPS and IPRs in general have arisen from deliberations falling within the latter topic.

In fact, the COP has become a forum in which TRIPS and IPRs are openly debated and critiqued. There are two reasons for this. First, the national delegations consist largely of civil servants from environment ministries. They tend to be concerned mostly about conservation, sustainable development and food security, and often have little contact with their trade ministry counterparts.⁸⁸ Second, there are close links between many of the national delegations and well-organized networks of highly articulate and politically astute activists who represent international NGOs and attend virtually all inter-governmental meetings relating to the CBD. The building of such links has been made easier by the openness of CBD forums. Sometimes activists are even invited onto the official delegations.

⁸⁶ *Convention on Biological Diversity*, *supra* note 2, at art. 8(j).

⁸⁷ Ordinary meetings of the Conference of the Parties are held every two years. COP R.P. 4(1). The next meeting will take place at The Hague, Netherlands, in May 2002. *See* *Convention on Biological Diversity website*, at <http://www.biodiv.org>.

⁸⁸ There are exceptions. Some national delegations include individuals from trade and industry ministries and even intellectual property specialists. However, these are more likely to be from developed countries with the resources to send more delegates. For an overview of each contracting party, see the *Convention on Biological Diversity website*, *supra* note 87.

With respect to implementation, the COP, at its third meeting (COP-3) in November 1996, drafted Decision III/14, "Implementation of Article 8(j)." In this decision, the COP agreed on the need to "develop national legislation and corresponding strategies for the implementation of Article 8(j) in consultation particularly with representatives of their indigenous and local communities."⁸⁹ Pursuant to this agreement, the CBD Secretariat arranged the Workshop on Traditional Knowledge and Biodiversity Conservation. The workshop took place in Madrid, Spain, in November 1997, and was attended by representatives of governments and 148 indigenous and local community organizations.⁹⁰

This was followed up at the fourth meeting of the COP (COP-4) in May of 1998, by Decision IV/9, the "Implementation of Article 8(j) and Related Provisions." This decision recognized "the importance of making intellectual property-related provisions of Article 8(j) and related provisions of the Convention on Biological Diversity and provisions of international agreements relating to intellectual property mutually supportive, and the desirability of undertaking further cooperation and consultation with the WIPO."⁹¹

The parties agreed to establish an ad hoc, open-ended, inter-sessional working group to address the implementation of Article 8(j) and related provisions to be composed of parties and observers including, in particular, representatives of indigenous peoples and local communities.⁹² One of the mandated activities of the working group is "to provide advice . . . on the application and development of legal and other appropriate forms of protection for the knowledge, innovations, and practices of indigenous and local communities embodying traditional lifestyles"⁹³

The working group had its first meeting in Seville, Spain, in March 2000.⁹⁴ Based upon its recommendations, two months later COP-5, in the annex to Decision V/16, "Article 8(j) and Related Provisions," extended the mandate of the working group and adopted a program of work on

⁸⁹ *Report of the Third Meeting of the Conference of the Parties to the Convention on Biological Diversity*, U.N. Environment Programme, Annex II, at 90, 91, U.N. Doc. UNEP/CBD/COP/3/38 (1997), available at <http://www.biodiv.org/doc/meetings/cop/cop-03/official/cop-03-38-en.pdf>.

⁹⁰ See United Nations Environment Programme Announcement website, at <http://www.unep.org/restrict/unep.org/restrict/uneplink/y1997/nov/nov97gef.htm> (last visited Nov. 27, 2001).

⁹¹ *Report of the Fourth Meeting of the Conference of the Parties to the Convention on Biological Diversity*, U.N. Environment Programme, Annex I, at 111, U.N. Doc. UNEP/CBD/COP/4/27 (1998), available at <http://www.biodiv.org/doc/meetings/cop/cop-04/official/cop-04-27-en.pdf>.

⁹² See *id.* at 111, 112.

⁹³ *Id.* at 112.

⁹⁴ See *Final Briefing*, at <http://www.iisd.ca/biodiv/article8j> (last visited Nov. 27, 2001).

implementation of Article 8(j) and related provisions.⁹⁵ This included the following tasks relating to legal elements:

Task 11: The Working Group [is] to assess existing subnational, as appropriate, national and international instruments, particularly intellectual property rights instruments, that may have implications on the protection of the knowledge, innovations and practices of indigenous and local communities with a view to identifying synergies between these instruments and the objectives of Article 8(j).⁹⁶

Task 12: The Working Group [is] to develop guidelines that will assist Parties and Governments in the development of legislation or other mechanisms, as appropriate, to implement Article 8(j) and its related provisions (which could include *sui generis* systems), and definitions of relevant key terms and concepts in Article 8(j) and related provisions at international, regional and national levels, that recognize, safeguard and fully guarantee the rights of indigenous and local communities over their traditional knowledge, innovations and practices, within the context of the Convention.⁹⁷

Nevertheless, it is difficult to envisage the COP, which still does not include the United States as a full member, ever adopting a protocol to the CBD that would require parties to harmonize their IPR systems with their CBD-related obligations, including protection of TK. But as will be explained below, trade negotiators are not deaf to the critiques of TRIPS being expressed at this forum.

2. The FAO International Undertaking on Plant Genetic Resources and Farmers' Rights

According to Cary Fowler, a former political activist opposing the extension of IPRs to life forms in the United States and internationally, during the 1980s,

The extension of intellectual property rights through the legislative and judicial process (without improvement in efforts to conserve genetic diversity) was a sign to nongovernmental organizations that a new arena

⁹⁵ See *Report of the Fifth Meeting of the Conference of the Parties to the Convention on Biological Diversity*, U.N. Environment Programme, Annex III, at 66, 143, U.N. Doc. UNEP/CBD/COP/5/23 (2000), available at <http://www.biodiv.org/doc/meetings/cop/cop-05/official/cop-05-23-en.pdf>.

⁹⁶ *Id.* at 145.

⁹⁷ *Id.*

was needed. In order to continue there also needed to be a redefining and repackaging of the arguments and the goals ... the challenge ... was to develop a new strategy and set it to work in a new but potentially friendlier arena.... The strategy was developed to protect the 'property rights' of the Third World through challenging industrialized countries' access to genetic diversity.⁹⁸

At the beginning of the 1980s, Fowler and Pat Mooney identified the FAO as the most promising arena. The two had done some consultancy work for the Mexican government on the scientific and political aspects of genetic resource control and erosion, which led to a period of close collaboration between Mexican officials in Rome and NGOs. During this time, Mooney played a major strategizing and awareness-raising role that had the desired effect of mobilizing a great many developing countries. The consequence was that the FAO became the principle battleground of what became known as "the seed wars,"⁹⁹ and with the advantage point – in contrast to the Uruguay Round negotiations on IPRs – held by the developing countries. This was due not only to their strength in numbers, but also to the fact that they had taken the initiative.

The main bone of contention was that the developed countries were abusing the free exchange principle in two ways. First, it was argued that most of the world base crop collections were held in the developed world, even though most of the accessions had come from the developing world. Second, while folk varieties were treated as being the common heritage of humankind, plant breeders in the developed countries were securing IPR protection for their own varieties. Again, according to Fowler,

To a certain extent this shift in arenas marked the first time NGOs, or opponents of plant patenting, had taken the initiative with their own proposals. Moving the debate to FAO allowed for this to happen because it shifted the power base from American to Third World interests. Furthermore, it extended the debate beyond patenting in the narrow sense, and thus moved the debate onto territory NGOs are most comfortable with – the connections between patenting and genetic conservation, and between these and development issues.¹⁰⁰

⁹⁸ CARY FOWLER, *UNNATURAL SELECTION: TECHNOLOGY, POLITICS, AND PLANT EVOLUTION* 180 (1994).

⁹⁹ For a discussion of the FAO's importance in these "seed wars" and of the developing countries' advantage in the dispute, see Jack Kloppenburg, Jr. & Daniel Lee Kleinman, *Seed Wars: Common Heritage, Private Property, and Political Strategy*, 95 *SOCIALIST REV.* 6 (1987).

¹⁰⁰ FOWLER, *supra* note 98, at 181-182.

At the 1981 FAO biennial conference, a resolution was adopted, against the vehement opposition of developed countries (especially the United States, United Kingdom and Australia) and the seed industry, calling for the drafting of a legal convention. In 1983, the over-ambitious demand for a convention was replaced by a call for a non-binding undertaking, and for the creation of a new FAO Commission on Plant Genetic Resources (CPGR) where governments could meet for discussion and monitor what became known as the International Undertaking on Plant Genetic Resources.¹⁰¹ By the mid-1980s, over 100 countries agreed to the IUPGR, whose stated objectives were “to ensure that plant genetic resources of economic and/or social interest, particularly for agriculture, will be explored, preserved, evaluated and made available for plant breeding and scientific purposes.”¹⁰² These signatory countries included many developed countries that would not have signed a binding convention.

The first meeting of the CPGR took place in March 1985.¹⁰³ In spite of U.S. attempts to discredit the commission, 93 countries were represented, and it soon became a well-established body within the FAO.

In 1993, CPGR Resolution 93/1 called for the IUPGR to be revised in harmony with the CBD.¹⁰⁴ To this end, the Commission (now called the Commission on Genetic Resources for Food and Agriculture or the CGRFA) has held a series of negotiations to revise the IUPGR. These proved to be extremely difficult, but were finally concluded in November 2001, when a text for the revised IUPGR was adopted and then converted into a legally-binding treaty.¹⁰⁵

The Farmers’ Rights concept was included in the IUPGR from 1989 in response to the developed countries’ insistence on excluding IPR-protected plant varieties from application of the common heritage principle. Mooney, as a counter to Breeders’ Rights, coined “Farmers’ Rights.” Farmers’ Rights is not an IPR as such, but it is frequently suggested as a principle that could be implemented as a compensation or benefit-sharing mechanism. Officially, Farmers’ Rights is an attempt to acknowledge “the enormous contribution that . . . farmers of all regions of the world . . . have made and will continue to make for the conservation and development of

¹⁰¹ See *Establishment of a Commission on Plant Genetic Resources*, FAO Conf. Res. 9/83, 22nd Sess., FAO (Nov. 23, 1989), available at <ftp://ext-ftp.fao.org/waicent/pub/cgrfa8/Res/C9-83E.pdf>.

¹⁰² See *International Undertaking on Plant Genetic Resources*, FAO Conf., 22nd Sess., FAO (Nov. 1983), available at <ftp://ext-ftp.fao.org/waicent/pub/cgrfa8/iu/iutextE.pdf>.

¹⁰³ See *Meetings of the CGRFA*, at <http://www.fao.org/ag/cgrfa/meetings.htm> (last visited Nov. 27, 2001).

¹⁰⁴ Dutfield, *supra* note 79, at 511.

¹⁰⁵ See *International Treaty on Plant Genetic Resources for Food and Agriculture*, FAO Conf., 31st Sess., FAO (Nov. 3, 2001), available at <ftp://ext-ftp.fao.org/waicent/pub/cgrfa8/iu/ITPGRe.pdf>.

plant genetic resources which constitute the basis of food and agriculture production throughout the world.”¹⁰⁶ Resolution 5/89 defined Farmers’ Rights as:

rights arising from the past, present and future contributions of farmers in conserving, improving and making available plant genetic resources, particularly those in the centres of origin/diversity. These rights are vested in the International Community, as trustees for present and future generations of farmers. . . and supporting the continuation of their contributions as well as the attainment of overall purposes of the International Undertaking [on Plant Genetic Resources].¹⁰⁷

This is a paradoxical definition, since the holders of the *farmers’* rights are not the farmers but the international community. And while the intent is laudable, it is far from clear that an international community whose members have been responsible for the huge-scale conversion of biologically-diverse ecosystems, such as tropical forests and traditional low-input polycultural agro-ecosystems to pastures, high-input monocultural croplands and plantations, can be trusted to act as responsible trustees for traditional farming communities in support of the continuation of their high-biodiversity farming systems.

Notwithstanding the problematic official definition, NGO campaigning in support of the interests of traditional farmers has encouraged some governments to consider how to operationalize Farmers’ Rights in a relatively un-paternalistic fashion that can truly benefit traditional farmers. Internationally, the concept has galvanized considerable opposition to biopiracy relating to folk plant varieties, which appears to be spilling over into the WTO.

B. TK at the World Intellectual Property Organization

WIPO’s involvement in TK goes back more than twenty years. In the 1970s and 1980s, WIPO jointly with the U.N. Educational, Social and Cultural Organization (UNESCO), held a series of meetings on folklore which culminated in the 1982 adoption of the Model Provisions for National Laws on the Protection of Expressions of Folklore Against Illicit Exploitation and Other Prejudicial Actions. In 1984, WIPO and UNESCO convened a meeting to explore the possibility of developing an international treaty on folklore based on the Model Provisions. However, participants at

¹⁰⁶ *Report of the Commission on Genetic Resources for Food and Agriculture*, U.N. FAO, 6th Extraordinary Sess., Annex B, art. 10.1 at 7, U.N. Doc. CGRFA-Ex 6/01/REP (2001), available at <http://www.fao.org/ag/cgrfa/docsex6.htm>.

¹⁰⁷ *Farmers’ Rights*, FAO Conf. Res. 5/89, 25th Sess., FAO (Nov. 1989), available at <http://www.fao.org/ag/cgrfa/IU.html>.

the meeting were unable to reach agreement and the proposal for a treaty was withdrawn.¹⁰⁸ Consequently, WIPO dropped the issue of folklore from its programs for several years.¹⁰⁹

The next collaboration between WIPO and UNESCO on folklore was the 1997 World Forum on Folklore in Phuket, Thailand. The idea of having such an event was proposed in February 1996 by several of the developing country delegations attending the joint sessions of the WIPO Committee of Experts on a Possible Protocol to the Berne Convention, and the WIPO Committee of Experts on a Possible Instrument for the Protection of the Rights of Performers and Producers of Phonograms.¹¹⁰ The Committees subsequently recommended to the WIPO Governing Bodies that an international forum on folklore be arranged.

The majority of participants at the World Forum agreed that copyright law was inadequate to protect folklore and therefore urged WIPO and UNESCO "to pursue their efforts to ensure an effective and appropriate international regime for the protection of folklore."¹¹¹ Most of the participants then suggested the following actions:

- A Committee of Experts should be set up in cooperation with UNESCO as soon as possible consisting of experts in both the conservation and protection of folklore and representing a fair balance of global geographical distribution.
- Regional consultative fora should take place.
- The Committee of Experts should complete the drafting of a new international agreement on the *sui generis* protection of folklore¹¹²

In early 1998, shortly after Kamal Idris of Sudan had become the new Director-General, WIPO established a new unit called the Global

¹⁰⁸ See Kuruk, *supra* note 50, at 817-19, 819 n.382. However, UNESCO remained somewhat active in the field of folklore. In 1989, for example, UNESCO's member states adopted a document known as the Recommendations on the Safeguarding of Traditional Culture and Folklore.

¹⁰⁹ See *id.*

¹¹⁰ These joint sessions led to the development of the aforementioned WIPO Performances and Phonograms Treaty and to the WIPO Copyright Treaty. See *Memorandum prepared by the Chairman of the Committees of Experts, Diplomatic Conference on Certain Copyright and Neighboring Rights Question*, para. 1, WIPO Doc. CRNR/DC/6 (Aug. 30, 1996).

¹¹¹ UNESCO-WIPO *World Forum on the Protection of Folklore, Phuket Plan of Action*, 235, U.N. ESCO and WIPO (Apr. 8-10, 1997).

¹¹² *Id.* The participants suggesting such actions included all except the representatives of the U.S. and U.K. governments. *Id.*

Intellectual Property Issues Division (GIPID). This unit was headed by Richard Owens, a lawyer working in WIPO's Development Cooperation Division. The purpose of this new Division was to identify and respond to the new challenges for the intellectual property system of globalization and rapid technological change. As part of this mandate, the Division sought to identify potential new beneficiaries of IPRs, including traditional peoples and communities. The Division researches and explores various issues including protection of traditional knowledge, innovations and creativity, and protection of folklore.¹¹³

During 1998 and 1999, WIPO embarked on nine fact-finding missions in various parts of the world on traditional knowledge, innovations, and culture to investigate the needs and expectations of TK holders, bearing in mind the possible use of existing IPRs to protect their knowledge, innovations, and culture.¹¹⁴ In addition, WIPO held four regional consultations on the protection of expressions of folklore, jointly with UNESCO.

Since 2001, GIPID has sought to go beyond identifying and investigating the issues involved and to find out the views of TK holders by addressing basic conceptual problems and testing practical solutions. The emphasis of its work has shifted towards such activities as pilot projects on the use of existing IPRs to protect TK, exploration of customary law and its relationship with the formal intellectual property system, and training and awareness-raising programs for the benefit of TK holders.¹¹⁵

Is this work likely to lead to a new treaty on TK? This does not seem possible. According to one commentator:

¹¹³ The two other issues are biotechnology and biodiversity, and intellectual property and development. *Id.*

¹¹⁴ See *Intellectual Property Needs and Expectations of Traditional Knowledge Holders: WIPO Report on Fact-Finding Missions on Intellectual Property and Traditional Knowledge (1998-1999)* 9, WIPO (Apr. 2001), available at <http://www.wipo.org/globalissues/tk/report/final>.

¹¹⁵ One of the early outcomes of this more applied phase of the work is a Study commissioned jointly by WIPO and the United Nations Environment Programme on the role of IPRs in the sharing of benefits arising from the use of biological resources and associated traditional knowledge. The Study consists of an introductory review, case studies, and an analytical synthesis. The case studies were released by WIPO and UNEP in Nairobi in May 2000 at the Fifth meeting of the Conference of the Parties to the Convention on Biological Diversity. For copies of these case studies, see *The Role of Intellectual Property Rights in the Sharing of Benefits arising from the Use of Biological Resources and Associated Traditional Knowledge: Selected Case Studies*, WIPO & UNEP Doc. UNEP/CBD/COP/5/INF/26 (2000), available at <http://www.wipo.int/globalissues/biotech/documents/index.html>.

GIPID's mandate is limited. American support for the new mandate was secured in return for the concession that GIPID was not 'on a norm setting track'; that is to say, that its work is not intended to feed into a process which would end with the creation of a treaty or recommendations.¹¹⁶

Nevertheless, there is a great deal of interest in this work. For the 26th Session of the WIPO General Assembly from September 25 – October 3, 2000, the WIPO Secretariat prepared a paper inviting the member states to consider the establishment of an Intergovernmental Committee on Intellectual Property and Genetic Resources, Traditional Knowledge and Folklore. This proposal was approved by the General Assembly, and the first meeting of the Committee took place in Spring 2001.¹¹⁷

C. TK at the World Trade Organization

Even though TK was not an issue during the Uruguay Round, it has been one at the WTO almost since the organization came into being. As early as June 1995, it came up in a meeting of the Committee on Trade and Environment. At that particular meeting, the Nigerian delegate argued that TRIPS must be construed to "accord recognition to traditional interest and right holders."¹¹⁸ In addition, the Indian representative complained, "[T]he worst casualty, in an IPR regime for plant varieties, was the knowledge, innovations and practices of indigenous and local communities embodying traditional lifestyles relevant for the conservation and sustainable use of biodiversity, highlighted in Article 8(j) of the Biodiversity Convention."¹¹⁹

Since then, developing country interest in TK has increased, becoming less reactive and more proactive. Proposals from such governments frequently make reference to the CBD and the IUPGR. This suggests that deliberations on TK at the CBD COPs, the FAO CGRFA and WIPO have not sidelined the TK issue – as some governments might have preferred – but mainstreamed it to the extent that TK has emerged as an issue that the WTO and all of its member states must take seriously.

In the future, historians of trade law may point to 1999 as a year that marked a shift in the balance of power at the WTO. While the Quad countries (the United States, European Union member states, Japan and

¹¹⁶ Michael Halewood, *Indigenous and Local Knowledge in International Law: A Preface to Sui Generis Intellectual Property Protection*, 44 MCGILL L. J. 953, 986 (1999).

¹¹⁷ *Matters Concerning Intellectual Property and Genetic Resources, Traditional Knowledge and Folklore* para. 13, WIPO Doc. WO/GA/26/6 (Aug. 25, 2000).

¹¹⁸ *Committee on Trade and Environment: Report of the Meeting Held on 21-22 June 1995*, para. 12, WTO Doc. WT/CTE/M/3 (July 18, 1995), available at <http://docsonline.wto.org>.

¹¹⁹ *Id.* at para. 20.

Canada) were still disproportionately powerful, developing countries became more proactive and assertive. According to UNCTAD Secretary-General Rubens Ricupero, who had been strongly advocating a positive developing country approach to trade negotiations, more than half of the 250 proposals submitted to the WTO General Council during the preparations for the Seattle Ministerial Conference came from developing countries.¹²⁰ Of these 250 proposals, fifteen were on TRIPS and eight came from developing countries.¹²¹ And while many factors contributed to the collapse of the Seattle Conference, criticisms by many developing countries that they were being excluded from key negotiations probably contributed to its failure to launch a new trade round or even to agree on a declaration at all.

During the early stages of the twelve-month period leading up to the Seattle Conference, a year when Article 27.3(b) of TRIPS was scheduled to be reviewed, it seemed that the United States, the European Union, and Japan were going to seek to raise the standards of protection. For its part, the United States, in a communication to the WTO General Council dated November 19, 1998, noted in reference to the 1999 review that the TRIPS Council is "to consider whether it is desirable to modify the TRIPS Agreement by eliminating the exclusion from patentability of plants and animals and incorporating key provisions of the UPOV agreement regarding plant variety protection."¹²² This was presumptuous given that an agenda for the review had not yet been declared.

A communication from the European Union to the General Council dated June 2, 1999, while adopting a conciliatory tone, noted that "[I]t should of course be kept in mind that the TRIPS *acquis* is a basis from which to seek further improvements in the protection of IPR. There should therefore be no question, in future negotiations, of lowering of standards or granting of further transitional periods."¹²³

In a similar vein, a submission from Japan to the General Council dated July 6, 1999 stated that:

¹²⁰ Rubens Ricupero, *Rebuilding Confidence in the Multilateral Trading System: Closing the "Legitimacy Gap"*, in *THE ROLE OF THE WORLD TRADE ORGANIZATION IN GLOBAL GOVERNANCE* 40 (Gary P. Sampson ed., 2001).

¹²¹ Victor Ognitsev, *Elements of a Positive Agenda*, in *UNITED NATIONS CONFERENCE ON TRADE AND DEVELOPMENT, A POSITIVE AGENDA FOR DEVELOPING COUNTRIES: ISSUES FOR FUTURE TRADE NEGOTIATIONS* 11, 13, U.N. Doc. UNCTAB/ITCD/TSB/10, U.N. Sales No. E.00.II.D.8 (2000).

¹²² *Preparations for the 1999 Ministerial Conference: General Council Discussion on Mandated Negotiations and the Built-In Agenda* 6, WTO Doc.WT/GC/W/115 (Nov. 19, 1998), available at <http://docsonline.wto.org>.

¹²³ *Preparations for the 1999 Ministerial Conference: EC Approach to Trade-Related Aspects of Intellectual Property in the New Round*, para. 3, WTO Doc. WT/GC/W/193 (June 2, 1999), available at <http://docsonline.wto.org> (emphasis added).

... taking into account the nature of the TRIPS Agreement, that is, a minimum standard of intellectual property protection, we should not discuss the TRIPS Agreement with a view to reducing the current level of protection of intellectual property rights. *To the contrary, the TRIPS Agreement should be improved properly in line with new technological development and social needs. For example, the TRIPS Agreement should deal with higher protection of intellectual property rights which has been achieved in other treaties or conventions in other fora appropriately.* [emphasis added]¹²⁴

What is especially problematic about these statements is their shared assumption that the only direction the international IPR regime should move is towards ever higher minimum standards and fewer exceptions. In spite of this, the full development and impact of TRIPS continues to defy even the most sophisticated economic analyses,¹²⁵ and many developing countries simply cannot fulfill their TRIPS obligations within the transitional periods. Such statements were bound to provoke a reaction.

Indeed, developing countries were far from unresponsive to these pressures. As they themselves had a number of grounds for dissatisfaction with TRIPS, they decided it was time to place their concerns on the negotiating table. TK was one of these issues.¹²⁶

On August 6, 1999, two important documents were submitted to the General Council. One of these, from the Permanent Mission of Venezuela, proposed that the next review of TRIPS *inter alia* should "[E]stablish on a mandatory basis within the TRIPS Agreement a system for the protection of intellectual property, with an ethical and economic content, applicable to the traditional knowledge of local and indigenous

¹²⁴ *Preparations for the 1999 Ministerial Conference: Proposal on Trade-Related Aspects of Intellectual Property: Communication from Japan*, para. 6, WTO Doc. WT/GC/W/242 (July 6, 1999), available at <http://docsonline.wto.org> (emphasis added).

¹²⁵ For an example of such an analysis, see Keith E. Maskus, *Intellectual Property Rights and Economic Development*, 32 CASE W. RES. J. INT'L L. 471 (2000).

¹²⁶ Other major issues were access to essential drugs and technology transfer. See *Preparations for the 1999 Ministerial Conference: Implementation Issues to be Addressed Before/At Seattle: Communication from Cuba, Dominican Republic, Egypt, El Salvador, Honduras, India, Indonesia, Malaysia, Nigeria, Pakistan, Sri Lanka and Uganda*, para. 27, WTO Doc. WT/GC/W/354 (Oct. 11, 1999), available at <http://docsonline.wto.org>. See also *Preparations for the 1999 Ministerial Conference: Implementation Issues to be Addressed in the First Year of Negotiations*, para. 27, WTO Doc. WT/GC/W/355 (Oct. 11, 1999), available at <http://docsonline.wto.org>.

communities, together with recognition of the need to define the rights of collective holders.”¹²⁷

And the African Group of countries proposed that after the sentence on plant variety protection in Article 27.3(b) “a footnote should be inserted stating that any *sui generis* law for plant variety protection can provide for [*inter alia*]: (i) the protection of the innovations of indigenous farming communities in developing countries, consistent with the Convention on Biological Diversity and the International Undertaking on Plant Genetic Resources.”¹²⁸

This latter communication, which attracted considerable NGO support worldwide, also warned that “by mandating or enabling the patenting of seeds, plants and genetic and biological materials, Article 27.3(b) is likely to lead to appropriation of the knowledge and resources of indigenous and local communities.”¹²⁹

A more detailed proposal for a legal framework on TK was submitted to the General Council on October 12, 1999 by the governments of Bolivia, Colombia, Ecuador, Nicaragua, and Peru.¹³⁰ Specifically, the document proposed that the WTO establish a mandate in a future trade round with three purposes:

- a) To carry out studies, in collaboration with other relevant international organizations, in order to make recommendations on the most appropriate means of recognizing and protecting traditional knowledge as the subject matter of intellectual property rights.
- b) On the basis of the above-mentioned recommendations, initiate negotiations with a view to establishing a multilateral legal framework that will grant effective protection to the expressions and manifestations of traditional knowledge.

¹²⁷ *Preparations for the 1999 Ministerial Conference: Proposals Regarding the TRIPS Agreement: Para. 9(a)(ii) of the Geneva Ministerial Declaration*, para. 2, WTO Doc. WT/GC/W/282 (Aug. 6, 1999), available at <http://docsonline.wto.org>.

¹²⁸ *Preparations for the 1999 Ministerial Conference: The TRIPS Agreement: Communication from Kenya on Behalf of the African Group*, para. 23, WTO Doc. WT/GC/W/302 (Aug. 6, 1999), available at <http://docsonline.wto.org>.

¹²⁹ *Id.* at para. 24.

¹³⁰ *Preparations for the 1999 Ministerial Conference: Proposal on Protection of the Intellectual Property Rights Relating to the Traditional Knowledge of Local and Indigenous Communities*, WTO Doc. WT/GC/W/362 (Oct. 12, 1999), available at <http://docsonline.wto.org>.

- c) To complete the legal framework envisaged in paragraph (b) above in time for it to be included as part of the results of this round of trade negotiations.¹³¹

Developing countries have begun not only to complain in an organized fashion about TRIPS, but also to propose in a coordinated way. Thus, not only have developing countries actively opposed the raising of IPR standards, they have even proposed that TRIPS be revised in order to circumscribe certain rights, to maintain or expand the exceptions, and to create new IPR frameworks.

What does this imply for TK? It seems highly unlikely that a new framework to protect TK will be inserted into TRIPS anytime soon. And since the United States is determined to prevent a WIPO convention on TK that could then be incorporated in TRIPS, this is unlikely to happen even in the more distant future. At best, minimalist measures to safeguard TK from misappropriation could conceivably be agreed upon. A greater danger is that trade negotiators will sacrifice the interests of traditional knowledge holders once concessions in other areas of intellectual property or other trade-related issues are secured in return. In fact, for developing countries, TK serves a strategic purpose at the WTO that is unlikely to serve the interests of traditional peoples and communities. While some trade negotiators and ministries may see TK as a significant moral or economic issue, it is difficult to imagine many developing countries pursuing this issue with any great determination. Measures to protect TK are far more likely to be achieved at the international level by the CBD COPs. And for governments genuinely interested in TK, whether out of a sense of social justice or because they believe TK can benefit national economies, solutions need to be found at the national level. These solutions have more to do with basic human rights than with intellectual property rights.

Indeed, the significance of the TK issue should be seen as transcending its role in TRIPS negotiations and should not – indeed cannot – be reduced to a problem merely for IPR experts or trade negotiators to solve. It is not that elements of TK *cannot* be protected through patents, copyrights, and trade secrets, but that the exploitation of traditional peoples and communities, including holders of TK, is fundamentally due to a widespread failure to respect their basic rights, and not to the inadequacies of IPRs to protect TK.

V. CONCLUSIONS

This Article has sought to reveal how and why traditional knowledge became TRIPS-related. It has also shown that TRIPS and the WTO are not really appropriate agreements or forums to resolve the issue.

¹³¹ *Id.* at para. 10.

The concluding part of this paper considers what developing country use of TK implies for their compliance with TRIPS and for compliance more generally.

First, it should be clear that whether or not developing countries will gain once they have fully implemented their TRIPS obligations, their perception is that TRIPS does not further their interests and exists only because the developed countries insisted there should be such an agreement. While the flexibility within the agreement has much to do with the tenacity with which some developing country delegations sought to defend their interests, there is little doubt that the main beneficiaries of TRIPS, at least in the short term, are the transnational corporations (TNCs) whose interests may be quite different.

So are developing countries using this issue to introduce new IPR standards on TK into TRIPS? And if so, are they linking the speed of their compliance to such an introduction? Or are they simply using the issue either to obtain non TRIPS-related trade concessions or to justify implementing an agreement they dislike as slowly as they can get away with? We cannot be certain, but the complexity of the issue and the improbability of developed countries agreeing to accept new norms on TK both suggest that the latter is the real motivation. This may, therefore, be an example of countries introducing "problems" into negotiations not to solve them but to undermine an unpopular agreement and, more specifically in this case, to deflate pressures for compliance.

TRIPS is of course unfinished business. Developed countries would like to see the standards progressively raised, as would the TNCs. While some developing countries accept the agreement as it is and seek to construe its rules as creatively as possible, others are actively trying to weaken the standards. In both cases, many of them share an interest in being able to extend the transitional periods without having to answer for their inaction to a WTO dispute settlement panel. It is very possible that playing the TK card has had some effect, though it is not clear how great this impact has been as compared to the technology transfer and access to essential medicines cards.

Section IV strongly suggests the likelihood that the period since 1999 has seen a slight shift in the balance of power at the WTO towards developing countries, at least with respect to TRIPS. From the view of these countries, this has had both positive and negative consequences.

On the positive side, developed countries have softened their stance and have decided to focus for the time being on implementation of the existing standards rather than seeking to raise them further. And while many developing countries have failed to meet the built-in implementation deadlines, such as the requirement to provide protection for plant varieties by 2000, they are not being challenged at the WTO for this. Most probably, raising the TK issue has been a contributory factor to this lack of a challenge.

On the negative side, the United States and the European Union have responded by encouraging developing countries to raise their IPR standards *beyond* those required by TRIPS *outside of the WTO*, such as through bilateral treaties. A good example of such a bilateral agreement is the 2000 Agreement Between the United States of America and the Hashemite Kingdom of Jordan on the Establishment of a Free Trade Area, which requires that Jordan allow the patenting of business methods and computer-related inventions. While one must assume that the Jordanian government felt it was a good agreement for the country, such patents are highly controversial in the United States and Europe and are not expressly required by TRIPS. In addition, the United States and the European Union continue to unduly pressure countries with “inadequate” IPR standards by threatening to remove trade concessions. Moreover, it appears likely that if countries agree to create a Free Trade Area of the Americas, IPR standards throughout the American continent will become higher than those required by TRIPS (i.e. ‘TRIPS plus’).

From the view of developed countries, the business associations, and lobby groups that pushed so hard to ensure that IPRs were on the Uruguay Round agenda,¹³² they are finding that TRIPS comes with a price. Logically it is difficult to understand why determining the standards of patentability, for instance, should be a business for trade negotiators to resolve. But politically it is much easier to comprehend.¹³³ Seeking to emphasize the TRIPS-relatedness of TK in spite of its complexities is similarly flawed logically, but also advantageous strategically. TK *is* trade-related, but only insofar as intellectual property is trade-related. Use of the TK issue shows that developing country governments have learned to frame issues of interest to them as trade-related (and in this case TRIPS-related) just as the developed world business associations in the 1980s successfully made the case that aspects of IPRs were trade-related and should therefore be dealt with at GATT.

¹³² For an account of how a coalition of business associations worked behind the scenes to help ensure that the Uruguay Round agenda included trade-related intellectual property rights, see Peter Drahos, *Global Property Rights in Information: The Story of TRIPS at the GATT*, 13 PROMETHEUS 6 (1995).

¹³³ See Peter M. Gerhart, *Why Lawmaking for Global Intellectual Property is Unbalanced*, 22 EUR. INTELL. PROP. REV. 309 (2000).

