THE PROTECTION OF INDIGENOUS MEDICINAL KNOWLEDGE IN INTERNATIONAL INTELLECTUAL PROPERTY LAW

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Résumé - Abstract

Depuis environ vingt ans et plus intensément durant la dernière décennie, le savoir indigène est venu « tourmenter » le droit de la propriété intellectuelle. Si ce domaine du droit a été historiquement interpellé par les nouvelles technologies il est maintenant, avec la problématique du savoir médicinal indigène, littéralement mis à l'épreuve par les inventions du passé. Le présent mémoire se consacre à l'étude du statut du savoir médicinal indigène en droit international de la propriété intellectuelle. Ainsi, nous procéderons à l'étude des principales conventions internationales et du régime commun de la propriété intellectuelle afin de déterminer le traitement accordé au savoir indigène dans le système actuel. Ensuite, nous étudierons le rôle que la propriété intellectuelle pourrait être appelée à jouer dans le futur.

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For 20 years, and more intensively during the last decade, indigenous knowledge has challenged the regime of intellectual property. If this field of law has been, in the past, challenged by new technology, it is now, with the problematic of indigenous medicinal knowledge, put to the test by "old invention". The present thesis examines the status of indigenous medicinal knowledge in international intellectual property law. Thus, we will proceed to the study of the main international conventions and the common regime of intellectual property law in order to determine the treatment accorded to medicinal indigenous knowledge within the actual system. The role that intellectual property could play in the future will also be examined.

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Introduction

Stadacona;[1] 1535; Jacques Cartier and his crew are experiencing their first "Canadian winter." The group is affected by scurvy, a quarter of them have died and the rest remains severely ill.[2] At this time, with the use of such methods as bleeding and purging, the term "scientific medicine" comes close to being an oxymoron. While the Frenchmen are powerless in ameliorating their fate and await their death, Domagaya, an Iroquois, provides them with a tea made from leaves of white cedar. After a few days, members of the crew are cured.[3] In some ways, the history of Canada would not have been the same without the cures of indigenous people.

Obviously, "scientific" medicine has significantly evolved since that time. However, a sentiment of superiority over native medicine seems to persist. Paradoxically, or maybe in the logic of Jean de Lafontaine's famous fable *Le lion et le rat*,[4] Western medicine has "rediscovered" native or indigenous medicinal knowledge. Pharmaceutical companies now turn to indigenous knowledge to accelerate their research on treatments for a large range of illness. This is not simply a coincidence. The market for herbal products, for example, is flourishing. According to Dr Suman Sahai, "it is estimated to touch five trillions US dollars by 2020."[5]

This rising interest for indigenous medicine is not without problems. Indeed, indigenous peoples and their representatives are protesting, claiming that they are victims of biopiracy.[6] "Biopiracy", however, is not the subject of an accepted definition. The Action

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[1] Now Quebec City
[2] M. Trudel, *The Beginnings of New France 1524-1664*, (Toronto: Canadian Publisher, 1973), at 27-28.
[3] *Ibid.*
[4] In this fable, Jean de Lafontaine illustrated that we always need someone "smaller than us."
[5] S. Sahai, "Protection of Indigenous Knowledge and Possible Methods of Sharing Benefits with Local Communities", Background paper prepared for the Multi-stakeholder Dialogue on Trade, Intellectual Property and Biological and Genetic Resources in Asia, BRAC Centre for Development Management, Rajendrapur Bangladesh, 19-21 April 2002, at 6-7, online: Development Through Dialogue <http://www.dgroups.org/groups/OKN/docs/Indigenous%20Knowledge.pdf> (last visited: February 22, 2003).
[6] See for instance the *Johannesburg Declaration on Biopiracy, Biodiversity and Community Rights*, Second South-South Biopiracy Summit, Johannesburg, August 2002, [hereinafter "Johannesburg Declaration"]. This declaration is a compilation of two civil society declarations: *The Valley of 1000 Hills Declaration*,

Group on Erosion, Technology and Concentration defines it as "the appropriation of the knowledge and genetic resources of farming and indigenous communities by institutions seeking exclusive monopoly control (...) over these resources and knowledge."[7]

For example, cases in which a patent is granted for an invention that is not novel as regards indigenous knowledge are considered as biopiracy. Some also consider that a patent granted in accordance with national law, but derived from indigenous knowledge, is also biopiracy if no prior informed consent had been granted and no benefit sharing agreement had been reached.[8] Consequently, indigenous peoples have claimed that the actual intellectual property system is a tool of appropriation.[9]

Indigenous knowledge is thus the topic of numerous debates in the international forum. Numerous non-governmental organizations (NGO) are denouncing the present situation as regards the protection of this knowledge and argue that it needs to be protected.[10] In addition, developing countries are increasingly adopting a view similar to that of the NGOs. In response to this problematic, the World Intellectual Property Organization (WIPO), the World Trade Organization and the Conference of the Parties of the Convention on Biological Diversity are among those seeking solutions.

Until now, equity has been the rationale on which are based the numerous arguments that are in favour of the protection of indigenous knowledge. It is assumed that this type of knowledge may be used beneficially by various parties whereas the current system has not put in place any system of compensation. Therefore, some protection would be

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made in KwaZulu Natal, South Africa in March 2002 and the *Rio Branco Commitment*, made in Rio Branco, Brazil in May 2002. It also reflects the viewpoints expressed by the majority of participants at the *Second South-South Biopiracy Summit.*

[7] UK Commission on Intellectual Property Right (Final Report), "Integrating Intellectual Property Rights and Development policy", 12th September 2002, at 74, online: Intellectual Property Right Commission <http://www.iprcommission.org> (last visited: February 22, 2003), [hereinafter "Integrating Intellectual Property Rights"].

[8] *Ibid.*

[9] As an example: *COICA Statement*, Meeting on Intellectual Property Rights and Biodiversity, Santa Cruz, Bolivia, September 30, 1994.

[10] For instance: Grain and the Rural Advancement Foundation International (RAFI), online: Grain <http://www.grain.org>, RAFI < http://www.rafi.org> (last visited: March 15, 2003).

necessary to bring equity to unequal relations.[11] Concerns related to environmental conservation, cultural preservation and promotion of the utilization of indigenous knowledge as a means of development have also been expressed to justify its protection.[12]

While interesting, the question of the existence of a moral obligation toward indigenous peoples as well as the underlying reasons for protecting indigenous knowledge will not be subject of a thorough analysis in this paper. Assuming the existence of such an obligation toward indigenous peoples - at the very least as regards the preservation and respect of their knowledge-[13] we will examine the treatment to which it is subjected in intellectual property law. We will demonstrate that the actual regime does not offer any substantial and effective protection to indigenous knowledge and briefly expose various solutions that have been proposed in order to improve the holder of indigenous knowledge's situation. In short, this thesis aims to examine the role played by the international intellectual property regime and the role it should play in the future in order to answer to the obligation of preservation and respect of indigenous knowledge.

More precisely, the first chapter will concentrate on the factual and conceptual framework of the thesis. Terms important to the understanding of the question, e.g. "indigenous" and "indigenous knowledge", are thus defined. In this chapter, we will also emphasize the diverging views of indigenous and Western peoples on the concept of property.

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[11] C. Correa, "Traditional Knowledge and Intellectual Property: Issues and Options Surrounding the Protection of Traditional Knowledge", at 5, online: Quaker United Nations Office <http://www.geneva.quno.info/pdf/tkmono1.pdf> (last visited: February 22, 2003).

[12] *Ibid.*

[13] For instance, such an obligation could be justified by an application of Rawl's theory of justice. At the national level, it could be argued that some action is needed in order to arrange the social and economic inequalities which indigenous are the victims. J. Rawls, *A Theory of Justice*, (Cambridge: Harvard University Press, 1971). Some authors have suggested the application of this theory at the international level. C. Beitz, *Political Theory and International Relations*, (Princeton: Princeton University Press, 1979); S. Hoffmann, *Duties Beyond Borders*, (Syracuse: Syracuse University Press, 1981

In the second chapter, the present status of medicinal indigenous knowledge in the context of international intellectual property law will be delimited. In order to determine if the actual system does offer some protection to indigenous medicinal knowledge, two main international conventions that could possibly have an effect on it, namely the *Convention on Biological Diversity*[14] and the *Agreement on Trade-Related Aspects of Intellectual Property Rights*,[15] are going to be studied. We will demonstrate that, while representing a good starting point, the CBD does not, in reality, assure the protection of medicinal indigenous knowledge. As for the TRIPS Agreement, which does not address that question directly, we will argue that the agreement does not improve significantly the situation of indigenous knowledge, whether or not it is in conflict with the CBD.

The second chapter also seeks to examine the actual regime of intellectual property in order to determine if it could protect indigenous medicinal knowledge. It will be demonstrated that the regime of patent, as well as the regime of trade secrets, offer little protection to this type of knowledge since they are more in accordance with the Western view of knowledge as property. The different *sui generis* regimes already adopted by several national states will also be discussed.

Since we hope to demonstrate that the actual regime of intellectual property does not offer many possibilities to the holders of indigenous knowledge, the third chapter will be consecrated to an examination of the changes that have been proposed for the intellectual property system. We aspire to show that these approaches, that do not imply the recognition of property rights such as a compensatory liability regime, are more suitable for the knowledge that is already in the public domain. It will also be further argued that future changes in the regime of intellectual property as regard this knowledge should insist on a negative rather than on a positive protection.

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[14] *Convention on Biological Diversity*, June 5, 1992, 31 I. L. M. 818, [hereinafter "CBD"].
[15] *Agreement on Trade-Related Aspects of Intellectual Property Rights*, December 15, 1993, Annex 1 C of the *Marrakech Agreement Establishing the World Trade Organization*, 33 I.L.M. 81 (1994), [hereinafter "TRIPS"].

Chapter 1: Conceptual and Factual Framework

1. Knowledge Concerned

c) Notion of Indigenous

No uniform definition of "indigenous" could be found to apply in all countries. Indeed, different definitions have been used depending on the context particular to each State.[16] Even the United Nations has not yet formally defined this concept because doing so could have the effect of excluding specific groups.[17] In fact, it is difficult to imagine a definition that could capture all of the diversity of the indigenous populations. Contrarily to what is usually believed, there are various situations where it becomes complex to differentiate a minority from an indigenous society.[18] However, some documents have attempted to delimit some guidelines.

The *U.N. Working Group on Indigenous Populations*, after having reiterated that a narrow definition was not desirable,[19] has used the criteria that stem from the most widely accepted definition, which was provided for in the study of Jose Martinez Cobo. According to this latter definition, indigenous communities are:

> those which having a historical continuity with pre-invasion and pre-colonial societies that developed on their territories, consider themselves distinct from other sectors of societies now prevailing in those territories, or parts of them. They form at present non-dominant sectors of society and are determined to preserve, develop, and transmit to future generations their ancestral territories, and their ethnic identity, as the basis of

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[16] Dr. E.-I. A. Daes, Commission on Human Rights, "Working Group on Indigenous Populations", Fourteenth Session, UNESCO, 1996, E/CN.4/Sub.2/AC.4/1996/2/Add.1, at par.6.
[17] *Ibid.* at par. 3.
[18] M. Battiste & J. Youngblood Henderson, *Protecting Indigenous Knowledge and Heritage, a Global Challenge*, (Saskatoon: Purich Publishing, 2000), at 61.
[19] Daes, *supra* note 16, at par. 2-3. A narrow definition may limit the flexibility of governments and peoples in applying relevant instruments to their own national circumstances.

> their continued existence as peoples, in accordance with their own cultural patterns, social institutions and legal systems.[20]

The definition that is provided by the *International Labour Organization Convention No 169* [21] is also largely accepted in the international community and differs little from Cobo's study. Both of them consider that self-identification as indigenous is a decisive criterion.[22]

Indigenous peoples need to be differentiated from traditional populations, even if they are a part of the latter. As Brush has noted, the term *indigenous* has been used for quite some time as a synonym of "*folk*", rendering the term to being seen equivalent to "*local*" or "*nonformal.*" Thus, an ambiguity did exist and the term was often used in a way that included local populations of a majority group.[23] Even if some authors still continue to use those terms interchangeably,[24] the term "indigenous" will be preferred in this paper as it is represented in Cobo's study and the *ILO Convention.*[25]

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[20] J. M. Cobo, "Study of the Problem of Discrimination against Indigenous Populations", UN doc. No. E/ CN.4/ Sub.2/1986/87.

[21] 7 June 1989, 28 I. L. M. 1382, [hereinafter *ILO Convention*]. However, as noted by Halewood, this definition is "frequently criticized for giving priority to the histories of Americas, New Zealand and Australia, and ignoring the African and Asian historical realities."; M. Halewood, "Indigenous and Local Knowledge in International Law: A Preface to *Sui Generis* Intellectual Property Protection", (1999) 44 McGill L. J. 953, at 957.

[22] Civil Society Organizations and Participation Programme (CSOPP) of the United Nations Development Programme (UNDP), "About Indigenous Peoples: Definition", online: UNDP <http://www.undp.org/csopp/CSO/NewFiles/ipaboutdef.html> (last visited: January 23, 2003).

[23] S. B. Brush, "Indigenous Knowledge of Biological Resources and Intellectual Property Rights: The Role of Anthropology", (1995) American Anthropologist no. 3, 653, at 659. Brush explains that the principal opposition was simply between non-formal and Western scientific knowledge systems. "The emphasis on "folk" knowledge reflected a broader interest in popular culture, as opposed to "high culture" that can be traced to the Romantic Movement."

[24] D. Posey, G. Dutfield, "Marché mondial de la propriété intellectuelle", CRDI, Ottawa, 1996, at 3 and 22-41.

[25] However, we admit that there is a problem with the use of this definition in certain parts of the world. We agree with Brush that it is "best used in regions with a colonial history that has left a predominant national culture and autochthonous cultures that coexist and compete for limited resources, especially land" S. B. Brush, "Whose knowledge, Whose Genes, Whose Rights? In S. Brush and D. Stabinsky (eds.), *Valuing Local Knowledge: Indigenous Peoples and Intellectual Property Rights*, (Washington: Island Press 1995), at 5. As Béteille said about this, the designation "as "indigenous" acquires substance when there are other populations in the same region that can reasonably be described as settlers or alien" Thus, if there is no problem in countries like Australia or North America, the situation is different in regions like Islamic Asia and large parts of Africa. T.W. Purcell, "Indigenous Knowledge and Applied Anthropology: Questions of Definition and Direction", (1998) 57 Human Organization, no. 3, 258, at 259; A. Béteille, "the Idea of Indigenous Peoples", (1998) 39 Current Anthropology no. 2, at 187-191; J. L. Trotti "Compensation Versus

The total number of indigenous peoples in the world has been estimated by the U.N. to be three hundred million.[26] They exist in more than seventy countries, on all five continents and are divided into approximately five thousand groups.[27] Today, an important part of the remaining tropical biodiversity is found in areas inhabited by indigenous peoples.[28]

These indigenous communities are unfortunately similar as they exhibit signs of many social problems such as poverty, poor health, unemployment and high rates of imprisonment. Moreover, their land and resources are often threatened by many negative aspects of development, such as deforestation and mining.[29] The very existence of their communities is, in many cases, endangered. As an example it is said that one Amazonian indigenous culture disappears every year since 1990.[30] This trend is far from changing for the better. Indeed, in 1991, two thirds of the remaining tribes counted fewer than a thousand members.[31] Consequently, a substantial amount of indigenous knowledge has been lost or is in the process of becoming so, not having been passed on to the new generations.

d) The notion of Indigenous Medicinal Knowledge

Medicinal or ethnobiological indigenous knowledge is simply a type of knowledge that is related to the curative and medicinal properties of plants, their extracts, and of minerals.[32] Ong Chui Koon has defined it more precisely as "the sum total of all knowledge and practices, whether explicable or not, used in the diagnosis, prevention and elimination of

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Colonization: A Common heritage Approach to the Use of Indigenous Medicine in Developing Western Pharmaceutical", (2001) 56 Food Drug L. J. 367, at 368.

[26] K. Moran, "Toward Compensation: Returning Benefits from Ethnobotanical Drug Discovery to Native Peoples", in *Ethnoecology, Situated Knowledge/Located Lives*, V. D. Nazarea (ed.), (Tucson: University of Arizona Press, 1999), at 251. Estimation made in 1999.

[27] Grand Council of the Crees, "Who are the World's Indigenous Peoples", online: Canada, Grand Council of the Crees, <http://www.gcc.ca/Political-Issues/international/who_are_indigenous.htm> (last visited: January 23, 2003).

[28] V. Date, "Global "Development" and its Environmental Ramifications – The Interlinking of Ecologically Sustainable Development and Intellectual Property Rights", 27 Golden Gate U. L. Rev. 631, at 662.

[29] Grand Council of the Crees, *supra* note 27.

[30] K. Moran, *supra* note 26, at 251.

[31] E. Linden, "Lost Tribes, Lost Knowledge", Time, Sept. 23, 1991, at 46. Cited by D. Shelton, "Fair Play, Fair Pay", 1992 Int'l Y.B. Env'l. L., at 78.

[32] Trotti, *supra* note 25, at 369.

physical, mental, or social imbalance."[33] However, it cannot be completely understood without a parallel analysis and definition of the term "indigenous knowledge."

i) The Difficulty in Defining the Concept of *Indigenous Knowledge*

Since it is not enough to simply affirm that indigenous knowledge is the knowledge held by persons that fit into the category of "indigenous", it seems fundamental to address the question of its nature and content. In order to determine if indigenous knowledge can be protected by intellectual property law this term has to be properly defined. However, this is not an easy exercise. The difficulty can be explained by several factors, which we will discuss below.

First, in most of these indigenous communities, knowledge is strongly anchored in traditions, spirituality and the individual. It cannot then be completely separated from tradition without losing an important part of its sense and value. As it has been said, it is difficult to separate the technical from the non-technical and the rational from the irrational.[34] This incapacity to isolate the particular knowledge makes it more complex to study its content.[35]

Secondly, the type of information and know-how held by these peoples is significantly influenced by their environment. It has a local character.[36] As the environmental landscape changes from one place to another, so does the knowledge that is generated within its geographic limits. This explains the fact that it inevitably varies from one community to the other. As a matter of fact, an Amazonian indigenous group (tropical forest setting) is more likely to possess ethnobiological knowledge than an Inuit community (artic setting). Thus, biological diversity is one among a multitude of factors that can affect the nature of knowledge. On the other hand, the Inuit are more susceptible

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[33] H.C. Koon, "Intellectual Property Protection of Traditional Medicine and Treatments in Malaysia", in M. Blakeney (ed.), *Intellectual Property Aspects of Ethnobiology*, (London: Sweet & Maxwell, 1999) 153, at 157.

[34] E. P. Parkes, A. Bicker (eds.), *Indigenous Environmental Knowledge and its Transformation: Critical Anthropological Perspectives*, (Amsterdam, Harwood Academic, 2000), at 5.

[35] Battiste & Henderson, *supra* note 18, at 36.

[36] Parkes and Bicker, *supra* note 34, at 4.

of having a deeper knowledge of ice and of all its properties. In short, the ethnoscience of each group is genuine because it reflects the group's particular adaptation to a different place and to a different environment: "each indigenous regime is characteristic of the creative adaptation of a people to an ecological order."[37]

However, some identical information is held by different groups living in geographic proximity or that have common characteristics.[38] For instance, a variety of plants can be found in different places and similar knowledge about them and their properties may have been developed independently.

In addition, the diversity of this knowledge makes it more difficult to define. More then simply having a strong knowledge about their local ecology, indigenous peoples have specific knowledge about biological, botanical, geographical, geological and hydrological attributes of their ecosystem.[39] Finally, the expression of their traditions through such means as the counting of legends, through painting or myriad other means is also a valuable asset.[40]

Because of its diversity, indigenous knowledge is useful in many areas of life such as nutrition, health, and agriculture.[41] Since all of these types of knowledge cannot be considered as a whole without taking into account their various specificities, this thesis will specifically concentrate on medicinal knowledge that is used in the development of new drugs. This type of knowledge is particularly interesting as it may generate considerable financial gains if the revenues that are generated by the commercialization

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[37] Battiste & Henderson, *supra* note 18, at 41.
[38] G. Rodriguez Stevenson, "Trade Secrets: The Secret to Protecting Indigenous Ethnobiological (Medicinal) Knowledge", (2000) N.Y.U. J. Int'l. L. & Pol. 1119, at 1140.
[39] D. J. Stephenson Jr., "A Practical Primer on Intellectual Property Rights in a Contemporary Ethnoecological Context", in Nazarea, *supra* note 26, at 230.
[40] K. Puri, "Cultural Ownership and Intellectual Property Rights Post-Mabo: Putting Idea into Action" (1995) 9 I. P. J. 293; B. Amani, "Fact, Fiction or Folklore? It's Time the Tale Were Told...: Part I" (1999) 13 I. P. J. 237.
[41] "Integrating Intellectual Property Rights", *supra* note 7, at 82.

of a pharmaceutical product are considered.[42] Therefore, it could represent a manner by which development could be fostered in indigenous communities. However, this subject, as it is present in international debate, is significantly broader then the purposes of our paper and is extended to all types of knowledge that is held by these communities regardless of its possible monetary value.

In spite of many efforts that have been made to protect that type of knowledge at the international level, the concept of indigenous knowledge has yet to be coherently defined. Inasmuch, there is no agreed definition for this term.[43] Depending on their professional field of action, interests and beliefs, each person or group has their own vision and definition.[44] In fact, it is rather difficult for a non indigenous person to effectively grasp the reality of the topic through a simple reading of the available literature on the subject. As pointed out by Dr. Daes in the *Report on the Protection of the Heritage of Indigenous Peoples*, indigenous knowledge is a "complete knowledge system with its own concepts of epistemology, philosophy, (...) scientific and logical validity (...) [and] can only be fully learned or understood by means of the pedagogy traditionally employed by these peoples themselves, including apprenticeship, ceremonies and practice."[45]

It would thus seem pointless to attempt to concentrate all of the diversity of this knowledge into a unique definition. An effective manner of avoiding making this concept under exclusive is therefore to simply enumerate its many characteristics. In fact, as for the concept of "indigenous", the notion of "indigenous knowledge" is among those which should not be rigidly defined.

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[42] The pharmaceutical industry is the most profitable industry in the world, earning profits of 18.3% compared to an average profit of 5% for other industries, online: Center for Policy Alternatives <http://www.cfpa.org/issues/healthcare/prescription/talking.cfm> (last visited: February 6, 2003).

[43] M. Ruiz, "Traditional knowledge as prior art and the use of the patent system as a defensive measure against misappropriation", online: Southcentre, <http://www.southcentre.org/publications/occasional/paper09/toc.htm > (last visited: March 13, 2003).

[44] Dr. J. Mugabe, "Intellectual Property Protection and Traditional Knowledge: An Exploration in International Policy Discourse", WIPO, Geneva, December 1998, online: African Centre for Technology Studies <http://www.acts.or.ke/paper> (last visited: March 4, 2003).

[45] E. I. Daes, Commission on Human Rights, "Final Report on the Protection of the Heritage of Indigenous Peoples", UN Doc. No. E/CN.4/Sub 2/1995/26

ii) Sources and Characteristics of Indigenous Knowledge

It is possible to establish some common characteristics among the various types of knowledge that are held by indigenous peoples around the world. These are going to be useful when analyzing the treatment accorded to indigenous knowledge in the actual system of intellectual property law.

First, the expression "indigenous knowledge" refers to the culmination of the indigenous peoples' intellectual efforts.[46] However, this intellectual process somewhat differs from its Western counterpart, and indigenous knowledge sources are among the very reasons for which it has been historically discredited by Western societies. Strongly based on extrapolation and resulting from the mixture of the sacred and the profane, indigenous knowledge is quite distinct from Western science. More precisely, indigenous knowledge has three main sources.[47]

The first type of knowledge is empirical. It is acquired through constant observation and experiment. The information and know-how possessed at a determinate time is the product of trial and error made by countless preceding generations. It is the result of a group effort over a considerable length of time. Improvements are achieved by a further process of repetition by which new knowledge is added to existing knowledge. [48]

Consequently, indigenous knowledge, contrarily to what is generally thought by many, is not static.[49] In indigenous societies, like in others, the emerging necessity of adaptation creates a new possibility to experiment and innovate. Thus, even if deeply rooted in

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[46] Ruiz, *supra* note 43, at par. 8-9.
[47] M. Brant Castellano, "Updating Aboriginal Traditions of Knowledge", in B. L. Hall, G. J. Sefa Dei, D., Goldin Rosenberg (eds.), *Indigenous Knowledge in Global Contexts: Multiple Reading of our world*, (Toronto: University of Toronto Press, 2000), at 23.
[48] *Ibid.* at 6.
[49] D. A. Posey, "Biological and cultural diversity: the Inextricable, Linked by Language and Politics", in Luisa Maffi (ed.), *On Biological Diversity: Linking language, Knowledge and the Environment*, (Washington: Smithsonian Institution Press, 2001) 379, at 382.

tradition, indigenous knowledge is dynamic, updated through the constant occupancy of a territory and stimulated by environmental changes or other external stimuli.[50]

Secondly, there is the revealed knowledge which stems from dreams, visions and intuition. Spirituality is important in the process of development of this type of knowledge. The best example is probably the one given by "shamans."[51] The role of the latter is to cure the soul and the body by balancing the spiritual, human and natural forces.[52] To achieve this aim, they use rituals of sacrifice and ecstasy brought about by the music of the tambourine or other means that vary by the tribe.[53] For instance, many peoples who have been to Amazonia have reported the utilization of *ayahuasca*,[54] a powerful hallucinogen, as a means to bring about revelations about plant properties. The idea is to make the mind travel to a different level and contact spirits. The remedy is then revealed to the shaman through hallucinations.[55]

The third source, tradition, does not stand apart from the two other sources (revelations and empirical observations). Indeed, knowledge that is passes down from one generation to the next is revealed or empirical. However, it is acquired in different ways by the new generations. More precisely, the elders are often responsible for teaching the young.[56] The information is not preserved in writing by the community. As a consequence, the

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[50] Posey, *supra* note 49, at 382.

[51] It is believed that the word "shaman" has originated in the Siberian culture. M. Mandelstam Balzer (ed.), *Shamanism, Soviet Studies of Traditional Religion in Siberia and Central Asia*, (London: M.E. Sharpe, 1990), at ix; A.L. Siikala and M. Hoppal, *Studies on Shamanism*, (Budapest: International Society for Shamanistic Research, 1998), at 1. It would means "to know in a ecstatic manner" or "one who is excited, moved, raised" Grim defines the shaman as a "person, male or female, who experiences, absorbs, and communicate a special mode of sustaining, healing power."; J. A. Grim, *The Shaman, Patterns of Religious Healing Among the Ojibway Indians*, (London: University of Oklahoma Press, 1983), at 1.

[52] More precisely: "shamans deal with the spiritual causes and effects of healing. Their goal is to affect the physical, but they believe the physical world is a manifestation or reflection of the spiritual world. In seeking healing the shaman typically employs the help of a spirit or group of spirits", online: <http://www.wholespirit.com/docs/universalspiritarticle.htm> (last visited: January 23, 2003).

[53] In fact, the altered state of consciousness may be achieved by various methods including music and dancing. Grim, *supra* note 51, at 12.

[54] *Yage or Banisteriopsis*: M. Ripinsky-Naxon, *The Nature of Shamanism*, (Albany, State University of New York Press, 1993), at 51.

[55] *Ibid.* at 96.

[56] Brant Castellano, *supra* note 47, at 23.

integrity of the content depends on visual and intellectual memory. This means that this is subject to involuntary changes in the process of repetition.[57]

It can be concluded that, far from being the result of a chemical or biological analysis, indigenous knowledge emerges from a mix of intuition and visions helped by a daily observation of nature. It represents a personal, subjective experience and does not aspire to universality.[58] Consequently, contradictory perceptions can be considered valid in the same system of knowledge. It recognizes that different eyes can see different things.[59] Social realities can often be interpreted differently.

iii) Clash between Indigenous Knowledge and Western Science

The clash between indigenous knowledge and the dominant knowledge of the West can be quite easily made if the aforementioned sources and characteristics of indigenous knowledge are kept in mind. Where Western science values rationality, objectification and quantification, indigenous knowledge systems often give priority to emotion, subjectivity and qualification.[60] Where Western science is the product of ardent analysis lead by scientists with much education in a specialized field, indigenous knowledge is the fruit of lay intuition, and results from a deep connection between human being and nature.

Indigenous knowledge is heavily influenced by culture whereas Western scientists often strive to transcend it. This latter aim is to reach universality; to find a solution that is independent of personal beliefs and probabilistically incontrovertible.[61] Indigenous people that hold the particular knowledge can be said to be in search of a subjective truth.[62] Purcell resumes the situation in those words:

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[57] Parkes, Bicker, *supra* note 34, at 4.
[58] Brant Castellano, *supra* note 47, at 23.
[59] *Ibid.* at 7.
[60] *Ibid.* at 8 and 27.
[61] Purcell, *supra* note 25, at 259.
[62] Brant Castellano, *supra* note 47, at 27.

> A spiritual healer may explain a persistent headache not as resulting from physiological phenomena but from neglect of an ancestor. The plausibility of this explanation rests within the symbolic structure of the healer's culture. A scientific explanation, however, must be demonstrated outside of any unique symbolic structure; it must have universality under specified empirical methodological conditions independent of the practitioner's belief.[63]

However, Dutfield argues that one should not conclude that indigenous knowledge is inherently unscientific because of its alternative roots:

> [A] great deal of traditional environmental knowledge is empirical and systematic, and therefore scientific. (...) [I]t seems reasonable to claim that some TK *is*, at least to some degree, scientific even if the form of expression may seem highly *un*scientific 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 [64]

Indigenous approach is thus different from the Western system of thought. This in no way means that indigenous knowledge is unscientific or not valuable. In fact, it has incontestably proved its worth, having been utilized by scientists themselves as a means to direct their research.

c) Value of Ethnobiological Knowledge

The fact remains that a significant number of drugs have been developed through the utilization of indigenous knowledge. It is the case, for instance, of aspirin, quinine, and a certain number of drugs to prevent cancer.[65] Today, paradoxically, the scientific interest in indigenous knowledge is accruing significantly. Even if science is more and more

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[63] Purcell, *supra* note 25, at 259.

[64] G. Dutfield, "Protecting Traditional Knowledge and Folklore: A review of progress in diplomacy and policy formulation", UNCTAD/ICTSD Capacity Building Project on Intellectual Property Rights and Sustainable Development, October 2002, online: International Centre for Trade and Sustainable Development <http://www.ictsd.org/iprsonline/unctadictsd/docs/Dutfield2002.pdf> (last visited: February 23, 2003) [hereinafter "Diplomacy and Policy Formulation"], at 13.

[65] N. Roth-Arriaza, "Of Seeds and Shamans: The Appropriation of the Scientific and Technical Knowledge of Indigenous and Local Communities", (1996) 17 Mich. J. Int'l. L. 919, at 921-922.

complex and developed, Western scientists are increasingly attracted to biological resources and to the related knowledge from which it stems.[66] This interest can be explained by various factors.

First, cultural and biological erosion have reached such a point that their occurrence cannot be denied. Several languages are dying every year[67] and, as underlined by one author, there is an inextricable link between language and knowledge.[68] When a language vanishes from earth, a culture is lost. As we previously stated, knowledge is so strongly anchored in culture that when the latter dies, the former is also inevitably carried away. The fact that indigenous knowledge is orally transmitted accentuates this reality since there is a risk that the knowledge vanishes with the language. Scientists will therefore attempt to collect the available information before it is lost.

This phenomenon is amplified even further by the occurrence of parallel biological erosion. Indeed, because of the way it has been managed or mismanaged, the world is becoming biologically uniform and many plants species are being jeopardized. Consequently, potential cures may perhaps be lost, particularly due to the diminution of rain forest superficies that has been seen as a real biological El Dorado. Approximately 1,100 out of the 35, 000 to 40,000 plants with possible pharmaceutical applications have already been studied by scientists.[69] A considerable part of the remaining plants are at risk and could become extinct before the analysis of their curative potential is realized[70]

Historically, the use of indigenous knowledge has been a means by which to increase the success ratio in trials, thus serving to accelerate the creation of new effective drugs. According to the author Principe, the probability that a plant species emerges as being an effective plant-based drug is between one in ten thousand and one in one thousand

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[66] Rodriguez Stevenson, *supra* note 38, at 1131-1133.
[67] In 1993, nearly 2500 languages were in immediate danger of extinction. Posey, *supra* note 49, at 379.
[68] *Ibid.* See Also. L. Maffi, "On the Interdependence of Biological and Cultural Diversity", in Maffi (ed.) *supra* note 49, at 1.
[69] K. Peterson, "Recent Intellectual Property Trends in Developing Countries", (1992) 33 Harv. Int'l. L. J. 277, at 282. Cited by Rodriguez Stevenson, *supra* note 38, at 1133.
[70] Rodriguez Stevenson, supra note 38, at 1133.

samples.[71] As noted by Richard Shultes, often dubbed "the Harvard father of ethnobotany":

> If phytochimist must randomly investigate the constituents of biological effects of 80 000 species of Amazon plants, the task may never be finish. Concentrating first on those species that people have lived and experienced for millennia offers a short-cut to the discovery of new medically or industrially useful compounds.[72]

In fact, this probability of success is intrinsically linked with information that has previously been obtained, or obtained during the process of screening. When the screening is based on information received from indigenous peoples, instead of being based on randomly-collected information, the probability of success increases to one in two samples.[73] This increase in the success rate shows the considerable pertinence of the information that is acquired from indigenous peoples.

This information is important in several ways. First, the information directs the researchers, directing their attention to the possible use of a specific plant for a specific illness or class of disease. Screening samples randomly is a much more time-consuming process and quite costly. Secondly, it tells them which part of the plant contains the active substance and at what time of year the substance is present. Having this information, it is easier to isolate the active molecules in a laboratory setting. Thirdly, indigenous knowledge can also gives clues concerning the preparation method of the different components.[74]

In the early nineties, 119 useful prescription drugs had been developed directly from plants. It has been estimated that three-quarters of these drugs were discovered following

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[71] P. Principe, "Monetizing the pharmacological benefits of plants", (1991) U. S. Environmental Protection Agency, Washington DC. Cited by D. Pearce, S. Puroshothaman, "The economic value of plant-based pharmaceutical, in T. Swanson (ed.), *Intellectual property rights and biodiversity conservation: an interdisciplinary analysis of the values of medicinal plants*, (London: Cambridge University Press, 1995), at 133. See also K. Bosselman, "Plants and Politics; The International Regime Concerning Biotechnology and Biodiversity", (1996) 7 Colo. J. Int'l L. & pol'y 111, at 117.

[72] Moran, *supra* note 26, at 252.

[73] Roth-Arriaza, *supra* note 65, at 928.

[74] Rodriguez Stevenson, *supra* note 38, at 1132.

their earlier use in indigenous medicine,[75] proving the usefulness of such knowledge. The usefulness is even becoming more evident as the pharmaceutical industry becomes increasingly interested in natural products as a source of new biochemical compounds. As an example, over one hundred pharmaceutical companies, as well as the US government, are currently funding projects that specifically aim to study the plants used by Amazonian shamans and healers.[76]

More then being just a source of information for the pharmaceutical industry, indigenous knowledge is quite valuable for local communities. In many developing countries, the majority of the population still depends on traditional medicine.[77] For instance, 70% of the Indian population relies on it.[78] Of course, not all of this knowledge can be attributed to indigenous peoples – "traditional" being a more inclusive term than "indigenous"- but it shows the importance of this kind of knowledge for local communities that do not necessarily have access to new pharmaceutical discoveries due to various social factors.

2. How Indigenous Knowledge Has Been Utilized

The utilization of indigenous knowledge by Western scientists as an accelerated means by which to develop new drugs is not a problem. On the contrary, in a perfect world all of the interested people would be able to take advantage of a remedy. Knowledge related to human health should be shared so that it can be accessed around the globe. Indigenous peoples generally agree with this statement and welcome interest in their knowledge.[79] However, it remains that these peoples do desire to establish the parameters of their contribution.[80]

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[75] S. Laird, "Natural Products and the Commercialization of Traditional Knowledge" in T. Greaves (Ed.), *Intellectual Property Rights for Indigenous Peoples: A Sourcebook*, (Oklahoma City: Society for Applied Anthropology, 1994), at 145-149.
[76] According to Raintree, online: <www.rain-tree.com> (last visited: January 23, 2003).
[77] World Health Organization, "Médecine traditionnelle: besoins croissants et potentiels", WHO Policy Perspectives on Medicines, no 2 (may 2002), online: World Health Organization <http://www.who.int/medicines/library/trm/trm_polpers_fr.pdf> (last visited: January 23, 2003).
[78] *Ibid.*
[79] G. Dutfield, "Protecting and Revitalizing Traditional Ecological Knowledge: Intellectual Property Rights and Community Knowledge Databases in India", in Blakeney, *supra* note 33, at 103.
[80] L. Maffi, "Language, Knowledge, and Indigenous Heritage Rights", in Maffi (ed.), *supra* note 49, at 422.

Historically, indigenous peoples have not been remunerated for the utilization of their knowledge. In 2000, it was estimated that the annual world market for drugs derived from medicinal plants discovered with the contribution of indigenous communities exceeded thirty two billion US$.[81] According to Posey, less than 0.001% of the profits from drugs developed from natural products and traditional knowledge were distributed to traditional and indigenous peoples.[82] As long as indigenous peoples are part of the traditional population, it is assumed that their situation is quite the same.

There are some examples of situations in which indigenous medicinal knowledge has been patented with no recognition of the contribution of indigenous peoples in the patent application. The *Ayahuasca* case is a good example. In the mid 1980's, Loren Miller, an American scientist and president of the pharmaceutical company *International Plant Medicine Corporation*, traveled to the Amazon Rain Forest of Ecuador with a precise idea in mind: bringing back a sample of *banisteriopsis caapi*.[83] This vine, native to the Amazonian Rain Forest, has been used for hundreds years by generations of shamans and other healers in the composition of *ayahuasca*. Revered by indigenous people as a sacred medicine, this Amazonian hallucinogenic plant concoction is used as a cure for an important amount of diseases and, as well, as a means to contact spirits.[84]

According to one version of the story, the leader of the Secoya people, in a moment of naivety, asked his son to "give the nice gringo some ayahuasca from the garden."[85] In return, Loren Miller "generously" gave two boxes of American cigarettes. Back in the United States, he applied for a patent and obtained it in 1986.[86]

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[81] World Bank, "Indigenous Knowledge and Intellectual Property Rights", IK Notes, no 19, April 2000, online: World Bank <http://www.worldbank.org/afr/ik/iknt19.pdf> (last visited: 23 January 2003).
[82] D.A. Posey, "Intellectual Property Rights for Native Peoples: Challenges to Science, Business and International Law", document presented at the International Meeting on Property Rights, Biotechnology and Genetic Resources, Nairobi, Kenya, 1991. Cited by J. Mugabe, "Protection de la propriété intellectuelle et savoir traditionnel", Document prepared for the WIPO, Geneva (Switzerland), December 1998, at 7, online: African Center for Technical Studies < http://www.acts.or.ke> (last visited: February 23, 2003).
[83] O. Blanco, "Biopiracy in the Amazon", *El Tigre Journeys,* Iquitos, Peru, online: Biopark, <http://www.biopark.org/peru/biopiracy1.html> (last visited: January 24, 2003).
[84] Rinpinsky-Naxon, *supra* note 54, at 96.
[85] COICA, "En manos de los piratas", Boletín Nuestra Amazonia, 1997, online: Pangea <http://www.pangea.org/coam/ayahuasc.htm> (last visited: March 15, 2003).
[86] *Ibid.*

Nothing further was heard before 1994, the year in which indigenous peoples from Ecuador discovered the issuance of this patent. Angry that a foreigner had obtained private rights over their sacred vine, they decided to challenge the patent.[87]

In 1996, the controversy over ayahuasca spilled into the diplomatic arena. The Ecuadorian government went as far as refusing to sign a bilateral agreement on intellectual property rights with the United States. As a consequence, Washington threatened Ecuador with economic sanctions.[88] The controversy ended in 1999 when Antonio Jacanamijoy, the leader of a council representing various indigenous communities, applied for, and obtained, the rejection of the controversial patent.[89]

More recently, the case involving the Hoodia cactus from the Kalahari Desert has made the headlines. For centuries, the *San* people of Southern Africa used pieces of this cactus as an appetite suppressant. Aware of this knowledge, the *Council for Scientific and Industrial Research* (CSIR) of South Africa isolated the molecule of this plant that curbs appetite and patented the active ingredient (the P57). The rights to develop an anti-obesity drug were sold to Pfizer, an American pharmaceutical company. It has been estimated that this drug could generate millions of dollars of revenues.[90]

The CISR knew the research were based on the *San*'s knowledge but did not attempt to reach an agreement with them. The *San* complained and threatened to bring suit against the CSIR. When the case became public, the CSIR contacted the *San* in order to negotiate a benefit-sharing agreement. At the end of September 2002, the negotiations for the final benefit sharing agreement remained heated. However, the CSIR, in a Memorandum of

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[87] L. Fecteau, "The Ayahuasca Patent Revocation: Raising Questions About Current U.S. Patent Policy", (2001) 21 Boston. Coll. T. W. L. J. 69, at 69.

[88] Biopark, "Ayahuasca: From the Amazon to the Urban Jungle", Excerpted from the final 1999 annual report of the Geopolitical Drug Watch based in France, online: Biopark <http://www.biopark.org/peru/ayahuasca-OGDreport.html> (last visited: March 15, 2003).

[89] Fecteau, *supra* note 87, at 69.

[90] A. Barnett, "In Africa the Hoodia Cactus Keeps men alive, now its Secret is "Stolen" to Make Us Thin", June 17, 2001, The Observer.

Understanding signed at the end of March 2002, recognized the San as having rights to their knowledge and agreed to share future royalties.[91]

These cases illustrate two different situations in which biopiracy was raised. In the *Ayahuasca* case, biopiracy was invoked because a patent had been granted for an invention that was not novel as regards with indigenous knowledge in the public domain. As for the *San* case, the patent was granted in accordance with national law but derived from indigenous knowledge. It was considered biopiracy because no prior informed consent had been granted and no benefit-sharing agreement had been reached.

Since some patents, like ayahuasca, have been revoked on the first ground, the regime of intellectual property appears to be not as inappropriate as it has been deemed to be by some NGO's. However, the latter still claim that the regime remains inefficient as they estimate that for every successful revocation of a patent, there are at least a thousand others that go unnoticed.[92] Additionally, because revocations are expensive to obtain and indigenous peoples do not generally have the economic means to challenge the patents, it could be argued that the system should be more active in trying to prevent the patenting of this knowledge. As for the other kind of situations, they will be discussed in a later section of this paper.

Some companies have not waited for the regime to efficiently recognize indigenous knowledge and have adopted various attitudes toward indigenous peoples. They have admitted from the outset the heightened value of indigenous knowledge and quickly came to an understanding in order to compensate them adequately. For instance, the company *Shaman Pharmaceutical* tried to commercialize new cures with the collaboration of indigenous populations from the tropical forests through the implantation of specific

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[91] L. Gillespie-White, E. Garduno, "Treading an Independent Course for Protecting Traditional Knowledge", International intellectual Property Institute, April 2002, online: International Intellectual Property Institute (IIPI) <http://www.iipi.org/newsroom/views/tk%200402.pdf> (Last visited: January 24, 2003); All Africa, Focus on Biopiracy in Africa, August 30, 2002, online: All Africa <http://fr.allafrica.com/stories/200208300151.html> (Last visited: January 24, 2003).

[92] South Centre, "TK Digital Library: Another Tool for Biopiracy?", South Bulletin, no 39, online: South Centre <http://www.southcentre.org/info/southbulletin/bulletin39/bulletin39-04.htm> (last visited: February 18, 2003).

mechanisms that would remunerate them. The proposed plan was to channel a percentage of profits to the communities that would have contributed to product development.[93] However, on January 5, 2001, *Shaman Pharmaceutical* filed a petition for protection under bankruptcy law[94] and there is yet no evidence of any substantial benefits for indigenous peoples.

In the same way, the *Merck-INBio* deal is often cited as an example of legitimate benefit-sharing. In 1991, the pharmaceutical company *Merk* concluded a bioprospecting agreement with *The Instituto Nacional de Biodiversidad (InBio)*, a non-profit, public interest organization established by the Costa Rican government. *Merck* agreed to pay *INBio* $1 million to screen samples, as well as royalties on sales of any resulting products.[95]

It has been estimated that by 1999, *Merck* had invested more than $3.5 million in the deal.[96] Even if *INBio* receives only two percent in royalties on pharmaceuticals developed from Costa Rica's biodiversity, it would take only twenty drugs to be able to earn more funds than the country currently gets from coffee and bananas which are two of its major exports.[97]

It has been advanced by some, however, that indigenous peoples have been forgotten by the government of Costa Rica. According to Carolyn Crook, a PhD student at the University of Toronto, "local and indigenous communities have not yet shared in the

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[93] C. D. Jacoby, C. Weiss, "Recognizing Property Rights in Traditional Biocultural Contribution", 16 Stab. Envt'l. L. J. 74, at 105.

[94] Multex Finance, "Shaman Pharmaceutical Business Summary", online: <http://biz.yahoo.com/p/s/shph.ob.html > (last visited: March 16, 2003)

[95] World Resources Institute, "The National Biodiversity Institute, Costa Rica", online: World Resource Institute (WRI) <http://www.wri.org/wri/biodiv/b34-gbs.html> (Last visited: January 24, 2003).

[96] Industry Intelligence, "Bioprospecting: raiding nature's pharmacy", online: Inpharm <http://www.inpharm.com/intelligence/ims031001.html> (Last visited: November 22, 2002); M. Greener, "A tour Around Bioprospecting", 26 April, 2001, online: Inpharm <http://www.inpharm.com/netfocus/tours/medicaltours/tour_79.html> (Last visited: November 25, 2002).

[97] World Resources Institute, *supra* note 95.

economic benefits to any great extent. [98]

In another vein, some scientific and professional organizations have set up ethical guidelines for research with indigenous peoples.[99] Those documents are not legally binding, but have the advantage of making the scientific community aware of the problematic.[100]

Although some companies and organizations have presented themselves as having recognized the value of indigenous knowledge, their will cannot be relied on. Intellectual property rights have thus been proposed at the international level as a means to protect indigenous knowledge.

3. The will of Indigenous Peoples

It would be pertinent to first analyze the will of indigenous peoples prior to beginning an analysis of their situation in intellectual property law. Their perspectives on the question can often be found in many non-legal instruments, such as declarations. Declarations are useful because they usually clearly express indigenous people's expectations.[101]

There are many indigenous peoples' declarations[102] that address the question of their knowledge protection. It would be unnecessary to deal with all of them; we will rather

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[98] J. Eberlee, "Assessing the Benefits of Bioprospecting in Latin America", *Reports Science from the Developing World*, January 21, 2000, online: International Development Research Centre <http://www.idrc.ca/reports/read_article_english.cfm?article_num=609> (Last visited: January 24, 2003).

[99] As an example, the International Society for Ethnobiology has drafted guidelines for research, collections, databases and publications. None of those action shall be undertaken without prior informed consent of "all potentially affected communities of indigenous peoples or traditional societies", G. Dutfield, "Indigenous Peoples, Bioprospecting and the TRIPs Agreement: Threats and Opportunities" online: African Centre for technical studies (ACTS) <http://www.acts.or.ke/dutfield.doc>, (last visited February 23, 2003) [hereinafter "Threats and Opportunities"].

[100] Ibid.

[101] S. Ragavan, "Protection of Traditional Knowledge", (2001) 2 Minn. Intell. Prop. Rev. 1, at 41.

[102] D.A. Posey, G. Dutfield, *Beyond Intellectual Property: Toward Traditional Resource Rights for Indigenous Peoples and Local Communities*, (Ottawa: International Development Research Centre, 1996), at 128.

emphasize the interesting elements. Even if these declarations were drafted by various groups from different parts of the world, their content remains quite similar.

Firstly, in the *Indigenous Peoples' Earth Charter*, which is contained in the *Kari-Oca Declaration*,[103] indigenous peoples have declared that their "health rights must include the recognition and respect of traditional knowledge held by indigenous healers. This knowledge, including [the] traditional medicines and their preventive and spiritual healing power, must be recognized and protected against exploitation."[104]

Additionally, indigenous peoples believe that their knowledge of plants and herbs must be protected[105] and that the usurping of their medicine should be considered as a crime against their peoples.[106] Finally, they require that their intellectual property rights be guaranteed:

> As creators and carriers of civilizations which have given and continue to share knowledge, experience and values with humanity, we require that our right to intellectual and cultural properties be guaranteed and that the mechanism for each implementation be in favour of our peoples, and studied in depth and implemented.[107]

Article 44 of the *Charter of the Indigenous and Tribal Peoples of the Tropical Forests*[108] addresses a similar notion.

In the *Mataatua Declaration*,[109] they included the right to be the exclusive owners of their intellectual property with the right to self-determination. This point has been regularly emphasized by indigenous peoples since that time.[110]

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[103] This declaration is a result of the World Conference of Indigenous Peoples in Territory, Environment and Development which was held in Rio de Janeiro, Brazil (25-30 May 1992), online: UNDP <http://www.undp.org/csopp/CSO/NewFiles/ipdocdec.html> (Last visited: January 24, 2003).
[104] *Ibid.* Declaration no 26.
[105] *Ibid.* Declaration no 96.
[106] *Ibid.* Declaration no 99.
[107] *Kari Oca Declaration, supra* note 98, declaration no 102.
[108] *Charter of the Indigenous and Tribal Peoples of the Tropical Forests* (IAIP Charter), Penang, Malaysia 15 February 1992.

In the basic points of agreement of the *COICA/UNDP Regional Meeting on Intellectual Property Rights and Biodiversity*,[111] it as been stated that for indigenous peoples, intellectual property is a tool for the misappropriation of their knowledge for commercial purposes.[112] They consider the present system to be colonialist, racist and usurpatory.[113]

Finally, in September 2002, in the *Johannesburg Declaration*, local communities and NGO's from around the world declared:

> We believe that community rights over biodiversity and indigenous knowledge are collective in nature, and therefore cannot be privatized or individualized. Intellectual property rights as applied to biodiversity and traditional knowledge are private and monopolistic in nature and therefore incompatible with community rights. IPRs cannot exist within a traditional knowledge system and attempts to bring these two words together are misguided and unacceptable
>
> In this context, we declare that the initiative of the World Intellectual Property Organisation (WIPO) to develop systems for the protection of traditional knowledge is highly inappropriate. WIPO should work to stop biopiracy that occurs because of biodiversity patents, and not to define the rights of the communities which should be done by the communities themselves.

Over time, it can be seen that indigenous people appears to increasingly consider the intellectual property system as an inappropriate and ineffective means by which to protect their interests. We believe that this attitude can be partly explained by the divergences in views on property as between Westerners and indigenous peoples.

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[109] The *Mataatua Declaration on Cultural and Intellectual Property Rights of Indigenous Peoples*, First International Conference on the Cultural & Intellectual Property Rights of Indigenous Peoples, Whakatana, Aotearoa, New Zealand, 12 - 18 June 1993.
[110] As an example: *COICA Statement*, *supra* note 9.
[111] Ibid.
[112] Ibid. no 2 Basic points of Agreement.
[113] Ibid. no 8 Basic points of Agreement.

4. Property in Indigenous Knowledge

The utilization of indigenous knowledge for commercial benefits without compensation to the peoples from which it is taken raises the important question of ownership. As pointed out by Ruiz, director of the *Biodiversity Program of the Sociedad Peruana de Derecho Ambiental*, the question of ownership as regards indigenous knowledge is probably the most difficult question faced by experts and indigenous peoples when conceptualizing mechanisms to protect it.[114] This question is not only complex but is also of great importance when addressing the situation of indigenous knowledge in international intellectual property law. A clear answer is, however, not given by the actual doctrine on the subject.

(a) Indigenous Peoples and Property Rights

Among scholars, there is a widespread idea that the concepts of property rights are alien to indigenous societies.[115] However, Dutfield clarifies the situation by saying that if "[m]any traditional communities have a strong sharing ethos, (...) this does not mean that everything is shared with everybody."[116] According to him, almost each indigenous collectivity adheres to its own specific system of property.[117] As pointed out by the Canadian Four Direction Council, each indigenous community also has its particular way to consider and attribute property for knowledge:

> 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 rights and responsibilities which

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[114] Ruiz, *supra* note 43.
[115] G. Dutfield, "The Public and Private Domains: Intellectual Property Right in Traditional Ecological Knowledge", (1999) Electronic journal of Intellectual Property Rights, WP 03/99. Online: Oxford Intellectual Property Research Centre <http://www.oiprc.ox.ac.uk/EJWP0399.html > (last visited: January 24, 2003) [hereinafter "Public and Private Domains"].
[116] *Ibid.*
[117] *Ibid.*

> attach to possessing knowledge, all of which are embedded uniquely in each culture and its language.[118]

It would therefore seem inexact to presume that intellectual property rights, as other property rights, are entirely unfamiliar concepts in indigenous society.[119] However, there is not only one kind of "aboriginal" or "indigenous intellectual property" since there is not a common generic system of collective intellectual rights.[120]

Even if the expression of the collective nature is different from one indigenous community to another, communality generally characterizes indigenous people's ownership.[121] Therefore, there is no particular individual to which the property rights are vested.[122] This makes the situation of indigenous knowledge particularly complex, complexity that is even more accentuated by the fact that the act of creation is also characterized by communality.[123] There is thus a difficulty to identify when the invention has been made and by whom.

Moreover, as pointed out by Dutfield, "a great deal of traditional knowledge cannot be traced to a specific community or geographical area."[124] In short, as mentioned in the Report by the UK Commission on Intellectual Property Rights, the stake in such a situation is not a simple resource that is owned by someone in particular, but more the very heritage of one or more communities.[125]

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[118] Four Directions Council Forests, "Indigenous Peoples and Biodiversity: Contribution of the Four Directions Council", Submission to the Secretariat for the Convention on Biological Diversity, 1996. Cited by Dutfield, "Public and Private Domains", *supra* note 115.

[119] In fact, some anthropological reviews give interesting examples where knowledge is considered as property in different indigenous culture. "Public and Private Domains", *supra* note 115, citing T, 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 Right, Oxford University). As an example, the Miskito healers of Nicaragua value their cures as private property; P.A. Dennis, "Herbal Medicine among the Miskito of Eastern Nicaragua", (1988) 42 Econ. Botany. 16.

[120] *Ibid.*

[121] As explained by Maffi, ownership is "communal", "where communal may refer to collective entities of various sorts, from a whole community to a lineage or other kin group" Maffi, *supra* note 80, at 415.

[122] *Ibid.*

[123] *Supra* page 16; 30.

[124] Dutfield, "Public and Private Domains", *supra* note 115.

[125] "Integrating Intellectual Property Rights", *supra* note 7, at 94.

Among indigenous peoples, knowledge is generally considered to be part of the intellectual commons and is reserved from private appropriation by any individual.[126] Dutfield adds that in many traditional societies, knowledge holders "have permanent responsibilities with respect to the use of knowledge irrespective of whether the knowledge in question is secret, is known to just a few people, or is known to thousands of people throughout the world."[127]

It would therefore seem that indigenous people's notion of intellectual commons differs from the notion of the public domain adopted by Western societies in their intellectual property system.[128] Indigenous communities provide access to information based on a different model. Indeed, in Western's societies, the intellectual public domain is defined as a common of all the ideas that are free for people to take and use. They no longer, or have never had an owner. It has been qualified by some authors as a "free for all" and as representing the intellectual equivalent of air, water and light in the sense that anybody that has access to the resource can use them. [129] However, as pointed out by Drahos, there are other models of community.[130]

Based on the work of Pufendorf and Grotius, Peter Drahos argues that there are four types of communities and that access to information in a community is constructed around one of these categories.[131] Firstly, the community can be positive or negative. The positive community is one where the commons are jointly owned by a certain group.[132] Things in positive community "differ from things owned, only in the respect that the latter belong to one person while the former belong to several in the same manner."[133] Positive community presupposes the exclusion of others from the common things.[134]

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[126] Maffi, *supra* note 80, at 415.
[127] Dutfield, "diplomacy and policy formulation", *supra* note 64, at 15.
[128] Maffi, *supra* note 80, at 415.
[129] *Ibid.*
[130] P. Drahos, "Indigenous Knowledge and the Duties of Intellectual Property Owners" (1997) 11 I. P. J. 179.
[131] Drahos, *supra* note 130, at 180.
[132] *Ibid.* at 184.
[133] *Ibid.* Citing S. Pufendorf, *De Jure Naturae et Gentium Libri Octo* (1672), (New York: London, 1964).
[134] Drahos, *supra* note 130, at 184.

The negative community has been described as a "community of all things."[135] The commons are open to everybody. Secondly, the community can be inclusive or exclusive. It is inclusive when there is only one group (humanity) and exclusive when the group is smaller than all the humanity.[136]

When considering indigenous knowledge, Drahos concludes that "indigenous peoples have evolved in more complex structures in the regulation of the commons than western societies and that the different types of community are simultaneously used as frames of reference."[137] Therefore, some knowledge may be open to all (inclusive community) when other types of knowledge are for the use of individual community members or only a part of it (exclusive community). This exclusive community is "more limited in the membership then the public at large" and has been qualified by Carol Rose as a "limited common"[138] According to her, they "may be commons on the inside, but they are property on the outside" (e.g. vis-à-vis non-members).[139]

In short, if we apply this latter theory to the public domain and the limited commons, we can reach a conclusion that puts into evidence the difference in the treatment that is accorded to information. The western notion of the public domain, where no person has a right to exclude anyone else from using the information because "all users are equally privileged to use it,"[140] seems to be included in the vision of a negative community. On the other hand, the limited commons generally adopted by indigenous peoples refers to a positive community. Moreover, while the notion of our intellectual property public domain is inclusive, the notion of indigenous commons is inclusive or exclusive

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[135] Drahos, *supra* note 130, at 184.
[136] *Ibid.* at 185.
[137] *Ibid.* at 186. However the author admits that it is "a broad generalization which would require a lot of anthropological work in order to assess its truth."
[138] C. Rose, "The Comedy of the Commons: Custom, Commerce, and Inherently Public Property", (1986) 53 U. Chi. L. Rev. 711; "The Several Futures of Property: Of Cyberspace and Folk Tales, Emission Trades and Ecosystems", (1998) 83 Minn. L. Rev. 129, at 144, [hereinafter "The Several Futures of Property]; "Romans, Roads, and Romantic Creators: Traditions of Public Property in the Information Age", Paper presented at the Duke Conference on the Public Domain, online: Duke Law School <http://www.law.duke.edu/pd/papers/rose.pdf> (last visited February 23, 2003).
[139] Rose, "The Several Futures of Property", *supra* note 138, at 144.
[140] Y. Benkler, "Free as the Air to Common use: First Amendment Constraints on Enclosure of the Public Domain", (1999) 74 N.Y.U. L. Rev. 354, at 360.

depending on the community and the knowledge concerned. This difference is not without consequences. In fact, due to some particularities, limited commons may be problematic as regards western tradition:

> Many of these limited commons are held together by custom rather than private "constitutions." Their membership may be defined on amorphous ex post criteria such as residence or informal acceptance by existing members, and their practices and goals, if definable at all, may be subject to subtle shifts and redirections. These features mean that they often modify the traditional trappings of individual property. Perhaps because of these modifications of the traditional trappings of property, the western legal tradition has historically had a certain cultural myopia about the many non-individual forms of property in the limited commons. That is, many limited common property regimes do not look like property at all to us, and we have tended to ignore them.[141]

The situation is even more problematic in the case of certain communities, especially the indigenous communities:

> The most difficult of these limited common property regimes are those whose memberships are less definite, and whose goals may shift, such as ecosystems managed by indigenous groups. Like folklore or the progressive artworks in cyberspace, these common resources are works in progress, and the participants who shape them are not entirely specifiable; indeed, the memberships are more akin to family or political communities than to such explicitly consensual communities as condominiums. Establishing limited common property regimes for such participants is a much trickier enterprise.[142]

What are the consequences of these divergences? First, the subjects at hand are intellectual assets that can be used indifferently by many persons at the same time without depriving anybody else of using it. Therefore, if indigenous peoples consider that

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[141] Rose, "The Several Futures of Property", *supra* note 138, at 140.

[142] Rose, "The Several Futures of Property", *supra* note 138, at 179. She also mentions that it is however not without precedent in the common law. "British customary law recognized evolving limited common property rights in communities well into the nineteenth century; those communities (but not outsiders) enjoyed rights to such various economic and recreational uses of land, and they were expected to govern their own behavior through reasonable community norms."

a form of knowledge is jointly owned by all (positive community) and that this "all" includes the humanity in its entirety (inclusive community), the result, while different, is not too far from it is with the notion of public domain (inclusive negative community). Indeed, the intellectual asset is at least open to all even if it is subjected to some limits.

We believe that more important problems arise when indigenous peoples consider their knowledge as being owned by the members of the community, or a part of it, while excluding from the property the rest of the humanity. In order to coherently expose the problematic, assume, as an example, that an Andean indigenous community has, over time, developed a deep knowledge of curative plants. Among this group, the knowledge is considered as property and is owned by all of the community. What occurs in the event that Western countries consider this knowledge to be a part of the public domain?

Drahos explains that the coexistence of different property arrangement relating to the intellectual commons has been possible because intellectual property is regulated on a territorial basis. Gradually, this coexistence of different property arrangements has been rendered even more complex by the advent of the international harmonization of standards; a trend that began in Europe at the end of the 19th century with the formation of the Union for the protection of industrial property and reached its "zenith"[143] with the signature of the TRIPS Agreement on April 15, 1994.[144]

To a certain extent, this globalization of intellectual property has had a weakening effect on the principle of territoriality.[145] In fact, globalization is often understood as a process

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[143] D.E. Long "Globalization: A Future Trend or a Satisfying Mirage?", (2001) 49 J. Copyright Soc'y. U.S.A. 313, at 349. The author argue that if TRIPs truly represented the zenith of harmonization, its terms and conditions would not be the subject of so much debate: " If so many countries want to re-make the deal, can TRIPs really be considered an example of IP harmonization? Or is it closer to the gunboat diplomacy of the nineteenth century when western countries sought to impose their civilization on the "barbaric peoples" of the world? Just as economic globalization has faltered in the face of cultural and ethnic clashes, so too has its IPR counterpart. The previously described debate over the protection of traditional knowledge that has driven the international IP community in recent years is only one example of cultural and political clashes that threaten the forces of harmonization."

[144] Drahos, *supra* note 130, at 187. At page 188, the author mentions that "the dominant feature of each period relates to the territorial reach that intellectual property law gives to an owner of intellectual property."

[145] At least in relation to property according to Drahos, *supra* note 130, at 188.

of denationalization.[146] Since standards for the protection of intellectual property are mandatory, member states are required to enact them. The problem remains that "the range of regulatory standards which states are obliged to implement increases and those standards are characterized by a greater specificity."[147] For instance, states have now less discretion to determine the criteria of patentability.[148] In short, it means that under the TRIPS, while states still have the power to implement national policies,[149] they also have more new constraints that are due to the imposition, for instance, of minimum standards.

For our Andean community, such trends may mean that, in practice, their knowledge is considered to be a part of the public domain as regards its Western definition and can be freely used even if it is not used in accordance with their view of property. It is a situation in which a simple application of the law of the strongest seems to prevail.

More precisely, if clashes as to the notion of property were not a major concern in a world where indigenous societies were able to live without external contact with the outside world, the situation does become more complex at the age of the "global village".[150] Moreover, since the rights of indigenous people are often dealt with by states whose economic power pales when compared to those of the U.S. and the EC, western states are well positioned to dominate any negotiations and to impose their vision upon other states. Therefore, how indigenous knowledge is considered in the Western World remains an important question. Are indigenous culture penalized by globalization and harmonization? Do they have intellectual property rights on "their" ideas?

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[146] J. Delbruck, "Prospects for a "World (internal) Law?": Legal Developments in a Changing International System", (2002) 9 Ind. J. Global Legal Stud. 401, at 409.

[147] *Ibid.* Drahos, *supra* note 130, at 188. Drahos gives the example of trade secret protection which was "not explicitly mentioned in the Paris Convention, becomes an explicit regulatory standard of protection to which states which sign the TRIPS Agreement have to adhere."

[148] Under the Paris Convention they were free to do so. Drahos, *supra* note 130, at 189.

[149] J.H. Reichman, "From Free Riders to Fair Followers: Global Competition under the TRIPS Agreement", (1997) 29 N.Y.U. J. Int'l L. & Pol. 11. "Even with regard to traditional objects of intellectual property protection, notably patentable inventions and copyrightable literary and artistic works, the TRIPS Agreement leaves developing countries ample "wiggle room" in which to implement national policies favoring the public interest in free competition."

[150] Expression of the Canadian communication thinker Marshall McLuhan. "War and peace in the global village; an inventory of some of the current spastic situations that could be eliminated by more feed forward." (New York: McGraw-Hill, 1968).

b) Introduction to the Status of Indigenous Knowledge in the Western World

Since ideas are an important source of wealth in the Western world, it is of uttermost importance to identify their owners. It is probably one of the reasons as to why the question of who owns ideas, or, more particularly, whether or not ideas should be owned, has been the subject of many discussions.[151]

In general, information cannot be appropriated. As expressed by Professor Samuelson, "the law generally has not been receptive to "information as property claims.""[152] Therefore, protection by intellectual property is strongly dependant on the will of the state. In fact, it is the state, by means of legislation, which determines what kind of information is included or excluded from the regime of property.[153]

On the other hand, as stated in the *Convention Establishing the World Intellectual Property Organization* (WIPO),[154] the term "intellectual property" is broader then the

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[151] For instance, Lawrence Lessig, in *The Future of Ideas*, discuss about control and property in ideas that are on the internet. L. Lessig, *The future of Ideas*, (New-York: Vintage Books, 2002).

[152] P. Samuelson, "Information as property: Do Ruckelshaus and Carpenter Signal a Changing Direction in Intellectual Property Law?", (1989) 38 Cath. U. L. Rev. 365, at 367. However, seventy years ago, the Supreme Court of United States in the International *News Service v. Associated Press* has ruled, in a dispute over the right of a news service to appropriate news from the subscribers of a rival service, that the news was the property of the gatherer. It has been qualified over the time as an unfair competition case. *Ibid* at 368; also J. Hugues, "The Philosophy of Intellectual Property", (1988) 77 Georg. L. J. 287, at 292 and 306. At 365-366, Samuelson also mentions that "[i]nformed by the Enlightenment tradition that influenced the drafters of the United States Constitution, American intellectual property law has generally resisted regarding information as something in which its discoverer or possessor can have a property interest. Trade secret law has long afforded remedies to the possessor of secret information against those who use improper means to obtain the secret and those who disclose it in violation of confidential relationships, but the law has, in general resisted characterizing the secret itself as property. (...) Patent law also places information concerning a patented invention in the public domain as soon as the patent issues. A patent merely restricts certain uses of information, for example in manufacturing the invention, and then only for limited times. Free dissemination of information, rather than its restriction through property rights, consistently has been the goal of the federal intellectual property law regime."

[153] K. Yelpaala, "Symposium: Biotechnology and the Law: Owning the Secret of Life: Biotechnology and Property Rights Revisited", (2000) 32 McGeorge L. Rev. 111, at 113. However, this fact becomes less accurate with the harmonization effectuated by the TRIPS agreement, an agreement that imposed a standard of minimal protection to all member countries, thereby reducing their sovereignty.

[154] 14 July 1967, amended in 28 September 1979, WIPO Publication No. 250(E).

existing categories of intellectual property and allows, to a certain extent, the recognition of *sui generis* regimes or customary form of protection.[155]

In short, intellectual property is the property that is created or recognized by existing legal regimes (copyright, patent, trademark, trade secret) or similar regimes.[156] When no protection is accorded by intellectual property under state auspices, the information is not removed from the public domain and can be used freely by the public.

As it is not the object of a customary or a *sui generis* form of protection, indigenous knowledge related to biological resources has been, for a long time, collected under the principle of common heritage.[157] Indeed, indigenous knowledge is often inevitably seen as being part of the public domain.

For instance, two political philosophers consider that indigenous knowledge cannot be protected by intellectual property laws because the knowledge does not imply a single act of creation. They state that the reason why indigenous knowledge should be protected, while other works that are part of the public domain are not, cannot be justified.[158]

Oksaken has also reached the same conclusion, adding that "the relationship between indigenous knowledge and protected knowledge is like the relationship between Homer's Odysseys and Joyce's Ulysseus: anyone capable of using indigenous knowledge may use it."[159]

However, this position remains controversial because, according to Dutfield, only knowledge that is widely distributed can be considered as a part of the public domain,

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[155] *Convention Establishing the World Intellectual Property Organization* (WIPO), Article 2. Definition of "Intellectual property"; Hugues, *supra* note 152, at 292.
[156] Hugues, *supra* note 152, at 292.
[157] S. Brush, "Bioprospecting the public domain", (1999) 14 Cultural Anthropology (no 4) 535, at 539.
[158] Dutfield, "Public and Private Domains", *supra* note 115; A. Stenson and T. Gray, "Cultural Communities and Intellectual Property Rights in Plant Genetic Resources", in T. Hayward and J. O'Neill (eds.), *Justice, Property and the Environment: Social and Legal Perspectives*, (Asgate Publishing, Aldershot and Brookfield, 1997), at 178-193.
[159] M. Oksaken, "Authorship, Communities and Intellectual Property Rights", online: <http://www.indiana.edu/~iascp/Drafts/oksanen.pdf> (last visited: January 25, 2003), at 11.

while indigenous peoples can claim rights on more localized knowledge that is held by a small number of people.[160] It is certainly true that indigenous peoples have more chances to protect their knowledge in this latter situation. However, it is not obvious that this can be achieved under the current regime of intellectual property. To determine this, it is important to analyze the present status of indigenous knowledge in intellectual property law. The possibility of granting both defensive[161] and positive[162] protection will be analyzed.

[160] "Public and Private Domains", *supra* note 115.
[161] It represents the measures ensuring that other parties do not obtain IP rights over already known knowledge.
[162] Utilization of the existing legal mechanisms offered by the regime of intellectual property law or a *sui generis* system to acquire intellectual property rights.

Chapter 2: Actual Treatment Given to Indigenous Knowledge

1. International framework

In order to effectively determine if the present regime of intellectual property law could be use as a tool to protect (defensive and offensive protection) indigenous medicinal knowledge, it is pertinent to analyze the existing international framework. In fact, an international recognition would indisputably be the strongest protection, this protection not relying on each independent state's regulation. Instead, this would guarantee a uniform protection of the knowledge in each country. We will concentrate our study of the position of indigenous knowledge in international intellectual property law on the CBD and the TRIPS, which are the two of the main conventions that could possibly have an effect on medicinal indigenous knowledge.

a) Convention on Biological Diversity

(i) Interests of the Parties and Goals of the Convention

Concluded in Rio de Janeiro in 1992 and ratified by 187 countries around the globe,[163] the CBD aims to conserve biological diversity and to foster sustainable development.[164] However, as a means to reach those latter goals, the Convention incidentally touches the question of indigenous intellectual property rights. For that reason, as well as for some others, this agreement has been seen as an "historic milestone"[165] and a step to achieve

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[163] The United States still haven't ratified the treaty, online: Convention on Biological Diversity <http://www.biodiv.org/world/parties.asp> (last visited: January 8, 2003).
[164] Fecteau, *supra* note 87, at 82.
[165] S. Patel, "Can the Intellectual Property System Serve the Interests of Indigenous Knowledge?", in Brush, *supra* note 23, at 316.

the preservation of biodiversity and indigenous knowledge. More precisely, it contains the most direct references on the subject at hand.[166]

During the negotiation of this convention, which was primarily an attempt to harmonize the North-South interests,[167] two major types of positions were adopted. First, the developed countries seemed to expect developing countries to protect their biodiversity but were reluctant to give the former significant economic benefits for so doing. Moreover, Western countries wanted the access to biological resources to be as unrestricted as possible. [168]

On the other hand, developing countries were increasingly realizing the value of their resources but did not have the tools to be able to exploit it. As a result, those countries wanted to regulate access to their biological resources and related knowledge and to receive benefits for granting this access. [169]

The parties tried to agree on an acceptable convention for the governments of biodiversity-rich countries, mainly developing countries, as for the biodiversity-poor countries, mainly industrialized countries.[170] This is reflected in the major objectives of the CBD as stated in its Article 1:

> (...) the conservation of biological diversity, the sustainable use of its components and fair and equitable sharing of the benefits arising out of the utilization of genetic resources, including by appropriate access to the genetic resources and by appropriate transfer of relevant technologies, taking into account all rights over those resources and technologies, and by appropriate funding.

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[166] Shelton, *supra* note 31, at 81.
[167] M. Blakeney, "Ethnobiological knowledge and the Intellectual Property Rights of Indigenous Peoples in Australia", in Blakeney, *supra* note 33, at 87. According to him, this is reflected in the requirement of "ensuring appropriate access to genetic resources and by appropriate transfer of relevant technologies, taking into account all rights over those resources and to technologies by appropriate funding."
[168] G. Dutfield, "Intellectual Property Rights, Trade and Biodiversity", (London: Earthscan Publications, 2000), at 33. [Hereinafter "Trade and Biodiversity"].
[169] *Ibid.*
[170] *Ibid.* at 32.

To achieve those goals, the Convention recognizes, for the first time in an international treaty, the importance of the contribution of indigenous communities to the preservation of knowledge that is related to biodiversity.[171]

In fact, the recognition of indigenous knowledge in Article 8 of the Convention is an incentive to continue to preserve their biodiversity, preservation being the main goal of the Convention. As noted by Professor Coombe, "[t]he CBD embraces the idea that traditional indigenous technique and knowledge are essential to the preservation of biodiversity and sustainable development."[172] Therefore, paragraph (j) of this article provides that each contracting party must:

> Subject to its national legislation, respect, preserve and maintain knowledge, innovations and practices of indigenous and local communities embodying traditional lifestyles relevant for the conservation and sustainable use of biological diversity and promote 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.

It is reinforced by other provisions of the Convention.[173] However, as we will discuss it, even if indigenous knowledge is thereby recognized, the protection that it is accorded by the CBD is weak in many aspects.

(ii) Application of the CBD to Indigenous Medicinal Knowledge

At the outset, it is important to determine the applicability of the CBD to indigenous medicinal knowledge. At first sight, a major limitation as regards the latter could be the fact that the protection accorded by the Convention addresses only the knowledge "*relevant to the preservation of biological diversity.*" In the preamble of the Convention,

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[171] Fecteau, *supra* note 87, at 82.
[172] R. Coombe, "Symposium: Sovereignty and the Globalization of Intellectual Property: Intellectual Property, Human Rights & Sovereignty: New Dilemmas in International Law Posed by the Recognition of Indigenous Knowledge and the Conservation of Biodiversity", (1998) 6 Ind. J. Global. Leg. Stud. 59, at 92.
[173] Section 10 (c) and 18.4 of the CBD.

the contracting parties also express the desire to equitably share the benefits that arise from the use of traditional knowledge "*relevant to the conservation of biological diversity*". The same wording is used in Article 8 (j) and 16.

In Article 2 (1) of the Convention, "*biological diversity*" is defined as "the variability among living organisms from all sources including, *inter alia*, terrestrial, marine and other aquatic ecosystem and the ecological complexes of which they are part." Thus, would medicinal knowledge be related to the conservation of biological diversity as defined in Article 2? In fact, the scope of the CBD is not that clear.

If we consider the wording that is used in the Convention, we would definitely have to interpret the different dispositions as limiting to the protection of knowledge relating to biodiversity. The main problem is that the Convention itself is not clear about the type of knowledge that could be classified as being related to biodiversity and it is not evident that medicinal knowledge could be considered to be part of the said category.

However, the Conference of the Parties (COP) on the Convention on Biological Diversity had appointed the *Subsidiary Body on Scientific, Technical and Technological Advice* (SBSTTA) to identify the "innovative, efficient and state-of-the-art technologies and know-how relating to the conservation and sustainable use of biological diversity."[174] The SBSTTA then created an indicative list of technologies that were recognized as being for sustainable use of biological diversity and its components. Traditional medicine is classified as being part of this category and is, therefore, more likely to be covered by the Convention.[175]

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[174] First Meeting of the Subsidiary Body on Scientific, Technical and Technological Advice, Draft provisional agenda, Annex to the Decision I/7, "Subsidiary Body on Scientific, Technical and Technological Advice" UNEP/CBD/COP/1/17. The SBSTTA is a body that has been established to provide recommendations.

[175] Report of the The Open-ended Intergovernmental Meeting of Scientific Experts on Biological Diversity, Annexe V, II.1 (e). See also: "Knowledge, Innovations and Practices of Indigenous and Local Communities", Subsidiary Body on scientific, technical and technological advice, UNEP/CBD/SBSTTA/2/7, 10 august 1996.

The knowledge that could be related to biodiversity, as seen by the parties to the Convention, is quite wide. It can be explained by the fact that the Convention's main goal is to foster the preservation of biodiversity. It was thus important to recognize the contribution of indigenous peoples as much as possible in such a way that it would help them to maintain their community and, consequently, reach the goal of maintaining the biodiversity. In other words, it seems to be understood by the parties that the loss of stewards could mean the definite loss of the resources.

Since the fight led by indigenous peoples is not limited to the preservation of biological diversity but can also been seen as a struggle for their very survival, it was necessary to protect indigenous knowledge as much as possible, thereby protecting indigenous peoples themselves. In this way, we are consequently fostering the conservation of biological diversity.[176] Professor Coombe expresses it clearly:

> The recognition of indigenous peoples' knowledge and its role in the conservation and sustainable use of biological resources corresponds to the complementary recognition that the preservation of biodiversity and the preservation of cultural diversity are integrally related [177]

In that sense, the objectives of the Convention are interrelated.

(iii) Overview of the Pertinent Provisions

The consequence of the intertwining of the objectives is that the CBD has to be seen as a whole, which implies that articles that concern indigenous knowledge cannot be analyzed separately. Thus, it is pertinent to briefly examine the Convention before concentrating on our subject of study.

An important principle of the CBD is one that is enunciated in both Articles 3 and 15. These provisions recognize the sovereignty of the States over their own genetic

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[176] As noted by Coombe, *supra* note 172, at 90, "we cannot expect to conserve biodiversity by keeping people poor."
[177] *Ibid.*

resources.[178] The Convention also gives States the authority to determine the access accorded to it. Accordingly, when this access is granted, it will be subject to terms that have been mutually agreed upon.[179] Therefore, and with the arrival of the CBD, the biological diversity of developing countries would no longer be easily or freely used against their will. They should, in principle, be able to be compensated for the utilization of their resources.[180]

At the present, few countries have already enacted legislation that confirms their sovereignty over their resources.[181] According to Dutfield, the exercise of such rights, more then fostering the conservation of their resources, will also help them to capture benefits arising from their utilization.[182] The *Merck-InBio* bioprospecting agreement is a clear example by which that opportunity was exploited. Thus, with the advent of the CBD, the utilization of the resources can be better regulated by the state. How about the utilization of indigenous knowledge?

Although it is not obvious at first sight, article 15 is also pertinent as regards the protection of indigenous knowledge. Indeed, the *Report of the Workshop on Traditional Knowledge and Biological Diversity* states that "given the connections between genetic resources and local and indigenous knowledge and innovations (...), it is important that Article 8(j) is implemented in conjunction with Article 15. For example, procedures of prior informed consent as required in Article 15.5 might also provide that access seekers must obtain the informed consent, the approval, of local and indigenous communities."[183]

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[178] The biological resources are no longer considered as the "common heritage of mankind" but instead as a common concern. Direction de la politique de la propriété intellectuelle, « La Convention sur la diversité biologique, les droits de propriété intellectuelle et la propriété des ressources génétiques : Evolution internationale », 1998, (part 2.2), online : Strategis Canada <http://strategis.ic.gc.ca/SSGF/ip00011f.html> (last visited : February 23, 2003).

[179] Art. 15(4) CBD.

[180] E.J. Asebey, J.D. Kempenaar, "Biodiversity Prospecting: Fulfilling the Mandate of the Biodiversity Convention", (1995) 28 Vand. J. Transnat'l L. 703, at 715.

[181] Dutfield, "Trade and Biodiversity", *supra* note 168, at 38. For instance: Ecuador, Philippines and Costa Rica.

[182] *Ibid.*

[183] Traditional Knowledge and Biological Diversity, Workshop on Traditional Knowledge and Biological Diversity, Madrid, Spain, 24 to 28 November 1997, UNEP/CBD/TKBD/1/2; UNEP/CBD/WG8J/1/2, 10 January 2000 [hereinafter: "Workshop on Traditional Knowledge"] ; Posey, *supra* note 49, at 390.

Article 8(j) emphasizes the requirement of prior informed consent for the notion of access to indigenous knowledge by indicating that "the wider application of indigenous and local communities' knowledge, innovation and practices (...) should only occur with the approval and involvement of its holders." Thus, consent, which also includes a right of refusal,[184] should be given by a representative of the indigenous community. Additionally, The new *Bonn guidelines* that were approved by decision VI/24 of the COP of the CBD in The Hague, 2002, specify that "where traditional knowledge associated with (...) genetic resources is being accessed, the prior informed consent of indigenous and local communities and the approval and involvement of the holders of traditional knowledge, innovations and practices should be obtained, in accordance with their traditional practices, national access policies and subject to domestic laws." [185]

Prior informed consent has been defined as "consent to an activity that is given after receiving full disclosure regarding the reasons for the activity, the specific procedures the activity would entail, the potential risks involved, and the full implications that can realistically be foreseen."[186] However, the Convention does not specify the kind of information that must be given in order for consent to be "informed,"[187] leaving a definitional void.

Concerning the right to compensation for the use of knowledge, article 8 (j) contains the clearest reference to this right. It is subsequently reinforced by articles 10(c), 17.2 and 18.4, which also contain references to indigenous communities. According to one interpretation of this disposition, holders clearly have rights over their knowledge even if they can or cannot have them be upheld through the existing regime of intellectual property rights. For instance, Dutfield believes that "[if] they are not capable of being protected by the existing IPR system, there is still an obligation for governments to safeguard these entitlements either through a new IPR law or by other legal or policy

[184] Coombe, *supra* note 172, at 102.
[185] Conference of the Parties on the Convention on Biological Diversity, Decision VI/24, "Access and benefit-sharing as related to genetic resources", Part A. "Bonn Guidelines on Access to Genetic Resources and Fair and Equitable Sharing of the Benefits Arising out of their Utilization", online: Convention on Biological Diversity <http://www.biodiv.org/ > (last visited: February 23, 2003), guideline no 31.
[186] "Workshop on Traditional Knowledge", *supra* note 183.
[187] Ragavan, *supra* note 101, at 33.

measure."[188] On the other hand, other authors seem to emphasize more on the fact that it does not explicitly recognize any right of compensation in favour of indigenous peoples.[189]

As for intellectual property rights, paragraph 5 of Article 16 is the only one that clearly alludes to it:

> The Contracting Parties, recognizing that patents and other intellectual property rights may have an influence on the implementation of this Convention, shall cooperate in this regard subject to national legislation and international law in order to ensure that such rights are supportive of and do not run counter to its objectives.

(iv) Strengths and Weaknesses of the Convention on Biological Diversity

Far from being the perfect tool for the protection of indigenous knowledge, the CBD is, however, considered as a step forward in its recognition. The value of this knowledge for indigenous communities themselves and for all others is explicitly admitted. Finally, the necessity of sharing the benefits that result from its exploitation is enounced.[190] If the Convention establishes the foundations for a regime that could result in the effective protection indigenous medicinal knowledge, the completion of the "structure" that will be built upon them is far from being achieved.

The principal problem that remains concerning the notion of indigenous knowledge is that the Convention raises the possibility of creating a specific protection for indigenous

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[188] Dutfield, "Trade and Biodiversity", *supra* note 168, at 35. According to him, this is reinforced by Article 18.4. He takes as an argument the fact that the word "holders' is use. According to him it "may not imply ownership but minimally suggests the existence of legal entitlement" He later continues saying that government have "at the very least a moral obligation (...) to safeguard those entitlements. Dutfield, "Threats and opportunities", *supra* note 99.

[189] Shelton, *supra* note 31, at 83.

[190] Halewood, *supra* note 21, at 975.

peoples when those rights are not specifically provided for anywhere else. The "how to do it" is nothing but missing.[191]

For example, the contracting parties recognized, in article 16(5), that "patents and other intellectual property rights may have an influence on the implementation of the Convention." Thus, it would seem that the Convention relies, to a certain extent, on existing intellectual property rights in order to insure the application of some of the enunciated principles, such as the sharing of benefits. However, as it will be demonstrated in a latter section, the actual intellectual property system does not grant positive rights to indigenous knowledge, nor does it insure the sharing of benefits.

The Convention does not insure in one way or another, the giving of compensation to indigenous knowledge holders.[192] On that point, Moran resumed the situation in this way:

> The biodiversity Convention, which formalize the sovereignty of nations over their biodiversity, merely "encourage" equitable sharing of benefits arising from traditional knowledge, innovations and practices. The Convention does not, in its framework stage, establish mechanisms to operationalize and accomplish this equitability. [193]

Moreover, it has been argued that the Convention does not involve the communities as to its application, but rather counts on the local government. For instance, the most important measure for benefit sharing, article 8 (j), is applicable, but only subject to the national legislation of each party. Thus, the various dispositions could be interpreted restrictively and the protection of indigenous knowledge would be more or less left to the discretion of each state. [194]

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[191] Halewood, *supra* note 21, at 977.
[192] Jacoby, Weiss, *supra* note 93, at 90; Mugabe, *supra* note 44, at 18.
[193] Moran, *supra* note 26, at 253.
[194] M. Blakeney, "The International Framework of Access to Plant Genetic Resources" in M. Blakeney, *supra* note 33, at 9.

The language utilized in the convention facilitates the exercise of this discretion.[195] It is not likely that a party will feel bound by any elaborated provision that use wordings such as "subject to national legislation", "as far as possible" and "as appropriate."

This is one of the main reasons why certain authors have criticized the power that is given to governments by the Convention; they believe that the goal of this international instrument has not been reached as, instead of being exploited by prospectors, indigenous peoples are now, under the CBD, being exploited by their own governments. Examples of this exploitation are the agreements that are being concluded between governments and foreign researchers which do not provide for any compensation in favor of indigenous peoples. According to the authors, the result of this is that the situation remains static and indigenous communities are still exploited.[196] The position of indigenous peoples regarding this situation is resumed by the anthropologist Posey:

> While indigenous peoples might be flattered with the recognition of their relevance *in situ* conservation, they are hardly convinced that the governments that have tried so hard to destroy them and their habitats are now suddenly going to zealously defend their rights. They are also not convinced that – given their negative experiences in the past – any "equitable sharing" will ever trickle down to the source of both the knowledge and resource, i.e., their communities.[197]

For indigenous peoples, the Convention is not really more then a "sovereignty grab by nation states over all biological and ecological resources." [198]

The concept of prior informed consent that is embedded in the CBD could have prevented those situations in which knowledge was obtained without the consent of indigenous peoples. However, the CBD does not provide any measure for cases in which

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[195] Mugabe, *supra* note 44, at 18.
[196] Fecteau, *supra* note 87, at 82-83.
[197] D.A. Posey, "Biodiversity, genetic resources and Indigenous peoples in Amazonia: (re) discovering the wealth of traditional resources of native Amazonians", document prepared for Amazonia 2000: Development, Environment, and geopolitics, online: University of Brithish Colombia <http://www.ubcic.bc.ca/docs/Posey_Biodiversity.pdf> (last visited: February 24, 2003).
[198] *Ibid.*

information is not acquired with "prior informed consent."[199] It thus does not constitute an important deterrent.

This problem is not limited to the application of the norm of prior informed consent. As noted by Bhutani and Kothari, "the absence of an enforcement mechanism within the CBD frustrates efforts to ensure compliance. The lack of a means by which countries can be compelled to fulfill their treaty obligations is a fundamental handicap of the treaty."[200]

Additionally, the interpretation given to the CBD has, according to some authors, engendered a new trend: biofraud.[201] As explained by Peña Neira, "this concept is used to qualify contracts allowing the possibility of extracting natural genetic resources without paying the real costs of the transaction to all the stakeholders involved."[202] This concept can also be applied in circumstances where indigenous knowledge is involved.

The *Novartis-Bioamazonia* case is an example in which biofraud was alleged. In this case, Brazil NGOs, indigenous populations and scientific communities accused pharmaceutical Swiss multinational *Novartis*[203] of biofraud, even it had agreed to pay royalties in accordance to the provisions of its contract with *Bioamazonia*, the institution that was charged to administer Brazilian genetic resources. The reason of this accusation is that the royalty rate was, according to the government of Brazil, excessively low. [204]

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[199] Ragavan, *supra* note 101, at 33.

[200] S. Bhutani, A. Kothari, "Symposium The Biodiversity Rights of Developing Nations: a Perspective From India", (2002) 32 Golden Gate U. L. Rev. 587, at 603.

[201] J.H. Vogel, "Sovereignty as a Trojan Horse: How the Convention on Biological Diversity Morphs Biopiracy into Biofraud", in file with the author. [hereinafter "Trojan Horse"]; S. Peña-Neira, C. Dieperink and H. Addink, "Equitably Sharing Benefits from the Utilization of Natural Genetic Resources: The Brazilian Interpretation of the Convention on Biological Diversity, vol. 6.3 Electronic Journal of Comparative Law, (October 2002), online: <http://www.ejcl.org/63/art63-2.html> (last visited: February 24, 2003) (Document presented at the 6th Conference of the Parties of the Convention on Biological Diversity held in the Hague, Netherlands, on 19 April 2002).

[202] Peña-Neira et al, *supra* note 201.

[203] Issue from the merger of Ciba-Geigy and Sandoz (1996).

[204] Peña-Neira et al, *supra* note 201. Mention that "the amount of money (250 Swiss Francs) *Novartis* had to pay in exchange for a single compound and the percentage of the royalties from new inventions the company had to pay to *Bioamazonia* were said to be very low. Actually, 250 Swiss Francs was no more than the Brazilian annual minimum salary. Moreover, only *Bioamazonia* would receive payments. No money would go to the indigenous people: they would be contributors only."

According to the contract concluded between *Bioamazonia* and *Novartis*, the pharmaceutical company was to investigate the characteristics of original compounds with the help of indigenous knowledge associated with these compounds. The contract, to which the indigenous peoples were not a party, did not contain provisions protecting indigenous knowledge. For these reasons, indigenous peoples were shocked and claimed their rightful benefits in the eventuality that their knowledge would generate financial gains.[205]

As a consequence of the controversy, new negotiations between *Bioamazonia* and *Novartis* began. The original contract was modified so that *Novartis* would accept to invest an extra 2.5 million Swiss Francs in the project.[206] However, this situation clearly demonstrates that the concept of "equitable benefit sharing" can be interpretable in a broad manner. More importantly, it shows that indigenous populations are at the mercy of the decisions of governments. It is not quite clear who acted fraudulently in the above case: *Bioamazonia*, who freely accepted a low royalty rate without any advantage to indigenous peoples or *Novartis*, which tried to negotiate the best deal for itself? The third alternative is that there is no one to blame.

In fact, it is not clear as to what exactly drove *Bioamazonia* to accept the first contract. Since price wars are another possible consequence of the CBD,[207] this could explain the low rate that was first negotiated. However, it does not explain why the interests of indigenous peoples were ignored.

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[205] Peña-Neira et al, *supra* note 201.

[206] *Ibid.*

[207] Vogel, "Trojan Horse", *supra* note 201. According to him, it is why a biodiversity cartel must be put in place: "In light of the fact that the biotechnology industry is highly competitive, one expects each firm will shop around to get the best deal. Economic theory implies that a price war will ensue not only among communities but also among countries as each tries to capture the same MTA offered by any particular firm. To prevent the bidding from spiraling downward to ever lower prices, all communities and countries which could have supplied the same information contained in a given MTA should agree as to the price of access and the distribution of revenues."

Finally, the fact that an important leader in biotechnology,[208] the United States of America, has not ratified the Convention does limit the benefits that this Convention could have generated. Vogel believes that this non-ratification can "pose a monumental threat to benefit sharing."[209]

For these reasons, the CBD has not significantly improved the current situation for indigenous knowledge. This fact has been admitted by parties to the Convention. Indeed, at the *Workshop on Traditional Knowledge and Biological Diversity* held in Madrid in 1997, a consensus was achieved regarding Article 8(j) of the CBD and the fact that it did not provide a sufficient legal basis for protecting indigenous knowledge.[210] In 1998, the Secretariat of the Convention even admitted that "best practices with regard to all aspects of the implementation of article 8 (j)" are still unclear.[211]

Five years later, after many consultations, discussions, working groups and few a decisions adopted by the Conference of the Parties, the situation has not significantly changed and the implementation problems of article 8(j) remain. The CBD is still considered to be nothing else then a good "starting point" in the recognition of indigenous knowledge. As we will now consider, the TRIPS Agreement does not reinforce the effect of the CBD.

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[208] J.H. Vogel, "The Successful Use of Economic Instruments to Foster Sustainable Use of Biodiversity: Six Case Studies from Latin America and the Caribbean", Biopolicy Journal, vol. 2, Paper 5, online: Pontificia Universidad Catolica del Ecuador, <http://www.puce.edu.ec/Investigacion/fatima/Whitep.htm> (last visited: February 24, 2003).

[209] Vogel, "Trojan Horse", *supra* note 201. At least in regard with the utilization of biologic resources: "The non ratification of the CBD poses a monumental threat to benefit sharing worldwide when secondary compounds are pandemic and found somewhere within the US jurisdiction. Genes in the U.S. are still *res nullius,* the property of nobody (...) Consider the extent of biological diversity that falls under the jurisdiction of the US but is part of larger ecosystems that falls under the jurisdiction of CBD ratified countries: Hawaii, Guam, and Samoa (ecosystems similar to those found in the jurisdictions of South Pacific Island nations), Alaska (Canada and Russia), (...) Puerto Rico (Latin America nations, *ex situ* gene banks, botanical and zoological gardens, and possibly even US embassy grounds. (...) Industry can presently enjoy free access to much of the biological diversity of the world by bioprospecting within US territory" However, we think it is less true concerning the knowledge.

[210] "Workshop on Traditional Knowledge", *supra* note 183.

[211] Executive Secretary, Secretariat of the Convention on Biological Diversity, "Implementation of Article 8 (j) and Related Provisions, 2 February 1998, UNEP/CBD/COP/4/10; cited in Halewood, *supra* note 21, at 976.

b) Agreement on Trade Related Aspects of Intellectual Property Rights (TRIPS)

(i) Background

Introduced under the auspices of the World Trade Organization (WTO)[212] and, more precisely, within the framework of the Uruguay Round of Multinational Trade Negotiation, the TRIPS is recognized as the key agreement for the harmonization of national intellectual property rights regimes.[213] It is seen as the most significant advance in the protection of international intellectual property since the adoption of the Berne and Paris Conventions at the WIPO.[214] The TRIPS Agreement established minimum standards of protection to be provided by contracting parties. These standards were largely inspired from the norms that existed at the time of the negotiations in certain developed countries. It is important to first examine the context of the negotiations in order to achieve a better understanding of the actual position of developing countries and their indigenous populations as well as the possibility for these peoples to be protected by the TRIPS international system in the future.

First, developing countries were hesitating to accept the establishment of new intellectual property standards within the GATT framework.[215] In fact, many countries only accepted

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[212] The Uruguay Round Agreements established the World Trade Organization, thereby replacing the General Agreement on Tariffs and Trade (GATT). The WTO assumes GATT's role of negotiating international trade agreements but also provides a forum within which to resolve trade disputes arising under those agreements. S. Holwick, "Trade and Environment: Developing Nations and the Agreement on Trade-Related Aspects of Intellectual Property Rights", (1999) Colo. J. Int'l Envt'l. L. Y. B. 49.

[213] Dutfield, "Trade and Biodiversity", *supra* note 168, at 15.

[214] Or simply as the "most ambitious international intellectual property convention ever attempted." John E. Guist, "Noncompliance with TRIPs by Developed and Developing Countries: Is TRIPs Working?", (1997) 8 Ind. Int''l & Comp. L. Rev. 69, at 69; A. I. Hasson, "Domestic Implementation of International Obligations: The Quest for World Patent Law Harmonization", (2002) 25 B. C. Int'l & Comp. L. Rev. 373, at 374.

[215] Some countries, mostly the one with weak intellectual property systems, did not want to negotiate in the context of the GATT because that meant to engage in linkage bargaining. Linkage-bargain diplomacy theory is defined by Petherbridge as a "theory of trade negotiation that suggests the key to reaching an agreement is getting the correct mix of issues into negotiation. In other words, issues previously unrelated may be linked for the purpose of bargaining. L. Petherbridge, "Intelligent TRIPS Implementation: a Strategy for Countries on the Cusp of Development" 22 U. Pa. J. Int'l Econ. Law 1029, at 1031. Of course, developing countries preferred to negotiate in the WIPO framework because it provided one-nation, one-vote decision-making. "Since more than half of the members were considered developing countries, and developing countries typically viewed strong intellectual property policies as contrary to their interests, it

after the continuous insistence and pressure from certain countries, particularly the United States who had been initially driven by the idea of using a linking bargaining strategy[216] as a means to get more from developing countries in intellectual property matters. This is explained by Yusuf:

> There was an assumption that, unlike WIPO negotiations where countries had to consider only the direct arguments for and against higher standards of protection, the GATT negotiations would force developing countries to look into what they could gain in other fields (eg. Agriculture, textiles, tropical products) by offering concessions on IPRs.[217]

At that time, the question of intellectual property protection was becoming increasingly important for developed countries because of rapid developments in technology. In fact, before the adoption of the TRIPS, only a few provisions of the GATT[218] could be linked to intellectual property. Many contracting parties also began to have concerns related to trade and intellectual property rights. For instance, the increase of trade in counterfeit and pirated goods became problematic. Consequently, countries asked for the establishment of new international norms to remedy this situation, thereby protecting their economy and answer to the needs of their companies. However, other parties, mostly developing countries fearing the over-protection of intellectual property rights and its consequences (e.g. possible impediments to the transfer of technology and increase in the cost) were quite reticent about the scope of such an agreement.[219]

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appeared unlikely substantive affirmative changes in international intellectual law could be achieved in WIPO" Also D. Gervais, *The TRIPS Agreement Drafting history and Analysis*, (London: Sweet & Mawell, 1998).

[216] *Ibid.*

[217] C. M. Correa, and A. Yusuf, *Intellectual Property and International Trade: the TRIPs agreement*, (London; Boston: Kluwer Law International, 1998), at 8.

[218] In fact, prior to the Uruguay Round, the GATT did not cover patent law, V. Tejera, "Tripping Over Property Rights: Is it Possible to Reconcile the Convention on Biological Diversity with Article 27 of the TRIPs Agreement", (1999) 33 New Eng. L. Rev. 967, at 975.

[219] Gervais, *supra* note 215, at 13.

Because of several factors, mostly political pressures,[220] and after many years of tight negotiations,[221] the TRIPS came into effect on January 1st 1995. The agreement reflects the many concerns previously enunciated in this thesis. As stated in its preamble, the objectives of the TRIPS are to "reduce distortions and impediments to international trade, taking into account the need to promote effective and adequate protection of intellectual property rights and ensure that measures and procedure to enforce intellectual property rights do not themselves become barriers to legitimate trade."

Inevitably, such an agreement has raised questions as to the scope of protection offered by intellectual property rights, a scope that represents a long-standing divergence for developed and developing countries. Because of its goals and nature, this kind of agreement had been conceived to better answer the needs of industrialized countries. At the very least, this is the impression of developing countries that have historically seen the implementation of a strong intellectual property system as benefiting the countries exporting products protected by this system, such as pharmaceuticals, while precluding other countries from having access to new technologies.[222] Even the United States, in their early years, refused to respect the intellectual property rights of residents of other countries.[223] This phenomenon is well explained by an author:

> At a stage when the technological capacity of a particular country is weak, and its enterprises are not able to take significant advantage of the incentive provided by intellectual property protection, the benefits gained from such protection (...) may be outweighed by the disadvantage of not being able

[220] As an example, the US adopted Section 301 of the Omnibus Trade and Competitive Act in 1988 which required the U.S. Trade representatives to review annually the intellectual property regimes of the U.S. trading partners and to dress a " watch list" when it is not satisfactory. To be included on this list meant that the country had to enter in bilateral discussions with the United States and failure to achieve resolution trough those discussions can result in sanctions against the nation. This aggressive measure has been maintained throughout the eight years of the Uruguay Round as an incentive to continue the negotiations Petherbridge, *supra* note 211 at, 1030. In 1989, United States put Brazil on this "Priority Watch List" thereby provoking this country to make an effort to improve the intellectual property protection. Rodriguez Stevenson, *supra* note 38, at 1129.

[221] See Stewart, T. P. (ed.), *The GATT Uruguay Round, A Negotiating history (1986-1992)* (Kluwer, Deventer, 1993).

[222] K.W. McCabe, "The January 1999 Review of Article 27 of the TRIPS Agreement: Diverging Views of Developed and Developing Countries toward the Patentability of Biotechnology", (1998) 6 J. Intel. Prop. L. 41, at 53.

[223] Correa and Yusuf, *supra* note 217, at 4.

> to acquire and adapt foreign technology without reference to its creator or to import new products and processes from alternative or cheaper sources. [224]

Interests of developing and developed countries are obviously opposed when it comes to the protection of intellectual property. Many examples of this opposition surfaced during the negotiations of the TRIPS. For instance, while industrialized countries and the United States in particular wanted to impose a minimum term of protection of twenty years from the filing date and expand the definition of "patentable subject matter", developing countries wanted to narrow it down and to shorten the time of protection.[225]

The fact that developing countries have to model their own laws on the existing regimes of developed countries in order to create an exhaustive intellectual property system is one of the most problematic points of the TRIPS.[226] Even if they do not need to apply a particular regime, because they can be country specific, developing countries have to comply with the minimum standards set up in Parts II and III of the Agreement. This could become very demanding for some countries that have not yet developed a consistent intellectual property regime.

For example, some countries did not have any patent protection for pharmaceutical products before the Agreement.[227] With article 27(1) of the TRIPS, they have now to grant a certain protection to this category of invention.[228] They do, however, have a delay

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[224] Correa and Yusuf, *supra* note 217, at 4.
[225] McCabe, *supra* note 222, at 43.
[226] L. Sarma, "Biopiracy: Twentieth Century Imperialism in the Form of International Agreements", 13 Temp. Int'l & Comp. L. J. 107, at 126-127.
[227] P. Thorpe, "Study on the Implementation of the TRIPS Agreement by Developing Countries", Commission on Intellectual Property Rigths, Study Paper no 7, online: Intellectual Property Rights Commission, <http://www.iprcommission.org/papers/pdfs/study_papers/sp7_thorpe_study.pdf> (last visited: February 24, 2003). Very few developing countries are still denying patent protection for pharmaceutical products. All but three of the 30 Least Developed Countries (LDC) in Africa are already providing patent for such products despite not having to do so until 2016 at the earliest.
[228] "Subject to the provisions of paragraph 2 and 3 patents shall be available for any inventions whether products or processes in all fields of technology, provided that they are new, involve an inventive step and are capable of industrial application."

of ten years to implement the said provisions and, in the case of pharmaceutical products, the transition period had been extended in June 2002 under article 66.1. [229]

Developing countries did not really have the choice to accept the TRIPS Agreement even if they could be disadvantaged by it. Indeed, they were under political pressure due to the linking strategy utilized by developed countries and the economic consequences of a refusal were too important. In short, the disadvantaged countries accepted an agreement which would better protect the intellectual property rights of the developed countries around the world, all the while possibly reducing their own access to new technologies. As said in a communiqué addressed to the *Council for Trade-Related Aspects of Intellectual Property Rights* by India, "obligations for developing countries under this Agreement are onerous."[230] What do developing countries get in exchange? What are the consequences of the TRIPS for medicinal indigenous knowledge?

(ii) Protection of Indigenous Knowledge Trough TRIPS

Considering the context of negotiations, it is not surprising to see that the TRIPS Agreement is silent as it concerns indigenous knowledge and its protection. Even if its protection is not incompatible with the objectives of the TRIPS, it is not afforded by the agreement. In fact, indigenous knowledge was not even an issue during the Uruguay Round. It did become an issue in 1995 during a meeting of the *Council on Trade and*

[229] Indeed, the Council for TRIPS has decided that "least-developed country Members will not be obliged, with respect to pharmaceuticals products, to implement or apply Sections 5 and 7 of Part II of the TRIPS Agreement or to enforce rights provided for under these Sections until January 1st 2016." See IP/C/25 (1 July 2002) "Extension of the transition period under article 66.1 of the TRIPS Agreement for least-developed country for certain obligations with respect to pharmaceutical products." This decision formalizes part of paragraph 7 of the Doha Declaration adopted on 14 November 2001: " We agree that the least developed country members will not be obliged with respect to pharmaceutical products to implement or apply Section 5 and 7 of part II of the TRIPS Agreement (...) until 1 January 2016." Developed countries had to accept that in order not to be accused to give more importance to trade than to public health.

[230] Council for Trade-Related Aspects of Intellectual Property Rights - Communication from India IP/C/W/196, 12 July 2000.

Environment.[231] This "omission" is another reason for many developing countries to be dissatisfied with the TRIPS.[232]

The question that remains to be answered at this time concerns the possible effects of such an omission. This absence of protection is differently interpreted by authors and member countries of the WTO. Some believe that indigenous knowledge cannot be really protected, the TRIPS being in opposition with the CBD, while others are able to see several possibilities for its protection. Thus, the TRIPS does not directly protect indigenous knowledge but does it indirectly preclude any protection?

One of the possibilities for protecting indigenous knowledge, according to Graham Dutfield, could be the substance of Article 1 which provides that "members may, but shall not be obliged to implement in their domestic law more extensive protection than is required by the Agreement, provided that such protection does not contravene the provision of the Agreement". Dutfield thinks that Article 1 "makes clear that whilst members are required to implement the provisions of TRIPS, more extensive protection and enforcement of IPRs are not precluded. Therefore the absence of (...) traditional knowledge does not disallow a member from enacting legislation to protect such a category of knowledge."[233] The main limitation to this is that WTO members are not obliged to enforce rights protected by other countries when they go beyond the minimum standards of the TRIPS.[234]

In other words, Article 1 of the TRIPS could enable a country to adopt legislation that would protect indigenous knowledge although this legislation would still remain a regional level solution and would not give traditional knowledge holders the legal right to enforce their rights outside their own countries.[235] This could only be done through the

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[231] Dutfield, "TRIPS-Related Aspects of Traditional Knowledge", 33 Case W. Res. J. Int'l L. 233, at 269.
[232] *Ibid.* at 237.
[233] Dutfield, "Trade and Biodiversity", *supra* note 168, at 17.
[234] *Ibid.* at 19.
[235] WTO, Council for Trade-Related Aspects of Intellectual Property Rights, "Review of the Provisions of Article 27.3 (b)" (3 November 1999), WTO Doc. IP/C/W/165, online: WTO < http://docsonline.wto.org>; WTO, Committee on Trade and Environment, "Report of the Meeting Held on 13-14 February 2001" (30 March 2001), WTO Doc. WT/CTE/M/26, online: WTO <http://docsonline.wto.org>.

conclusion of an international treaty that would consecrate recognition of indigenous knowledge.

The strongest critique currently addressed to the TRIPS Agreement as regards indigenous knowledge is its possible opposition to the CBD. Since the question has been raised by many member countries, the relationship between the CBD and the TRIPS has been tackled by the Council for Trade-Related Aspects of Intellectual Property Rights.[236] This relationship has become an important subject of discussion within the context of the review of article 27.3(b).[237] The positions of member states concerning the relationship between the TRIPS Agreement and the CBD divide into three distinct categories. A first group argues that there is no conflict between the two and that no changes need to be effected. A second group advances that there is an inherent conflict between the two agreements. Finally, a third group is of the opinion that there is no inherent conflict between both instruments but that there does exist a potentiality of one occurring, the potentiality being enough to demonstrate the need for international action.

First, the member States that do not notice any conflict between the CBD and the TRIPS argue that both agreements have different objectives and do not address the same subject matter.[238] According to them, the regime of the TRIPS does not, in any way, prevent compliance with the provisions of the CBD. As such, they believe that no change is required to either agreement in order to accommodate the implementation of the other and, furthermore, that implementation of each agreement should be pursued in separate frameworks. For instance, United States of America believes that "the provision of

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[236] Among other things, this later is responsible for "(i) monitoring the operation of TRIPS, and in particular members' compliance; (ii) affording members the opportunity to consult on matters relating to trade-related IPRS." (Article 68 of the TRIPS Agreement)

[237] And, to a much lesser extent in the context of the review of article 71.1. WTO, Council for Trade-Related Aspects of Intellectual Property Rights, "The Relationship between the TRIPS Agreement and the Convention on Biological Diversity Summary of Issue Raised and Points Made", (8 August 2002) WTO Doc. IP/C/W/368, online: WTO < http://docsonline.wto.org>.

[238] WTO, Council for Trade-Related Aspects of Intellectual Property Rights, "The Relationship between the TRIPS Agreement and the Convention on Biological Diversity", (13 June 2001), WTO Doc. IP/C/W/254, online: WTO < http://docsonline.wto.org> at par. 6; Council for Trade-Related Aspects of Intellectual Property Rights - Minutes of Meeting - Held in the Centre William Rappard from 2 to 5 April 2001, IP/C/M/30, at par. 143. (This argument has been given by many other members: Japan IP/C/M/26, par.77, IP/C/M/25, par. 93, Norway IP/C/M/32, par. 125, United States IP/C/W/209, IP/C/W/162).

Article 8(j) of the CBD and the provisions of the TRIPS Agreement, when appropriately implemented , are (...) mutually supportive."[239]

In their opinion, organized databases of knowledge, innovations and practices should be accessible over the internet. This would provide a source of information for patent examiners, ensuring that inventions for which a patent is granted are really new.[240] In short, they think that indigenous peoples have to publish their knowledge in order to protect it. However, it is difficult to see how the creation of such databases could have the effect of insuring benefit sharing between pharmaceutical companies and indigenous peoples. Indeed, it only precludes the patenting of indigenous knowledge already in the public domain.

In addition, many concerns have been expressed about such a project. In fact, some indigenous peoples fear that the compilation of their knowledge makes it more vulnerable to patenting by bioprospectors.[241] The solution proposed by the United States is seen as a definite threat by some indigenous peoples.

Secondly, the opinion of the member states of the European Community (EC) is, in some points, similar to Dutfield's. The EC admits that there is an area of interconnection between intellectual property rights and biodiversity-related matters and that "the implementation of patent regulation may have an effect on the implementation of the CBD."[242] However, according to them, "from a legal perspective, the CBD and the TRIPS Agreement do not conflict with each other."[243] They also argue that both treaties do not explicitly mention that it is subject to the other. Moreover they do not expressly refer to each other.

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[239] WTO, Council for Trade-Related Aspects of Intellectual Property Rights, "Communication from the United States", (13 June 2001), WTO Doc. IP/C/W/257.
[240] *Ibid.*
[241] As explained by Maffi, *supra* note 80, this can be partly explained by the fact that copyright law does not ensure protection of ideas. See her paper for other reasons given by indigenous to be concerned by compilations of their knowledge.
[242] IP/C/W/254, *supra* note 238, at par. 14.
[243] *Ibid.* at par. 4.

The major link between both agreements is Article 16(5) which says that intellectual property, the subject matter of the TRIPS, may have an influence on the implementation of the CBD. After taking this into account, the EC concluded that "there is nothing in the provisions of either agreement that would prevent a state from fulfilling its obligation under both"[244] and that "although the TRIPS Agreement does not contain provisions on the protection of traditional knowledge, it does not prevent states from enacting sui generis protection system for traditional knowledge."[245]

According to them, the provisions of the TRIPS are neutral in terms of their impact on the objectives of the CBD and the fact that the TRIPS grants patent rights over inventions that use genetic material does not prevent compliance with the provisions of the CBD.

The EC does admit, however, that there is considerable interaction between the two agreements and recognizes a need to develop an international model for the legal protection of traditional knowledge which would help to determine how, and to what extent, the protection of traditional knowledge can be included in the TRIPS Agreement. According to Linarelli, such a position "is a way to deflect developing countries away from seeking amendments to TRIPS."[246]

Finally, some countries believe that there is a marked incompatibility between the provisions of the TRIPS and the CBD. They argue that the TRIPS has limited the capacity of member states to grant protection to indigenous knowledge and that it is therefore impossible to reach the goals formulated in the CBD. However, the *Committee on Trade and Environment* seems to have rejected this argument by saying "that new forms of protection adapted to the particular circumstances of local and indigenous communities do not fall within the purview of TRIPS since they were not discussed during the negotiations."[247]

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[244] IP/C/W/254, *supra* note 238, at par. 4
[245] *Ibid.*
[246] J. Linarelli, "Trade-Related Aspects of Intellectual Property Rights and Biotechnology: European Aspects", (2002) 6 Singapore J. Int'l & Comp. L. 408, at 427.
[247] Coombe, *supra* note 172, at 91.

Despite this, countries like Brazil, China, Cuba, the Dominican Republic, Ecuador, India, Pakistan, Thailand, Venezuela, Zambia and Zimbabwe believe that the TRIPS has to be changed to be supportive of, and to ensure it will not run counter to, the objectives of the CBD.[248] They denounce the fact that (1) there are no provisions preventing biopiracy acts, (2) nothing ensures the prior informed consent of the rights holder and (3) nothing allows a member's claim to enforce its national regimes for fair and equitable sharing of benefits.[249] They also think that the TRIPS should be amended so that its members require that an applicant for a patent relating to traditional knowledge provide, as a condition to acquiring patent rights, the following information:

(i) Disclosure of the source and country of origin of the biological resource and of the traditional knowledge used in the invention;

(ii) Evidence of prior informed consent through approval of authorities under the relevant national regimes; and

(iii) Evidence of fair and equitable sharing under the national regime of the country of origin.[250]

According to the proponents of this approach, the failure to provide a solution that would ensure a mutually supportive relationship between the TRIPS and the CBD may become detrimental to the objectives of both instruments. They suggest making amendments to TRIPS in order to accommodate some essential elements of the CBD.[251] Since it is a question of adding conditions of patentability, it would clearly contribute to the application of the principles of the CBD (particularly prior informed consent and benefit sharing). However, it is unlikely to happen in a near future since powerful members, like

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[248] WTO, Council for Trade-Related Aspects of Intellectual Property Rights, "The Relationship between the TRIPS Agreement and the Convention on Biological Diversity and the Protection of Traditional Knowledge" (24 June 2002), WTO Doc. IP/C/W/356, online: WTO < http://docsonline.wto.org>.
[249] *Ibid.*
[250] IP/C/W/356, *supra* note 248.
[251] Ibid.

the United States, do not seem to have the will to recognize any rights to holders of indigenous knowledge.

2. Indigenous Knowledge and Existing Intellectual Property Rights

a) National Sui Generis Regimes and Constitutional recognitions

Realizing that international protection could be long in being developed, some countries have chosen to implement a national *sui generis* regime or to recognize constitutional rights to indigenous knowledge in order to protect this knowledge.

As an example, the Philippines enacted *The Indigenous Peoples Rights Act*[252] which recognizes the property rights of indigenous knowledge holders. Section 34 of this Act stipulates that indigenous peoples:

> are entitled to the recognition of the full ownership and control end protection of their cultural and intellectual rights. They shall have the right to special measures to control, develop and protect their sciences, technologies and cultural manifestations, including human and other genetic resources, seeds, including derivatives of these resources, traditional medicines and hearth practices, vital medicinal plants, animals and minerals, indigenous knowledge systems and practices, knowledge of the properties of fauna and flora, oral traditions, literature, designs, and visual and performing arts.

Similarly, Costa Rica, in Article 82 of the *Biodiversity Law*[253] recognized *sui generis* community intellectual rights:

> The State expressly recognizes and protects, under the common denomination of sui generis community intellectual rights, the knowledge, practices and innovations of indigenous peoples and local communities related to the use of components of biodiversity and associated knowledge. This right exists and is legally recognized by the mere existence of the cultural practice or knowledge related to genetic resources and biochemicals; it does not require prior

[252] *The Indigenous Peoples Rights Act*, 1997; Correa, *supra* note 11, at 12.
[253] Biodiversity Law (No. 7788), May 27, 1998

> declaration, explicit recognition or official registration; therefore it can include practices which in the future acquire such status.
>
> This recognition implies that no form of intellectual or industrial property rights protection regulated in this chapter, in special laws and in international law shall affect such historic practices.

In addition, the information related to the origin of the genetic resource and proof of prior informed consent given by governmental authorities and indigenous knowledge holders must, to a certain degree, be joined to the patent application.[254] Such a requirement seems to fail to comply with the standards established by the TRIPS Agreement. According to Pires de Carvalho:

> The problem is that to require that patent applicants identify the source of genetic resources and give evidence of prior informed consent as conditions of patentability conflicts with the TRIPS Agreement. First, in the Agreement the conditions of patentability are limited to novelty, inventiveness, and industrial applicability. Second, the disclosure requirements are limited to the obligations established by article 29. Third, it is not reasonable under article 62 to impose the Requirement. Finally, the patent may not be revoked on the grounds that the Requirement has not been met.[255]

Professor Coombe disagrees with this position:

> Under the TRIPs Agreement, member states continue to have jurisdiction to determine the novelty of an innovation. There is no uniform definition of the term, as the evolving jurisprudence in member states attests. A state party to the CBD would be within its rights to require disclosure of the origins of genetic resources as a means of enabling its examiners to evaluate the novelty of the claimed invention. If we recall the presumption under the Convention that when genetic resources are obtained in an area inhabited by indigenous communities, traditional knowledge will also be presumed to have been obtained, then we can understand the disclosure requirement to serve as a means of alerting patent examiners to the probable existence of relevant

[254] N. Pires de Carvalho, "Requiring Disclosure of the Origin of Genetic Resources and Prior Informed Consent in Patent Applications Without Infringing the TRIPs Agreement: The Problem and the Solution", (2000) 2 Wash. U. J. of L. & Pol'y 371, at 376.
[255] Pires de Carvalho, *supra* note 254, at 389.

> prior art. The publication of such disclosures would also enable member states, NGOs, and indigenous peoples to more easily locate those who should be engaged in appropriate access and benefit-sharing practices. [256]

If incorporating this kind of requirement into the TRIPS Agreement could be a possible solution, it is quite improbable that it could be done on a short time basis.[257] However, such a requirement would only have a positive economic effect if a patent is filed in a country that has established the same requirement. Therefore, it is not surprising that the ultimate goal of developing biodiversity-rich countries is still to establish the requirement as a condition of enforceability of patent rights in an international treaty.[258]

In South America, the Andean Community Commission (Bolivia, Colombia, Ecuador, Peru, Venezuela), in its Decision No 391[259] of 1996 has also recognized rights, to indigenous knowledge holders. More precisely, Article 7 states:

> The Member Countries, in keeping with this Decision and their complementary national legislation, recognize and value the rights and the authority of the native, Afro-American and local communities to decide about their know-how, innovations and traditional practices associated with genetic resources and their by-products.

To comply with this decision, Bolivia and Colombia have undergone a process of internal consultations in order to propose ways of protecting indigenous practices. As for Peru, the country has enforced, on the 10th of August 2002, Law No. 27811 that provides a regulatory framework through which indigenous peoples can assert their rights over collectively-held knowledge related to biological diversity. [260] This law obliges interested

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[256] R. Coombe, "The Recognition of Indigenous Peoples' and Community Traditional Knowledge in International Law", (2001) 14 St. Thomas L. Rev. 275, at 282.
[257] Pires de Carvalho, *supra* note 254, at 389.
[258] Pires de Carvalho, *supra* note 254, at 390.
[259] Decision 391, "Common Regime on Access to Genetic Resources", 2 July 1996, online: Foreign Trade Information System <http://www.sice.oas.org/trade/JUNAC/decisiones/DEC391e.asp> (last visited: February 24, 2003).
[260] "It is limited to knowledge held collectively, i.e. knowledge that belongs to the community as a whole rather than the individuals who are part of it by both the communities' representative organization and the interested party." (Article 10) M. Ruiz., I. Lapeña, "New Peruvian Law Protects Indigenous Peoples' Collective Knowledge", in Bridges. Online: ICSTD

parties to obtain the prior informed consent of communities providing biodiversity-related knowledge. Furthermore, it imposes the obligation of presenting a license when applying for a patent. Lastly, it creates the Funds for the Development of Indigenous Peoples.[261] In the case of Ecuador, Section 377 of the *Ecuadorian Intellectual property Law*[262] provides that a *sui generis* system be established concerning the collective intellectual rights of various ethnic groups and local communities. However, mechanisms for the protection or valuation of these rights are subject to a special law that will be enacted at a later date. No law has been yet enacted in this respect.[263]

In the same vein, Venezuela and Ecuador have recently recognized, in their Constitution,[264] several rights of indigenous peoples to the affirmation and the protection of their knowledge. As an example, the *Constitution of the Bolivarian Republic of Venezuela*, at Article 124[265] states that the collective intellectual property of technical knowledge and indigenous innovations are guaranteed and protected.

In 1999, Portugal has also established a *sui generis* regime which covers the knowledge associated with plant genetic resources.[266] Thailand has been even more specific and

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<http://www.ictsd.org/iprsonline/ictsd/docs/RuizLapenaBridgesYear6N6Sept2002.pdf> (last visited February 12, 2003).

[261] *Ibid.*

[262] *Ley de propiedad intellectual*, Registro official No 320, 19-V-98.

[263] Thanks are owed to Javier Andrade for having giving us this information.

[264] Ecuador's constitution of 1998 recognizes the collective rights for indigenous communities to the ownership of their ancestral knowledge. (*Constitution of Ecuador*, 1998), online: Inter-American Development Bank, <http://www.iadb.org/sds/soc/publication/gen_546_2107_e.htm>_ (last visited, January 11, 2003).

[265] *Constitución de la República Bolivariana de Venezuela*, 1999 "Artículo 124. Se garantiza y protege la propiedad intelectual colectiva de los conocimientos, tecnologías e innovaciones de los pueblos indígenas. Toda actividad relacionada con los recursos genéticos y los conocimientos asociados a los mismos perseguirán beneficios colectivos. Se prohíbe el registro de patentes sobre estos recursos y conocimientos ancestrales. "

[266] Decree Law No 118/2002, April 20, 2002, published in the Journal of the Republic on April 20, 2002. C. McManis, "Intellectual Property, Genetic Resources and Traditional Knowledge Protection: Thinking Globally, Acting Locally", unpublished manuscript, in file with the author.

enacted a law that only protects traditional medicinal knowledge.[267] Finally, other countries are now studying the possibility of enacting *sui generis* legislations.[268]

These systems are quite new and their efficiency cannot be effectively questioned at this time. If efficiently applied they should have the effect of protecting either negatively and/or positively, indigenous knowledge at the national level. However, Canada and the United States, as many other countries, have not yet protected intellectual property rights in indigenous knowledge within their constitutions or through *sui generis* systems. It is therefore pertinent to analyze the possibilities offered by the common regime of intellectual property rights.

b) Indigenous Knowledge as a Patentable Matter

In searching for a regime that is capable of protecting indigenous medicinal knowledge, scholars have mainly focused on patent law that seems, at first glance, to be the more appropriate legal means by which to do so. However, as we will demonstrates, important obstacles remain and it is not likely that patent law alone can grant positive protection to indigenous knowledge.

As they accord a temporary exclusive right of exploitation or monopoly, patents are granted to inventors of new, useful (with industrial application) and non obvious inventions.[269] These criteria all have to be analyzed and applied in order to determine whether indigenous medicinal knowledge generally qualifies as a patentable matter.

The TRIPS patent requirements are similar to those found in the Canadian and American legislations. We will therefore limit our analysis of the situation of indigenous knowledge

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[267] *Traditional Medical Promotion and Protection Act*, 1999; WTO, Committee on Trade and Environment, "Report of the Meeting Held on 13-14 February 2001", (30 March 2001), WTO Doc. WT/CTE/M/26, online: WTO <http://docsonline.wto.org>.

[268] For instance, New-Zealand, Australia, India, Panama. UNEP, Convention on Biological Diversity, Groupe de travail ad hoc a composition non limitée sur l'accès et le partage, "Rapport sur le rôle des droits de propriété intellectuelle dans l'application des arrangements relatifs à l'accès et au partage des avantages", August 10, 2001, UNEP/CBD/WG- ABS /1/4.

[269] Article 27 (1) TRIPS.

under those three regimes and refer to concepts that are generally accepted in most countries with patent protection.

(i) Novelty Criterion and Indigenous Knowledge

The TRIPS Agreement, like Canadian and American patent legislation, requires that an invention be new, which means unknown or not having been yet used by anyone. [270] In fact, this is already implied in the concept of "invention."[271] However, the invention does not have to be absolutely new in the sense that nobody has ever thought of it before.[272] Novelty is to be appreciated in comparison to what was previously known in the relevant art at the time of the claim.

Indeed, novelty is determined within the notion of prior art,[273] the scope of which varies in both the American and Canadian law, the latter being more inclusive then the former. The TRIPS Agreement does not define novelty and member states are therefore relatively free to determine the content of prior art. This explains why Canada and the United States have different rules on that particular point.

In Canada, an invention is not patentable for lack of novelty if the subject matter has already been disclosed at the time of the claim. In that situation, it is considered as already available to the Canadian public and elsewhere.[274]

Prior to 1989, in Canada, printed publications and previous patents were the only elements that were considered when determining if an invention was anticipated. Since

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[270] TRIPS, Section 5, Article 27(1), Section 2, "invention", *Canadian Patent Act*, R.C.S. 1985, c. P-4.
[271] "Invention" being define as "the act or process of inventing", and "invent" as "to create or devise new ideas, machine, etc." in the Collins Concise Dictionary, fourth edition, 1999.
[272] D. Vaver, "Intellectual Property Law" (Concord: Irwin Law, 1997), at 131.
[273] Ruiz, *supra* note 43. "Prior art or the state of prior art usually refers to the complete body of knowledge which is available to the public before a patent application is filed or, if a priority date is claimed, before that priority date. Novelty is measured against the state of the art."
[274] Section 28.2 of *the Canadian Patent Act*. The term "anticipation" is often used in this context.

that time, any kind of activity counts as anticipation as long as the information can be considered available to the public. [275]

According to Professor Vaver, "disclosure may occur if the invention is shown off without any requirement of confidentiality, displayed in a public place (...) or even installed in one's house where guests can see it."[276] However, the information must give information significant enough to lead to the claimed invention.[277] As expressed by the Canadian Federal Court in *Voith,* the reference must contain "all of the information which, for practical purposes, is needed to produce the claimed invention without the exercise of any inventive skill."[278]

In the United States, the requirements of novelty are enounced in Section 102 of the *Patent Act*. An invention is not novel if:

> 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 (...) patented or described in a printed publication in this or a foreign country **or in public use or in sale in this country,** more then one year prior to the date of the application for patent in the US.[279] [Emphasis added]

In fact, the principal difference between the Canadian and the U.S. legislations, and it is an important one, is the scope of prior art when the disclosure occurs outside the country. Any disclosure to the public anywhere in the world by publication or other kind of activity can constitute prior art in Canada, while only patents and publications would be considered as such in the United States. The American patent system is, on this point, like the Canadian one prior to the 1989 reform.

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[275] Vaver, *supra* note 272, at 133.
[276] *Ibid,* at 132.
[277] *Ibid.*
[278] *J.M. Voith GmbH* v. *Beloit Corp* (1991), 36 CPR (3d) 322 (FCA).
[279] *U.S. Patent Law*, 35 U.S.C. 101.

This question of the scope of prior art is not without consequences for our subject. It has an important impact on indigenous knowledge and its negative protection. Indeed, a larger definition of prior art does not mean that indigenous knowledge can be patented. However, it certainly means that this knowledge cannot be patented by pharmaceutical companies or anybody else. If any disclosure around the world can constitute prior art and any activity qualifies as a disclosure, this knowledge is "old" or anticipated and cannot be considered as a patentable matter. This qualification therefore acts as a shield against patenting of indigenous knowledge by bioprospectors.

On the other hand, the novelty criterion is not favourable to the positive protection of indigenous knowledge. Since an inventor cannot apply retroactively for a patent when his invention is known, it makes it difficult for indigenous peoples to patent their knowledge. This can be explained by many factors.

First, if the information has been available to the public in a publication, it can no longer be patented. Therefore, the publication of knowledge, while constituting a means to avoid the appropriation of knowledge by bioprospectors, can also preclude its privatization through the patent regime. In fact, there is an important amount of published documentation on indigenous knowledge and an interdiction imposed by the Canadian and American legislation to grant a patent when the information was published more then a year before the application.[280] That could be another reason why indigenous peoples could not patent their knowledge. Indeed, when already subject of a publication, the information would be considered as already known and therefore not patentable.

Secondly, because of the previously enumerated characteristics of indigenous knowledge, proof of novelty could be a difficult burden for indigenous peoples. It would seem a paradox to evoke the novel character of information that has been transmitted generation after generation for many decades. This "invention" is likely to be considered as already available to the public.

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[280] See for instance Section 28.2 of the *Canadian Patent Act*.

Thirdly, the substance involved can also influence the patentability of the related knowledge. In fact, the patentability of the substance depends on its previous availability to the public in a pure form. More precisely, it is not possible to simply patent a "product of nature" because it is not considered as new. A substance that can be found in nature in its pure form cannot be patented. However, as explained by Yano, "even if the substance is available to the public, if either the pure form of the substance is unavailable or the identity of the substance was previously unknown, then the pure substance is considered novel."[281]

In the case of indigenous peoples, their medicinal knowledge generally implies natural products because substances are being directly utilized without any process of isolating, extracting or purifying the active substance. In fact, the preparation of many indigenous cures simply involves basic steps such as boiling the plant or making a poultice.[282]

More importantly, indigenous peoples do not generally know the active elements of the plant utilized because it is not needed in order to obtain the desired result. Therefore, they utilize diluted substances in opposition to pure substances.[283]

In practice, this means that indigenous peoples cannot patent their knowledge because it is not considered new. On the other hand, researchers utilizing this knowledge to identify specific part of the plant in which they can find, among other things, the substance to synthesize, the illness it will cure and the way to use it, are going to be granted a patent for having identified the active substance and having made it available in a pure form.

The *Hoodia case* that was previously mentioned is a good example of this situation. As emphasized by Dutfield, the CSIR has a legitimate claim according to the *European Patent Convention*'s standards since the *European Patent Office Guidelines for Examination* state that:

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[281] L.I. Yano, "Protection of the ethnobiological knowledge of Indigenous peoples", (1993) 41 U.C.L.A. L. Rev. 443, at 460.
[282] *Ibid.* at 459.
[283] *Ibid.* at 461.

> if a substance found in nature has first to be isolated from its surrounding and a process for obtaining it is developed, that process is patentable. Moreover, if the substance can be properly characterized either by its structure, by the process by which is it obtained or by other parameters ... and it is "new" in the absolute sense of having no previously recognized existence, then the substance per se may be patentable. [284]

Dutfield concludes that the principal reasons for the CSIR agreeing to the sharing of benefits with the Bushmen were to be just, as well as to put an end to the public controversy.[285] In strict law, the CSIR would have probably won.

The difficulty lies in the fact that the concept of what is "known" and what is "new" may vary according to different points of view. This has been well expressed by Lord Hoffman of the British House of Lords, in a 1995 patent case in which he used the example of quinine:

> 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? (...) 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

[284] Dutfield, "Diplomacy and Policy Formulation" *supra* note 64, at 24.
[285] *Ibid.*

> pills. And he certainly would not know about the artificially synthesized alkaloid.[286]

Thus, the notion of novelty is subjective. However, from the point of view adopted by various legislations, an important part of indigenous knowledge can generally not be considered as new even if indigenous peoples may considerate it to be so.

(ii) Non-Obviousness Requirement and Indigenous Knowledge

Novelty is not the only problematic criterion in the context of patenting indigenous knowledge. The situation of the latter is not ameliorated within the analysis of the non-obviousness criterion or "inventive step" in the case of the TRIPS.[287]

First, the test to be applied in order to determine the obvious character of an invention is whether a person skilled in the art would, with the prior art available, have seen it as being obvious. In other words, it is obvious if at any given time a person would have come to it without difficulty because it was the next logical step from prior art. [288] If the invention appears obvious to a person skilled in the art, the discovery is not patentable.[289] In Canada, it has been expressed in those words by the Federal Court of Appeal in *Beecham Canada Ltd v. Procter & Gamble Co:*

> The question to be answered is whether at the date of the invention... an unimaginative skilled technician, in light of his general knowledge and the literature and information on the subject available to him on that date, would have been led directly and without difficulty to [the] invention.[290]

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[286] *Merrell Dow v. HN Norton*, (1996) 33 I. P. R. 1, at 10. Cited by Dutfield, "Diplomacy and Policy formulation", *supra* note 64, at 26.
[287] Section 27 of the TRIPS.
[288] Vaver, supra note 272, at 136,
[289] Section 28.3 *Canadian Patent Act*; Section 103 *U.S. Patent Act.*
[290] (1982), 61 CPR (2d) 1, at 27.

It is not easy to decide on the non obviousness of indigenous knowledge because it is difficult to determine what the prior art might have been.[291] Indeed, in the case of knowledge handed down from generation to generation, the problem lies in the pinpointing of the exact moment of the invention and the content of the prior art at that time. Even if it can be done, the fact that this knowledge has been possessed for centuries may have the effect of rendering it obvious. [292]

We accept the certain logic in the qualification as to whether something that is handed down for generations is obvious. For instance, the successful claiming of the character novel of the utilization of cod liver oil, a product which was consumed by our mothers and grand-mothers to prevent infectious diseases, cannot be imagined. However, it may be more difficult to understand how pharmaceutical companies can use the same kind of knowledge and satisfy the non-obviousness requirement. This can be reasonably explained by several factors.

First, the question concerning the "products of nature" has again an influence on the result. Companies usually succeed in satisfying this requirement because they isolate the active chemical or conceive a derivative of the natural substance which has been previously utilized by indigenous peoples. They do not simply patent the actual knowledge.[293] More precisely, they do not claim as an invention something as it occurs in nature, which is already known by indigenous peoples, but rather extract compounds from nature and make them available for industrial utilization.

Secondly, the content of the prior art, at least in United States, is advantageous for pharmaceutical companies. Indeed, as we have previously mentioned, the prior art on which will rely the patent office does not include prior knowledge in a foreign country if it is not the object of a publication or a patent application. Knowledge of indigenous peoples from another country is therefore not covered by this notion if not published or patented.

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[291] Rodriguez Stevenson, *supra* note 38, at 1146.
[292] *Ibid.* at 1147.
[293] When they do so, patent should not be granted.

This means that this requirement could be satisfied by pharmaceutical companies, even in the case that the invention is strongly based upon existing indigenous knowledge. As an example, a process permitting to make capsules of cod liver oil which have no taste and no odor, but possess the same medicinal qualities, is patent pending.[294] The subject matter of the patent is neither the cod liver itself nor its utilization but rather the process used to put it into capsules. Therefore, the invention has nothing do to with the use of cod liver oil to prevent infections, knowledge which already existed in the public domain. The old "process" would still be free of patent. In short, an invention can be new even if inspired on prior art.

(iii) Utility Requirement and Indigenous Knowledge

Finally, the invention must be useful in order to be patentable. It can be considered to be so when the invention has a conceivable use in a commercial or industrial sense. The TRIPS uses the expression "capable of industrial application."[295] This requirement is not particularly difficult to satisfy. However, in the case of indigenous knowledge, it is not quite clear how this criterion would apply and some authors have raised doubts as to this particular point.

According to Dr Vandana Shiva, the expression "capable of industrial application" that is utilized in the TRIPS is a higher standard than utility and has the effect of excluding persons that do not produce the substance in an industrial context. The underlying idea is to sell the invention in order to obtain economic benefits. Therefore, anyone that produces for personal or local consumption could be excluded.[296]

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[294] Online: www.neutrataste.com/tastefree.htm (last visited: February 25, 2003).

[295] Article 27 (1) TRIPS.

[296] V. Shiva, "Biopiracy, the Plunder of Nature and Knowledge", (Boston: South End Press, 1997), at 10. A footnote to Article 27(1) (5) provides that "the terms 'inventive step' and 'capable of industrial application may be deemed by a Member to be synonymous with the terms 'non-obvious' and 'useful' respectively." However there is still some controversy. Petherbridge, *supra* note 215, at 1051: "The language used by the TRIPs agreement, while claiming to be synonymous with "useful" as it is used in the United States, is actually "capable of an industrial application." Such language could easily be construed as requiring a higher standard than "useful" as it now stands in the United States. Regarding business methods and applications of algorithms, such language is perhaps permissive. Regarding [Expressed Sequence Tags], whose application is typically as a research tool, such language could easily be viewed as hostile to

We do not agree with this interpretation. The utility requirement is directed to the invention and not to the inventor and his goals. The invention has to be "capable of industrial application" but the inventor does not have to, at this stage, prove that he will exploit the invention in an industrial framework.

On the other hand, patents are not granted without conditions. Since public interest is involved, and this is even more accurate in the case of drugs, a patented product has to be made available to the public in a way that it effectively meets local demand.[297] The patentee is not completely free to choose if he will or will not use the property because the availability of certain technologies has repercussions on the quality of life of the community. Therefore, the non exploitation of a patent or the failure to meet local demand could be considered as an abuse and the patentee could be forced to license the technology, an obligation called compulsory licensing.[298] However, even with the existence of this threat, it is not meant that the patentee must personally commercialize the product. Licenses could be granted.

We do not think that indigenous peoples are disadvantaged when it comes to the fulfillment of the utility criterion. The existence of an industrial framework does not have to be proven at this stage. The non-exploitation of the invention could become a problem only at a further time in the process. On the other hand, it is useless to patent a product if the intent is to limit its use to personal purpose. It is another argument against the utilization of patent in the positive protection of indigenous knowledge.

(iv) Costs and Indigenous Knowledge

Even in a situation in which indigenous peoples could succeed in proving the three main requirements of the patent system, they would hardly be able to make their rights recognized. As it was previously exposed, indigenous peoples live with limited resources.

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awarding patents. Indeed, such language might be interpreted as hostile to a range of gene based biotechnology reagents whose industrial application is only theoretically possible, rather than practically possible."

[297] Vaver, *supra* note 272, at 168.

[298] Vaver, *supra* note 272, at 168-170.

It is unlikely that they have sufficient financial resources to afford the important costs linked to patent application. The high costs of filing an application, added to the costs of maintenance and the legal fees related with getting and protecting a patent constitute quite an insurmountable obstacle for indigenous peoples who would like to patent their knowledge. Since the patent system is highly complex, they are unlikely to negotiate it without some form of exterior help. In that way, the costs could become prohibitive.[299]

c) Indigenous Peoples as Joint Inventors

Some authors have argued that indigenous peoples could be recognized as joint inventors of a patented invention when their knowledge has contributed to develop it. In a certain way, they could be considered as co-owners of the invention and rewarded for their contribution.[300] Others have quickly rejected this proposition.[301] It is therefore pertinent to examine the concept of joint invention in order to determine if it could be reasonably applied in cases in which indigenous peoples have shared their knowledge with scientists that then develop successful drugs with such knowledge.

(i) Notion of Joint Inventorship

The *Canadian Patent Act* does not define the notion of joint inventorship.[302] In the case of the United States, Section 116 of the *Patent Act* briefly defines it as an "invention made by two or more persons jointly." Most of the principles applicable to joint

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[299] J.H. Vogel, "The biodiversity Cartel", online: <www.thebiodiversitycartel.com>, at 17. (last visited: February 25, 2003). "For example, filing costs with the USPTO typically exceed USD 10,000 and the whole process drags out for years before the patent is finally issued. To make matters worse, most patents usually do not result in a commercial product. Regulatory agencies require exhaustive scientific evidence that the new drug meets the dual criteria of efficacy and safety. The satisfaction of this criterion entails over a decade of R&D and may cost several hundred million US dollars."

[300] M. J. Huft, "Indigenous Peoples and Drug Discovery Research: A Question of Intellectual Property Rights", (1995) 89 NW. U. L. Rev. 1678.

[301] Jacoby & Weiss, *supra* note 93, at 100.

[302] Vaver, *supra* note 272, at 146. However, the concept clearly exists in Canadian law and there is some jurisprudence on the question. For instance, *Apotex Inc. c. Wellcome Foundation Ltd.*, (2002) CSC 77.

inventorship can, however, be found in American case law, Canadian Courts having followed their South neighbors on that legal question.[303]

In the landmark case *Monsanto Co. v. Kamp.*, the Court has specified the notion of joint invention in these words:

> A joint invention is the product of collaboration of the inventive endeavors of two or more persons working toward the same end and producing an invention by their aggregate efforts. To constitute a joint invention, it is necessary that each of the inventors work in the same subject matter and make some contribution to the inventive though and to the final result.[304]

Basically, as accepted in both Canada and the United States, the existence of joint inventors is recognized when each of them, collaborating with the other, has contributed to the inventive conception. Could indigenous peoples be considered as joint inventors when they provide information to bioprospectors about medicinal plant properties?

(ii) Collaboration

First, an invention that is simultaneously created by two persons in an independent manner cannot qualify as a joint invention. Therefore, the criterion of collaboration must be met in order to claim joint inventorship. Section 116 of the *U.S. Patent Act* says:

> Inventor may apply for a patent even though (1) they did not physically work together or at the same time (2) each did not make the same type or amount of contribution or (3) each did not make a contribution to the subject matter of every claim of the patent.

As mentioned in the *Levin* decision, "the current statute is meant to encompass a wide range of collaborative relationships."[305] However, the alleged joint inventor's works

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[303] For instance, in the *Apotex* case, while Justice Binnie argues that the American decision on that question is of little importance since the two laws are different, he reaches the same conclusion and uses a similar argumentation. *Apotex*, *supra* note 302, at par. 40.
[304] *Monsanto Co. c. Kamp*, 269 F. Supp. 818 (D.D.C. 1967), at 824.
[305] *Levin v. Septodont*, (2002) 34 Fed. Appx. 65, at 70 (U.S.C.A.).

cannot be totally independent of each other. According to Huft, "it does not seem to preclude situations when, although contact is minimal, a second inventor works from, or builds upon, information or ideas supplied earlier by a first inventor."[306] The legislation could be flexible enough to include a situation in which indigenous peoples give information to scientists on plant properties.[307]

We believe, however, that this collaboration will not be sufficient if the information is not directly given by indigenous peoples but acquired by another source such as a publication. The question becomes more complicated when it culminates in the analysis of the conception criterion.

iii) Participation in the Inventive Conception

In order to be recognized as a joint inventor, it is a prerequisite that a person has participated in the conception of the invention. Since the criterion of conception is one that is situated at the intellectual level, the determination of a coherent evaluation method that could be used systematically in most situations is not an easy task, if not an impossible one.

This is probably the reason for which the U.S. Federal Court has stated that "the determination of whether a person is a joint inventor is fact specific, and no bright line standard will suffice in every case."[308] It is therefore difficult to determine if joint inventorship can be generally applied in the case of indigenous knowledge. However, the established jurisprudence does give some guidance as to how it may be interpreted.

Conception has been defined as the "formation in the mind of the inventor, of a definite and permanent idea of the complete and operative invention."[309] The test for conception is whether the inventor had an idea that was definite and permanent enough that a person

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[306] Huft, *supra* note 300, at 1715.
[307] *Ibid.*
[308] *Fina Oil & Chem. v. Ewen*, 123 F.3d. 1466, at 1473.
[309] *Burroughs Wellcome Co. v. Barr Lab., Inc*, 40 F3d 1223, at 1228.

skilled in the art could understand the invention and reduce it to practice without extensive research or experimentation.[310]

In the case of a unique inventor, the application of this concept is not too complicated but it is very different to apply it to the case of joint inventors. According to Professor Vaver, everyone that has helped in the development of an idea can claim to be a co-inventor.[311] However, this has to be nuanced.

To be recognized as a joint inventor, the contribution to the claimed invention must not be insignificant in quality when compared to the dimension of the full invention.[312] Recently, the United States Court of Appeal for the 4th circuit has stated that "the significance of an alleged joint inventor's contribution (...) depends on whether that contribution helped to make the invention patentable."[313]

Thus, according to Huft, indigenous peoples that provide background knowledge cannot be considered to be joint inventors when the given information does not contribute to the differentiation of the invention from the prior art. In the same way, the Court has stated in *Burroughs Welcome* that "each inventor must contribute to the joint arrival at a definite and permanent idea of the invention as it will be used in practice."[314] On the other hand, "it is not necessary that the entire inventive concept (...) occur to each of the joint inventors."[315]

The resulting principle is that an inventor can be helped without having to necessarily share the product of his work.[316] Even if the information provided has been important in the process of arriving at the final invention, the provider of this information is not a joint

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[310] *Burroughs Wellcome, supra* note 309, at 1228.
[311] Vaver, *supra* note 272, at 146.
[312] *Pannu v. Iolab Corp.*, 155 F3d 1344, at 1351.
[313] *Levin, supra* note 305, at 73.
[314] *Burroughs Wellcome Co., supra* note 302, at 1229; L. Sung, "Collegiality and Collaboration in the Age of Exclusivity", 3 De Paul J. Health Care L. 411, at 429.
[315] *Kimberley-Clark Corp v. Procter & Gamble Distrib.* Co., 973 F.2d 911, 916 (Fed. Cir., 1992).
[316] *Shatterproof Glass Corp c. Libbey-Owens Ford Co.*, 785 F. 2d 613, 624, 225 U.S.P.Q. 634, 641. (C.A.F.C. 1985); *Hobbs c. United States Atomic Energy Commission*, 451 F. 2d 849, 864, 171 U.S.P.Q. 713, 724 (5th Cir. 1971).

inventor unless his participation has contributed to raise the invention above the prior art.[317]

In this context, proving the specific contribution of indigenous peoples to the conception of a drug derived from a plant is not an easy task. It is undisputable that indigenous peoples, by communicating their knowledge, do not participate in every aspect of the conception of the drugs. They do not, for instance, participate to the isolation of the active compounds. However, according to the American legislation and Canadian jurisprudence, it is not necessary to have made a contribution to the subject matter of every claim of the patent in order to claim joint inventorship.[318] This is determined on a claim by claim basis. It is also undeniable that by giving their knowledge, indigenous peoples do provide useful insights to scientists.

The central question is therefore whether this contribution is sufficient to raise the invention above the prior art. Thus, does indigenous knowledge help to make the invention patentable?

In his article on the subject, Huft simplified the question in this way: "Could the Western party have developed the conception without the contribution of indigenous knowledge?"[319] Considering the fact that he had previously suggested that the "contribution above the prior art" was the appropriate criterion, we do have some difficulties in accepting his formulation of the question which could lead to a misleading answer.

The situation of cells donors, without whom many scientific discoveries could not have occurred, can be taken as an example. The Californian Supreme Court has refused to consider them as joint inventors because their contribution is clearly not inventive and

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[317] Huft, *supra* note 300, at 1723.
[318] US: Section 116 *U.S. Patent Act*, Canada: *Gerrard Wire Tying Machines Company Ltd. of Canada v. Cary Manufacturing Co,*[1926] Ex. C.R. 170.
[319] Huft, *supra* note 300, at 1723-1724.

not related to the conception.[320] In the same way, the fact that the invention would not have been conceived without the communication of indigenous knowledge does not systematically mean that the holder of the knowledge would qualify as a joint inventor. Thus, another approach to the question will be adopted here when trying to determine if indigenous knowledge has potentially made the invention patentable.

First, the answer to the previous question obviously depends on the invention, the knowledge and the type of patent analyzed. Moreover, the position of the knowledge holders in this situation may differ significantly depending on the type of patent in question. Indeed, in respect of new pharmaceutical compound, the CIPO allows claims, among others, related to the structure of the compound, the process for preparing it and its many uses.[321]

In the case of a claim to the structure of the compound, it is not likely that indigenous peoples could be considered as joint inventors. A similar conclusion is reached when considering the process for preparing the compound. In fact, indigenous knowledge is usually not related to that process since its holders are generally not aware of the active elements of the plants used in their medicine. However, according to Huft:

> Since the compound may very likely never have been isolated without knowledge of the existence of a particular plant and its importance in indigenous medicine, indigenous knowledge is still of critical importance in the identification and development of the drug. Where the use of the isolated drug is the same as, or very similar to, that of the source plant, it is clear that the contribution of indigenous knowledge has been essential to the development of the drug.[322]

Qualifying the contribution of indigenous knowledge holders as essential to the conception of the drugs, the author implies that holders could claim joint inventorship in cases where it concerns the use of the drug.[323] We believe that it is unlikely that

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[320] *Moore v. Regents of the University of California*, 793 P2d 479, at 511-512.
[321] Huft, *supra* note 300, at 1723
[322] Huft, *supra* note 300, at 1724.
[323] Huft, *supra* note 300, at 1724.

knowledge holders can claim such a right in the invention. It is undisputable that the information contributed by indigenous peoples is valuable and has aided scientists to obtain the patentable invention. However it has not made the invention patentable as it is required by the existing jurisprudence.

Even if the information is not considered to be simple background knowledge, it does not help the invention to be patentable. It does not differentiate it from prior art. This can be explained by the very nature and the different characteristics of indigenous knowledge, as well as by the possibility that the information was previously available to the public.

More precisely, if the information can be considered as prior art or part of the public domain, the contribution of indigenous knowledge clearly does not contribute to the patentability of the invention. If the information has already been published, joint inventorship cannot be therefore claimed. In Canada, such a title cannot be granted if the information is to be considered as available to the public. It seems logical that an individual who only contributed to non-novel elements of a claim cannot be seen as being an inventor.[324]

The nature of indigenous knowledge is also a barrier. In some ways, the invention patented by pharmaceutical companies has nothing to do with the type of information generally communicated by indigenous peoples. It does not refer to the same language. In fact, scientists eventually patent a compound that was, in all probability, ignored by indigenous peoples. Indeed, these latter generally do not know the active substance of the plants they are using.

In many cases, the information that is communicated by indigenous knowledge holders is not included in the patent claims, the substance having been isolated and synthesized. Therefore, it is no longer a question of the use of a plant for a certain illness but, instead, the utilization of a particular substance. If the information does not appear in the claimed invention, how could it be claimed that knowledge holders be joint inventors? We

[324] *Levin, supra* note 305, at 73.

conclude it is not likely that indigenous peoples could be considered as joint inventors of a drug developed on the base of their medicinal knowledge.

Thus, indigenous knowledge holders should not expect too much from the patent regime. This is not completely unjustified. In fact, intellectual property has always involved some elements of novelty. Since the patent system is the most demanding on that point and on others, some scholars have chosen to focus on trade secrets for the possible protection of medicinal knowledge.

d) Trade Secrets

In trying to protect indigenous knowledge within the actual intellectual property system and concluding that the existing patent regime is barely accessible, some authors have suggested the utilization of trade secrecy as an alternative means of protection.[325] According to Professor Vogel, trade secrets represent the "least bad" option among the existing intellectual property systems. It constitutes a provisory means of protection until the materialization of a *sui generis* international binding agreement. It also allows maintaining traditional knowledge secret so the indigenous communities will not have foreclosed any future opportunities.[326]

If indigenous knowledge could be found to qualify as a trade secret, holders could succeed in an action for breach of confidence and obtain damages when the information is utilized by bioprospectors to develop new drugs. Although prosecuting infringement may be expensive, it will probably be unnecessary in the majority of the cases. Indeed, pharmaceutical companies will probably be reticent to risk millions of dollars increasing the value of knowledge illegally obtained and would probably rather sign a material transfer agreement. Therefore, the protection could be efficient and at more reasonable costs than the protection of patents. We will hereafter examine the possibility that indigenous knowledge be qualified as trade secrets in Canadian and American law.

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[325] For instance, Rodriguez Stevenson, *supra* note 38, Vogel, *supra* note 299.
[326] Vogel, *supra* note 299, at 2.

i) Overview of Trade Secrets

Trade secrets are an abstract form of protection that allows for the use of the invention, all the while keeping it secret. It may be a useful option when the invention does not meet patent requirements or if the inventor simply prefers to keep it secret in order to get longer monopoly on it.

In fact, trade secrets have several advantages in comparison to patent law. First, they do not need any paper applications or government approval and they do not imply any application or maintenance fees. Secondly, the protection exists as long as the information remains secret. Finally, the type of information that can be protected is broader. It is not necessary that the information be novel or that it be a suitable subject matter for patent or copyright protection.[327] The use of this regime is therefore appealing in the case of indigenous knowledge, but does it represent a workable solution? Can indigenous knowledge be generally qualified as a "trade secret"?

Unlike the United States, Canada does not have legislation on trade secrets.[328] Therefore, trade secrets have been historically addressed by the common law regime. In *Coco v. A.N. Clark (Enginers) Ltd*; Justice Megarry enounced the elements necessary for information to qualify as a trade secret.[329] He adopted a position similar to that of the

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[327] Ronald E. Dimock and J. A. McKinlay, "Trade Secrets and Industrial Property: Where Does Each Begin and End? (or Loosse Lips Sink Ships but Whose Lips, How Loose and Whose Ship)" in T. Hughes, *supra* note 320 at 97; As noted by Bently and Sherman, "in paten law a single disclosure to one person is insufficient to place the invention in the public domain and thus to destroy the novelty of an invention. In contrast, breach of confidence is built around a notion of "relative secrecy." In essence, this means that it is possible for a number of people to know about the "secret" and the information still not be in the public domain." L. Bently and B. Sherman, *Intellectual Property*, (New-York: Oxford Press, 2001), at 928

[328] In the "Green Book", the Institute of Law Research and Reform of Edmonton and a Federal provincial Working Party proposed the enactment of a Trade Secret Act which contains a definition of trade secret similar to the American Law. However, the law has never been enacted. "Trade Secrets" (Report No 46, July 1986) , at 256; D. Vaver, "What is a Trade Secret" in R.T. Hugues (ed), *Trade Secrets*, (Toronto: The Law Society of Upper Canada, 1990), at 18.

[329] [1969] R.P.C. 41 (Ch. D.). Justice Chevrier, *in RI Crain Limited v. Ashton Press Manufacturing Co. Limited* [1949] C.P.R. 143, at 149 also relied on American cases and law to define trade secrets. Also: *Positron inc. v. Desroches et al.*, [1988] R.J.Q. 1636, at 1653; F. M. Grenier, "The Law of Trade Secret and Confidential Information in the Province of Quebec", online: Leger Robic Richard, <http://www.robic.com/publications/Pdf/141-FMG.pdf> (last visited February 26, 2003).

United States' legislation. In the *United States Uniform Trade Secret Act* (UTSA), the trade secret has been defined in these words:

> Trade Secret" means information, including a formula, pattern, compilation, program, device, method, technique or process that: (i) derives independent economic value actual or potential, from not being generally know to, and not being ascertainable by property means by, other persons who can obtain economic value from it's disclosure or use, and (ii) is the subject of efforts that are reasonable under the circumstances to maintain it's secrecy.[330]

There are therefore two main conditions for information to be considered as a trade secret. First, the information cannot be generally known to those who have an interest in the topic; it must be secret and treated as such by the holder of the information. Secondly, it must have an economic value.

(ii) Trade Secrets and Indigenous Knowledge

Information must have a commercial value

First, the type of information that can be protected is quite broad. As noted by Lockerby, "Canadian courts have shown a willingness to take a broad approach to the concept of information, likely recognizing the limitless variety of forms it can take, especially in light of recent technological developments."[331] The existing American legislation also includes a large variety of situations as well.[332] The nature of indigenous knowledge should therefore not be a barrier to its protection. Secondly, in order to be considered as a trade secret, the information must have a present or potential value. However, the secret does not have to be actually used in business.[333]

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[330] Section 1 *UTSA*. Nearly all states have adopted the Uniform Trade Secret Act (UTSA); S. J. Willert, "Safeguarding Trade Secrets in the Information Age (with sample Communications Policy)", (2003) 49 NO. 1 Prac. Law 11, at 16.

[331] M. J. Lockerby, *Trade Secret Handbook*, (U.S.: American Bar Association, 2000), at 103.

[332] See Section 1 *UTSA*

[333] As noted by some authors, "the current trend (...) is to protect as a trade secret *any* valuable information. R. P. Mergers, P. S. Menell, M. A. Lemley, *Intellectual Property in the New Technological Age*, (New-York, Aspen Publishers, 2000), at 35. The *Restatement of Unfair Competition* defines "trade

Information not generally known to those who have an interest in the topic and treated as a secret by the holder

To be considered a trade secret, the formula, pattern, compilation, program, device, method, technique or process must be secret. However, it is not necessary for it to be an absolute secret. It needs only not be generally known among, or readily accessible, to persons that normally deal with the kind of information in question.[334]

In the case of indigenous knowledge, certain situations could be problematic. First, when the knowledge has been already published in scientific reviews or other publications, the knowledge could be considered as readily accessible to persons that normally deal with this kind of information.[335] Therefore, it will not qualify as a trade secret. The situation is the same for knowledge already in the public domain.

As for unpublished and non public knowledge, the situation is more favourable. As long as there is no disclosure by the shaman - or the main knowledge holder whatever his title in the community- to anybody else and that the transfer of such knowledge is limited to the next person responsible for healing within the tribe, it could qualify as a trade secret.

However, this is not likely to happen in all situations. If Schlatter is right:

> The problem here with indigenous people is that usually, the whole tribe knows about it, and the people tend to share this knowledge even with a stranger coming and asking for such knowledge. Although the system of trade secret protection is international, it would be difficult according to the traditional protection standards to argue that the stranger visiting the tribe discovered this traditional knowledge by unfair methods.[336]

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secret" as "any information that can be used in the operation of a business or other enterprise and that is sufficiently valuable and secret to afford an actual or potential economic advantage over others."

[334] Section 1(4) *UTSA*.

[335] Vaver, *supra* note 328, at 22.

[336] S. Schlatter, "Protection of Traditional Knowledge and Genetic Resources", online: World Bank <http://www.worldbank.org/wbi/B-SPAN/Intellectual%20property/schlatter.htm> (last visited: March 10, 2003).

In fact, to be considered a trade secret, the information must be treated as such by the holder. The owner of a trade secret must, at all times, treat the information as confidential. In the event that this information is communicated, the intention to keep it secret must be shown by the holder.[337] Therefore, if the latter consents to the revelation of the information to a stranger or chooses to communicate it to the community in general without any confidentiality agreement, he has obviously chosen not to treat it as a secret. As said by Justice Brandeis in dissent:

> The general rule of law is that the noblest of human productions – knowledge, truths ascertained, conceptions, ideas- become, after voluntary communication to others, free as the air to common use.[338]

However, there are some communities in which the knowledge is known just by the shaman or a restricted number of peoples and can therefore qualify as a trade secret. It is for this latter situation that Ecuador, supported by the *InterAmerican Development Bank*, has taken steps to establish a "biodiversity cartel" which operates a transformation from knowledge to trade secret.

Convinced that trade secrets were part of the solution to the problem of the protection of indigenous knowledge, the country launched in 1995 a project entitled "The Transformation of Traditional Knowledge into Trade Secrets." The project is still underway in that country with the aim of achieving the aforementioned cartel locally and to expand it to neighboring countries in the future.

The concept is relatively simple: the knowledge of participating communities is being catalogued in databases with restricted access. Each community has its own file. When an entry is made, checks are also done to see whether the knowledge is already in the public domain and whether other communities also share the knowledge in question. To avoid a price war among communities holding the same knowledge, a cartel is created and the

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[337] Vaver, *supra* note 328, at 32.
[338] *International News Service v. Associated Press*, 248 U.S. 215 (1918) at 250, cited by Dimock and McKinlay, *supra* note 327, at 111.

trade secret can then be negotiated in a Material Transfer Agreement which will benefit both the communities forming the cartel and the local government.[339]

Over 10,000 entries of indigenous knowledge are now confidentially stored in the database of the Ecuadorian NGO *Ecociencia* until resolution is achieve regarding their legal status. The leakage of potential trade secrets into the public domain has been thereby stopped.[340]

Similarly, during the first week of September 2002, at the World Summit on Sustainable Development, the Venezuelan President Hugo Chavez suggested the creation of a cartel similar to the OPEC oil cartel in order to regulate the price of the access to plants, animals and related knowledge. By joining forces, the countries hope to be able to set higher prices for pharmaceuticals companies wanting to exploit the biodiversity and indigenous knowledge.[341]

Qualifying their group as the "like-minded group of mega-diverse states", Brazil, China, Colombia, Costa Rica, Ecuador, Peru, Indonesia, Kenya, Mexico, South Africa, India and Venezuela are seeking ways by which to ensure that a bigger part of the corporate profits generated from the exploitation of rare animals, plants and knowledge stay in the Third World.[342]

However, to reach that point, knowledge has to be prevented from being leaked to external agents. Indigenous people must be aware of their duty to keep their knowledge a secret if they do not want to lose their right to it.

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[339] Vogel, "Biodiversity Cartel", *supra* note 299, at 2.
[340] We are grateful to J.H. Vogel for having giving us this information.
[341] REUTER, "Venezuela hopes for OPEC-like biodiversity cartel", online: <www.planetark.org/dailynewsstory.cfm/newsid/17635/story.htm> (last visited 2002-11-09).
Brazil, China, Colombia, Costa Rica, Ecuador, India, Indonesia, Kenya, Mexico, Peru, South Africa and Venezuela banded together to form what they call the "like-minded group of mega-diverse states." The 12 are home to 70 percent of the world's species. All have an extremely wide range of species of plants and animals and therefore a joint interest in protecting natural resources ranging from tropical rainforests to animals.
[342] *Ibid.*

The use of trade secrets is an interesting means by which to protect indigenous knowledge that has not already been made known to the public. It represents an affordable way to protect information and to obtain its benefits. On the other hand, it is useless for knowledge that has not been kept a secret,[343] which is however the case for an important part of indigenous medicinal knowledge. Moreover, some countries do not have regimes concerning trade secrets.[344]

In the first chapter it was mentioned that the way that indigenous knowledge is perceived in the Western world could be an important factor as it relates to indigenous medicinal knowledge. Our question was whether or not indigenous peoples were disadvantaged by the phenomenon of globalization and harmonization. What can now be concluded after this analysis of the status of indigenous knowledge as it is stands in the intellectual property system?

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[343] Trade secret law is not applicable when the material is in the public domain: Bently, Sherman, *supra* note 327, at 928.

[344] Mugabe, *supra* note 44, at 1.3. According to him "this form of protection of traditional knowledge is generally not institutionalized: institutions to safeguard trade secrets are either weak or absent in most countries."

Chapter 3: An Overview of the Future of Indigenous Medicinal Knowledge within the Intellectual Property Regime

1. Is There a Need for a Positive Protection?

As we have previously seen, we are in presence of two international conventions dealing pertinent in the analysis of our subject. One represents a moral victory (CBD) and the other (TRIPS) does not directly address the question of indigenous knowledge nor facilitates its protection. As for the common regime of intellectual property, the possibilities are clearly limited and, it could be said, almost inexistent when it is question of knowledge already in the public domain.

This is not surprising considering that the regimes regulating patents and trade secrets require that the invention be novel or generally unknown. In fact, the notion of novelty forms the core of the intellectual property system itself. Justin Hugues gives an idea of the importance of this concept in his famous article about the philosophy of intellectual property:

> A universal definition of intellectual property might begin by identifying it as nonphysical property which stems from, is identified as, and whose value is based upon idea or ideas. Furthermore, there must be some additional element of novelty. (...) What is important is that at the time of propertization the idea is thought to be generally unknown. The *res* cannot be common currency in the intellectual life of the society at the time of propertization.[345]

This can be partially explained by the fact that the primary objective of intellectual property is to promote the progress of science.[346] In order to do so, some rights are given to the inventor to encourage him to disclose his invention to the public. This goal is not reached if we allow the protection of something that is already known.

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[345] Hugues, *supra* note 152, at 294.

[346] As stated in the U.S. Constitution, art I (8), cl. 8. Of course, there are other theory to justify intellectual property, such as the labor theory and the personality theory. None of them can justify all the system of intellectual property. For instance, the elaboration of a theorem may necessitate a lot of work and in some ways promote the progress of science but cannot be protected within the system. The system is the result of a balancing of different interests.

In short, the regime of intellectual property offers little protection to an important part of indigenous knowledge since it considers this type of knowledge to be part of the public domain. In fact, most intellectual property regulations have evolved from a Western view of property. More precisely, we are in a situation in which the customs of indigenous peoples generally consider this knowledge as being their common property while the Western world argues that it can be freely appropriated. The claims of each party seem to be justified when couched in their own norms and beliefs. However, as mentioned by Meinzen-Dick and Pradhan, in this kind of situation,

> which law is accepted and enforced depends on power and social relationships between the different claimants. As groups interact more with "outsiders" who may not share the same community, religion, or other social field and hence do not recognize the legitimacy of the same laws and enforcement institutions, there may be a tendency to move toward statutory law and government enforcement or even, in the case of interactions between different countries, to international law e.g. the Law of the Sea, or attempts to involve the World Trade Organization in defining and enforcing intellectual property rights.[347]

This could partly explain why Western views are so often imposed on the international scene. Of course, the existence of this state of affairs does not suggest that we should not tend to respect indigenous practices and customs as much as possible. The goal should be to attempt to respect various conceptions, even if it is impossible to respect them all. This is precisely why the intellectual property system cannot completely ignore its effects on indigenous communities. It would seem important to at least evaluate the different possibilities.

Therefore, intellectual property may have a role to play in the amelioration of the status of indigenous knowledge, but this does not mean that it has to necessarily positively protect it. On that point, positions are divergent. Some authors conclude that intellectual property should grant positive protection to indigenous knowledge. As noted by Mugabe,

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[347] R. S. Meinzen-Dick and R. Pradhan "Legal Pluralism and Dynamic Property Rights", online: <http://www.capri.cgiar.org/pdf/capriwp22.pdf> (last visited: February 20, 2003).

they expose 3 major arguments. First, they argue that positive protection would foster technical evolution as it would facilitate the diffusion of this knowledge. Secondly, they believe that it would encourage indigenous peoples to continue to preserve the environment. Finally, they argue that industrialized countries have a moral obligation to act in a way as to insure that indigenous peoples receive an equitable share of the benefits engendered by the commercialization of their knowledge.[348]

Some WTO members are also asking for a system of international protection. India, a leader in the question of traditional knowledge, has many times asked for the creation of an international regime:

> India is of the view that securing benefits arising out of the use of TK related to biodiversity cannot be limited to national action alone and a basic understanding and respect for an internationally recognized regime to ensure rights to these communities is an absolute must. [349]

Peru, Bolivia, Colombia, Ecuador and Nicaragua are also convinced of the necessity of an international regime for various reasons:

> [I]nternational recognition of traditional knowledge as protectable matter would afford its holder the legal possibility of obtaining enforcement of their rights outside their own countries, thus enabling them to share in the economic benefits derived from that knowledge. Such recognition would also lead to a reduction in the misappropriation and unauthorized exploitation of such knowledge, and diminish the risk of erosion or destruction of these intangible goods and of the cultures that have generated them.[350]

These countries are not asking for a regime that would simply prevent misappropriation. They propose an international recognition of indigenous and traditional knowledge as a "protectable subject matter" as it had been done with the chips in 1983 as a solution to the second situation where biopiracy is claimed such as the "Hoodia Cactus type." In the

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[348] Mugabe, *supra* note 44, at 1.3.
[349] WTO, Committee on Trade and Environment - Council for Trade-Related Aspects of Intellectual Property Rights - Protection of Biodiversity and Traditional Knowledge, the Indian Experience - Submission by India, 14 July 2000, IP/C/W/198.
[350] WTO, Committee on Trade and Environment – "Review of Article 27.3(b)" - Communication from Brazil, WT/CTE/W/186, 12 February 2001.

same way, some nongovernmental organizations have militated in favour of the protection of indigenous knowledge that is already in the public domain.

Opponents of the positive protection of indigenous knowledge argue that this would have negative effects. More precisely, they think that such an initiative would "destroy the social basis for generating and managing the knowledge. Traditional knowledge (...) is communal property, passed on from one generation to the next. If it is protected under the laws of intellectual property, it would be privatized, and this may deny future generations and industry access to such knowledge."[351]

Moreover, the creation of a *sui generis* regime that would grant proprietary rights to indigenous knowledge already present in the public domain would entail several complexities. Indeed, a *sui generis* legislation allowing for the compensation of indigenous knowledge already in the public domain would, as said by Professor Vogel "open a Pandora's Box if holders of expired IPRs demand equal treatment."[352]

Different inventors could also start to seek protection under intellectual property rights because of the use of their knowledge in the development of a patented technology. As an example, inventors of theorems could claim that the situation is unjust because their method of calculation has been used in the conception of a protected subject matter and that they have not been remunerated for their knowledge. Indeed, why protect some indigenous knowledge holders and not them? All the intellectual property system and its basic principles could be questioned and reassessed and the public domain could thereby shrink importantly. This would not help the development of new knowledge.

Some indigenous peoples have expressed other reservation concerning the implementation of a regime of positive protection with an international scope. Since there are many different of indigenous populations, each one having its particularities, such a framework could be too inflexible and incapable to answer the different needs of

[351] Mugabe, *supra* note 44, at 1.3.
[352] "Trojan Horse", *supra* note 201.

indigenous communities. Moreover, it could curb national initiatives, local government and communities being therefore less motivated to implement their own solutions.[353]

In addition, positive protection is barely achievable at the international level. This would be a lengthy, if not impossible, protection to implement. This fact is brought to light if we consider the advances in this domain over the last 20 years. At the very least, the progression is far from that experienced for the situation of the semiconductor chips, which was an issue raised by USA, European Community and Japan:

> While new forms of intellectual property in the form of protection for semiconductors or plant varieties have readily been minted for transnational industrial elites both nationally and internationally, the recognition of indigenous intellectual property forms has proceeded slowly or not at all. This selective approach to solving free riding problems comes into sharp focus when one compares the evolution of protection for the semiconductor chip and the protection of folklore. Prior to 1984 manufacturers of computer chips in the US had complained that existing intellectual property regimes often failed to protect their products. In 1984 the Semiconductor Chip Protection Act was passed. In contrast, the issue of protection for indigenous knowledge has largely remained just an issue.[354]

Therefore, the path that would need to be traveled in order to effectively implement such a regime could be very long if not infinite. As mentioned by Professor Vogel, it "would probably be a feat far more challenging than the ratification of the CBD by the US."[355] Finally, the fact that the same information is often possessed by more than one indigenous community could represent an important problem. Indeed, to whom shall be granted the property rights in this knowledge?

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[353] UNEP, Convention on Biological Diversity, Ad Hoc Open Ended Inter-Sessional Working Group on Article 8(j) and Related Provisions of the Convention on Biological Diversity, "Legal and Other Appropriate Forms of Protection for the Knowledge, Innovations and Practices of Indigenous and Local Communities Embodying Traditional Lifestyle Relevant for the Conservation and Sustainable Use of Biological Diversity", 10 January 2000, UNEP/CBD/WG8J/1/2.
[354] Drahos, *supra* note 130, at 194.
[355] "Trojan Horse", *supra* note 201.

Of course, the level of difficulty that would be experienced in order to efficiently implement a regime is not a sufficient reason for not attempting to achieve the protection of indigenous knowledge. However, we believe that the impossibility of granting proprietary rights in medicinal indigenous knowledge already part of the public domain is justified by the nature and structure of the intellectual property regime. The fact that we have to denaturalize the system in order to protect a certain type of information may mean that we are not utilizing the proper tool. Therefore, we think that such a chaotic path should not be taken when talking about knowledge that is already in the public domain.

The arguments of the authors that are in favour of granting proprietary rights to indigenous knowledge are not really convincing in their reasoning relating to the knowledge already in the public domain. Their goals are noble, and should be pursued, but this does not mean that such a measure is neither the unique nor the right solution.

In our opinion the requirement of novelty should be applied equally and the granting of property rights in knowledge that is already part of the public domain is not the best solution. Other ways have to be studied that encourage the development of indigenous communities, as well as manners by which to encourage of benefit-sharing. Solutions that would not have the effect of granting proprietary rights in information that is part of the public domain should particularly be considered. The issue is how to proceed with the compensation of indigenous peoples for their valuable knowledge, without deconstructing the actual intellectual property system. We have to be reminded that solutions can take place inside or outside the intellectual property system. As for negative protection, however, the role of intellectual property is different.

2. Propositions to Improve Negative Protection

The system of intellectual property should be complete enough to avoid situations in which indigenous knowledge is simply patented without the added elements of novelty. We believe that some actions could also be taken inside the system in order to improve

the negative protection of indigenous knowledge. As mentioned by Dutfield, negative protection would be more achievable than positive protection "because some of the most commonly-discussed defensive protection measures are basically enhancements to or modifications of existing IPRs."[356] As for effective positive protection, it would probably require a completely new system whose development would necessitate the will and active participation of many governments.[357]

If we grant an effective negative protection to medicinal indigenous knowledge, the first type of situations where biopiracy is claimed, the "Ayahuasca type", would be settled. Yet, four main ways of offering negative protection have been suggested at the international level. First, negative protection could be achieved by a national law providing for the disclosure of the utilization of indigenous knowledge in patent applications, which is already being done in some countries.[358] However, as we have already emphasized, some modifications to the TRIPS Agreement have to be effected in order to do so.

In the United States, a better protection could be created by the recognition of indigenous knowledge as prior art. In fact, it seems that the exclusion of foreign prior art is outdated since information now travels easily from one country to another. The United States are isolated in this debate, Europe and Canada now having a common definition of prior art.[359] Since the American position on prior art can be considered as facilitating the direct and indirect misappropriation of indigenous knowledge,[360] it should be changed and harmonized with the regime adopted by other countries on the subject.

However, the general recognition of indigenous knowledge as prior art is not sufficient. As noted by Ruiz:

> [a]lthough there is traditional knowledge being held by indigenous peoples (and researchers as well for their own academic and research purposes) and there are publications,

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[356] Dutfield, "Diplomacy and Policy Formulation", *supra* note 64, at 18.
[357] *Ibid.*
[358] Such as Costa Rica, as we previously mentioned.
[359] Vaver, *supra* note 272, at 134.
[360] Ruiz, *supra* note 43.

> databases, journal and other means through which traditional knowledge is being disseminated and made public, traditional knowledge has rarely been recognized and considered as forming part of the state of the art for the purpose of the patent system in general. Seldom have patent examiners undertaken exhaustive searches and review of traditional knowledge sources.[361]

The recognition of undocumented, e.g. oral, knowledge as prior art does not completely solve the problem of misappropriation. The second way is to insure that patent examiners adequately evaluate prior art, thereby importantly reducing those cases in which indigenous knowledge is patented. As proposed by the USPTO, databases dealing with indigenous knowledge could be created. In the same vein, the *World Health Organization* has recommended to document the existing knowledge used in traditional medicines systems.[362]

We believe that the documentation of indigenous medicinal knowledge that is already in the public domain could be part of the solution. In fact, many databases already exist. [363] However, the system is not worthy it if we do not ensure that databases are systematically consulted by patent examiners. Otherwise, they can easily become a tool of misappropriation. Indeed, this is the major fear of indigenous peoples with this solution.[364]

Those two solutions could be efficient in ensuring the negative protection at the national level. However, if it could effectively preclude this knowledge from being patented at the national level, it has no effect in foreign countries that have not implemented such dispositions.[365]

If the creation of a national system that could prevent misappropriation of indigenous knowledge could be efficient in that country, it is not sufficient to ensure that the

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[361] Ruiz, *supra* note 43.
[362] Ruiz, *supra* note 43.
[363] For instance NAPRALERT (for natural product alert) which contains information from 1650 to the present. Online: University of Illinois, <http://www.uic.edu/pharmacy/depts/PCRPS/NAPRALERT.htm>
[364] South Centre, *supra* note 92.
[365] S.A. Hansen "Intellectual Property and Traditional Ecological Knowledge: Institutionally Globalized Biopiracy?" Professional Ethics Report, Vol. XV, no 3 (2002), online: <http://www.aaas.org/spp/sfrl/per/per30.htm> (last visited: November 22 2002).

knowledge already in the public domain would not be misappropriated outside that country. This is an opinion shared by Correa:

> A regime of IPRs protection implemented at the national level, however, only creates territorial rights, that is, they cannot be claimed and enforced in third countries. Since in many cases the appropriation of TK is made by foreign companies which eventually obtain IPRs protection abroad, the existence of a national system of protection leaves many of the problems (especially "biopiracy") unresolved.[366]

Correa suggests the implementation of an international regime that is limited to impose a national regime against the misappropriation of indigenous knowledge while States would be free to determine the means to prevent it.[367] Indigenous knowledge would not have to be registered under this scheme. The international protection would be limited to a negative protection.[368]

This kind of international regime that is limited to the imposition of the creation of a national system insuring a negative protection would be easier to implement on a short time basis than an international regime of positive protection. We believe that such a regime should be implemented as soon as possible. As said by Peru, "only when knowledge is protected at multilateral level can it be said that true protection has been achieved." [369]

3. A Compensatory Liability Regime[370] as a Possible Solution?

Finally, a suggestion that could settle the matter of indigenous knowledge already in the public domain, as well as to fairly compensate indigenous peoples, is particularly

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[366] Correa, *supra* note 11, at 17.
[367] Correa, *supra* note 11, at 17.
[368] However, states would still be free to implement a national regime insuring a positive protection if they think it is manageable in their country.
[369] A.M., Pacon, UNCTAD Expert Meeting on Systems and National Experiences for Protecting Traditional Knowledge, Innovations and Practices, Geneva, November 2000, "The Peruvian Proposal on the Protection of Traditional Knowledge."
[370] J. H. Reichman, "Of Green Tulips and Legal Kudzu: Repacking Rights in Subpatentable Innovation" (2000) 53 Vand. L. Rev. 1743.

appealing: the implementation of a liability regime through the intellectual property system. The differences between such a regime and a property regime have been expressed by Dutfield:

> "A property regime vests exclusive rights in owners, of which the right to refuse, authorise and determine conditions for access to the property in question are the most fundamental. For these rights to mean anything, it must of course be possible for holders to enforce them. A liability regime is a "use now pay later" system according to which use is allowed without the authorisation of the right holders. But it is not free access. Ex-post compensation is still required." [371]

However, we must emphasize that this is not in accordance with the principle of the CBD since no prior informed consent is required. Moreover, if implemented through the intellectual property regime, it could imply some substantive modifications to the TRIPS. It would therefore be a long-term project but we do believe that it could be more easily accepted by some states than a regime recognizing property rights in public domain's information. In addition, such a proposition would be more effective if we have previously implemented an international regime of misappropriation.

Under that regime, indigenous knowledge that is previously known would be treated as other work part of the public domain with one important exception. More precisely, pharmaceutical companies could use medicinal indigenous knowledge that is part of the public domain freely, without any authorization from indigenous peoples. However, compensation would have to be given.[372] The logic is that the proposed compensatory regime would impose the payment of money that otherwise would have been spent on research and development without the utilization on indigenous knowledge as a lead.[373]

There are many ways to implement a liability regime.[374] It could be that patent applicants would have to declare such utilization in their application. As a deterrent, the patent

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[371] Dutfield, "Diplomacy and Policy Formulation", *supra* note 64, at 31.
[372] Dutfield, "Diplomacy and Policy Formulation", *supra* note 64, at 31.
[373] Reichman, *supra* note 370.
[374] Dutfield, "Diplomacy and Policy Formulation", *supra* note 64, at 31.

would be revoked if the declaration is not made. Finally, this declaration would launch a process where a kind of tax determined by law would be imposed for this utilization. Compensation could be paid through a collecting society and the money amassed would be distributed to indigenous peoples. Different schemes can be imagined and it is not our goal to study them all. Our point is that solutions of this kind should be more seriously studied in order to determine the possibilities and limitations of such a regime.

These suggestions are particularly appealing to us for the reason that it seems to better consider the customs of indigenous peoples and, more precisely, their vision of the intellectual commons. Since their knowledge would be maintained in the public area but they would also receive compensation, we could approach the concept of limited commons, all the while conserving the elements of our public domain. In addition, we would thereby foster development and encourage indigenous peoples to conserve and pursue their traditions. It seems to be a "win-win" situation. At the very least, it is a solution that deserves to be better studied in the future.

Conclusion

The questions and debates that stem from knowledge of indigenous peoples are quite problematic and difficult to solve. The indigenous communities of virtually every country face very different situations and, therefore, experience different problems concerning this issue. Consequently, it would be difficult to find globally applicable solutions that would suit every aboriginal community.

The purpose of this study was *not* to identify the means to halt what has been claimed as biopiracy. Rather, we aimed to determine the present and future role that could be played by the intellectual property system in the protection of indigenous knowledge. Firstly, we exposed the nature of indigenous medicinal knowledge and the many questions that arise in its context. Among other notions, it was been suggested that indigenous peoples and Westerners are managing common and private property based on a different model of the community.

Assuming the above fact, we undertook, in the second chapter, to determine if the present system of intellectual property was flexible enough to acknowledge these differences. In fact, the main goal was to expose the possibilities already offered by the said system. It has been determined in this thesis that the two existing international conventions, in which were invested the hopes that the actual system *could* make room for the protection of indigenous knowledge, the CBD and the TRIPS were not, for various reasons, engendering significant changes.

In the case of the CBD, the convention recognizes that countries must respect and preserve indigenous knowledge, encourage benefit sharing and that the prior informed consent of indigenous peoples should be obtained. However, the resulting protection is weak since the convention allows for significant state discretion and lacks precision as an effective means of protection.

As for the TRIPS, which is silent on the question of indigenous knowledge, this international document may not preclude states from implementing a *sui generis* national regime. It clearly does not facilitate, however, any protection of indigenous peoples at the international level. Some developing countries still believe that TRIPS should play a more important role in the protection of indigenous knowledge.

As regards the common intellectual property regime, the protection of medicinal indigenous knowledge through patent and trade secrets was examined. It has been concluded that patents cannot be generally granted on that knowledge since it would not be regarded as being novel nor non-obvious. The possibility that indigenous peoples be recognized as joint inventors has also been rejected since the task of showing that indigenous peoples have contributed to making the invention patentable would likely be insurmountable.

As for trade secrets, this regime does offer more possibilities in cases in which the knowledge has not been made generally known. Since a large amount of indigenous medicinal knowledge is already widely known or not treated as a secret by its holders, we have concluded that the protection accorded by the domain of trade secrets remains limited.

It has become obvious that the present role of intellectual property in protecting indigenous knowledge is negligible and that the divergences in the conceptions of property and its attributes are often settled in favour of Westerners. However, we have argued that this state of affairs was and is justified by the very nature of intellectual property. We have concluded that the future role of intellectual property should be therefore limited in order to ensure an international negative protection of indigenous knowledge, or to implement a middle way solution such as a compensatory liability regime. Lastly, it has been argued that it was not desirable to settle the matter of indigenous medicinal knowledge that is already present in the public domain by granting proprietary rights to indigenous peoples over their knowledge since such a solution would entail numerous complexities, shrink the public domain and put into question the basic

principles of intellectual property. We firmly believe that other solutions should be first considered.

The questions as to how the preservation of the knowledge, its respect and even the compensation that could be given to aboriginal groups could be ensured remain the main, and unanswered, questions of the debate. Until now, human rights have been suggested as another means by which to insure protection to indigenous knowledge. While the present international framework does not explicitly recognize rights in traditional knowledge as a human right, some authors believe that existing instruments could be interpreted in a manner that is broad enough to include the protection of the rights of indigenous peoples to their knowledge.[375]

Mugabe, among others, has suggested that the *1948 Universal Declaration of Human Rights* and the *International Covenant on Economic, Social and Cultural Rights* are international instruments that could offer protection to indigenous knowledge. He exposes Posey's arguments, that which forwards that Article 1 of the Covenant, which establishes the right of self-determination, includes the right to dispose of natural wealth and resources. This would imply the right to protect and conserve resources, including intellectual property.[376] Again, according to Posey, Article 7 of the *Universal Declaration of Human Rights* could be used to extend the notion of intellectual property to the traditional knowledge of indigenous peoples.[377] Article 27 of the *Declaration on Human Rights,* similarly to other provisions of various instruments, is also suggested as a means to protect indigenous knowledge.[378]

It goes beyond the scope of this thesis to analyze the role that could be played by the system of human rights, as would the determination of the provisions that should or

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[375] Mugabe, *supra* note 44, at 1.3.
[376] Mugabe, *supra* note 44, at 1.3.
[377] Article 7 states that "all are entitled to equal protection against any discrimination in violation of this Declaration and against any incitement to such discrimination."
[378] (1) "Everyone has the right freely to participate in the cultural life of the community, to enjoy the arts and to share in scientific advancement and its benefits. (2) Everyone has the right to the protection of the moral and material interests resulting from any scientific, literary or artistic production of which he is the author."

should not be invoked to protect indigenous knowledge. However, we do believe that an appropriate "human right approach" should not tend to pursue the recognition of property rights in indigenous knowledge already in the public domain as it seems to be suggested by Posey.[379] For the previously mentioned reasons, we believe that a property approach is not appropriate for public knowledge. Instead, the discussion that surrounds human rights should emphasize the rights to share the financial benefits stemming from the exploitation of that knowledge.

However, such an approach may also have serious limitation. More precisely, it has been argued that we are dealing with a knowledge that is collective while, as mentioned by Mugabe, many of the human rights theorists believe that collective rights are not human rights. Axt explains this point of view:

> Generally, the rights of indigenous peoples are said to include rights to land, natural resources, self-determination, and culture. Inherent in each of these rights is the concept of collective rights. Indigenous groups often do not have a concept of individual private ownership of property (...). Traditional Western legal concepts however, do not generally include the notion of collective rights. The emphasis has been on individual rights *vis a vis* the state. This emphasis may limit the utility of Western concepts in helping indigenous peoples maintain their identity and rights in the face of pressure to assimilate and yield to the "modern" world.[380]

This solution clearly needs to be better studied in order to evaluate the real possibilities and limits of the human rights framework. Future debate on the protection of indigenous knowledge should be less concentrated on intellectual property. A broader view needs to be adopted in order to acknowledge the many facets of the problems that surround the issue.

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[379] Mugabe, *supra* note 44, at 1.3.

[380] Axt, J. et al., "Biotechnology, Indigenous Peoples, and Intellectual Property Rights", Report prepared for Congress of the United States of America, Congressional Research Service Research, 1993. Cited by Mugabe, *supra* note 44, at 1.3.

Finally, and it must be said, we would like to mention that principal problem related to indigenous knowledge may be the lack of real will, on behalf of state actors and other groups, to settle the matter. We still have some doubts on the real interest of some developing countries. Is their first preoccupation really to protect and preserve the culture of their indigenous population or do they simply use the problematic as a good argument to militate against the present intellectual property system? When we look at situations like the *Merk-InBio* and *Novartis-Bioamazonia* agreements, where the national government of indigenous peoples did not shared with them the benefits arising from the agreements, our doubts are evidenced to a certain extent. Thus, we can still hope that in the future indigenous peoples will not be used as money of exchange by local governments that are supposed, and claim to, protect them.

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