The Convention on Biological Diversity and Intellectual Property Rights: The Challenge of Indigenous Knowledge

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Abstract

The Convention on Biological Diversity provides for the use of intellectual property rights in the furtherance of its cardinal objectives. Not being an intellectual property convention, it offers no practical or independent scheme on how to use intellectual property rights in the pursuit of its said goals. Instead, it relies on the international intellectual property system. The principal instrument of that system is the TRIPs Agreement, which prescribes formal intellectual property rights for global application. Exploring conventional patent and trade secret regimes of intellectual property rights, this paper argues that the TRIPs Agreement's approach to those two regimes is in conflict with the nature of Indigenous knowledge forms. To that extent, the TRIPs Agreement constitutes an obstacle to the realisation of the conceptual objectives of the Convention on Biological Diversity with regard to the knowledge of Indigenous and local communities. Thus, a global intellectual property order capable of enhancing the objectives of the Convention on Biological Diversity should not ignore Indigenous protocols and jurisprudence on knowledge protection. The lingering review of the TRIPs Agreement's Article 27 provides the opportunity to move that instrument in the direction of a cross-cultural approach to intellectual property rights that has already been endorsed by the Convention on Biological Diversity and the World Intellectual Property Organisation.

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Introduction

The concentration of biological diversity[1] components in the global South in contradistinction to the prevalence of technology for their exploitation in the global North provokes the search for equity in the appropriation of biodiversity benefits and the advancement of conservation objectives. Indigenous and local communities[2] are

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1 "Biodiversity" or biological diversity is a novel term introduced by American scientist, Walter G Rosen probably as recently as 1987. See Wilson EO (ed), *Biodiversity*, National Academy of Science, Washington DC, 1988, p vi. Paul Wood rightly observes that biodiversity is a concept at a higher lane of abstraction. It "is the source of bioresources and therein lies its value to humanity." See Wood P, *Biodiversity and Democracy: Rethinking Society and Nature*, University of British Columbia Press, Vancouver, 2000, p 39. Biodiversity is more accurately understood as an abstraction whose real connection to humanity crystallises partly in the ubiquitous necessities called biological resources. It is generally defined in literature with reference to the interactions and complexity of diversity of life forms at ecosystem, species and genetic levels. See Convention on Biological Diversity, Article 2, reproduced in 31 ILM 818 (1992); McNeely JA and others, *Conserving the World's Biological Diversity*, IUCN, Gland, 1993, p 3; Bowman M, "The Nature, Development and Philosophical Foundations of Biodiversity Concept in International Law" in Bowman M and Redgewell C (eds), *International Law and Conservation of Biological Diversity*, Kluwer Law International, The Hague, 1996, p 5; Biggs S, "The Biodiversity Convention and Global Sustainable Development" in Kiely R and Marfleet P (eds), *Globalization and (Post-)Modernity and the Third World*, Routledge, London, 1998, 113, p 116; Baer KW, "The Theory of Intellectual Property and Biodiversity Treaty" (1995) 21 *Syracuse Journal of International Law and Commerce* 259, p 271; Gardiner RC, "Diverse Opinions on Biodiversity" (1999) 6 *Tulsa Journal of Comparative and International Law* 303; Bodnasky DM, "International Law and Protection of Biodiversity" (1995) 28 *Vanderbilt Journal of Transnational Law* 623, pp 627-8; The National Research Council of the United States, *Perspectives on Biodiversity: Valuing Its Role in Everchanging World*, National Academy Press, Washington DC, 1999, p 20.

2 In this article, I employ the terms Indigenous, traditional, local communities/ peoples in the context of their associated knowledge loosely and interchangeably without any distinctions. I, however, acknowledge the World Intellectual Property Organization's (WIPO) observation that "Indigenous knowledge fits into the traditional category, but traditional knowledge is not necessarily Indigenous". The point here is that the concept of "tradition" especially in relation to knowledge is a universal phenomenon that cannot be restricted to an exclusive category of people. See WIPO, *Report on Fact-Finding Missions on Intellectual Property and Traditional Knowledge 1998-1999*, WIPO, Geneva, 2001, p 26. See the *Convention Establishing the World Intellectual Property Organization*, (as severally revised), reproduced in 828 U.N.T.S. 3; 6 I.L.M.782 (1967), <http://www.wipo/clea/doc/en/wo/wo029en/htm> (18 June 2003). Although the definition of Indigenous peoples in an unsettled one in international law, it is a term that is often narrowly construed and limited to the discourse about the Aboriginal peoples of the Americas and Australasia and other culturally distinct

recognised as crucial forces in biodiversity conservation because of their close link with ecological and other natural forces. The significant role of their *non-industrial* and sustainable conservation practices also accentuates the need for equity in the "bioresource enterprise".

Intellectual property is primarily a mechanism for the allocation of rights over knowledge.[3] It is now considered a consensual option for addressing the issue of equity and reward for Indigenous knowledge. Intellectual property is also a potential device to check undue appropriation of benefits of biological diversity.[4] The two principal

groups elsewhere. See Patel S, "Can IPRs Serve the Interest of Indigenous Knowledge" in Brush S and Stabinky D (eds), *Valuing Local Knowledge: Indigenous Peoples and Intellectual Property Rights*, Island Press, Washington, DC, 1996, 305, p 307; Blakeney M, "The Protection of Traditional Knowledge Under Intellectual Property Law" (2000) 22 *European Intellectual Property Review* 251, p 252. However, in the discourse about knowledge, especially in the context of biodiversity conservation and bio-cultural practices, Indigenous knowledge is not limited to the knowledge of the peoples falling within international law's narrow view of "Indigenous peoples". Thus, Indigenous knowledge serves to distinguish alternative epistemic traditions outside the Western scientific or *conventional* practices. It incorporates the knowledge of the amorphous umbrella category called "local communities" a term invented to eschew the narrow and imprecise nature of the "Indigenous" label. See also Roht-Ariazza N, "Of Seeds and Shamans: Appropriation of Scientific and Technological Knowledge of Indigenous and Local Communities" (1996) 17 *Michigan Journal of International Law* 919, p 964 (pointing out that the term local communities is introduced to mitigate the narrow and imprecise nature of the term "Indigenous peoples"). There is ample literature on the controversy surrounding the term "Indigenous peoples". Few of those suffice to provide further lead: Kingsbury B, "Self-Determination and Indigenous Peoples" (1992) 82 *American Society of International Law Review* 383, p 389; Cobo JRM, "Study of the Problems of Discrimination Against Indigenous Populations", UN Sub-Comission on Prevention of Discrimination and Protection of Minorities, UN Doc. E/CN.4 Sub.2 1986/7/Add.4 (UN Sales #. E.86.XIV.3) (1987) [379]; Wiessner S, "Rights and Status of Indigenous Peoples: A Global Comparative International Legal Analysis" (1999) 12 *Harvard Human Rights Journal* 57 pp 110-115; Anaya J, *Indigenous Peoples in International Law*, Oxford University Press, New York, 1996, p 3; Fagan DN, "Achieving Restitution: The Potential Unjust Enrichment Claims of Indigenous Peoples Against Multinational Corporations" (2001) 76 *New York University Law Review* 632, p 653.

3 See Downes DR, "How Intellectual Property Can Be a Tool to Protect Traditional Knowledge" (2000) 25 *Columbia Journal of Environmental Law* 253, p 256.

4 See Drahos P, "Indigenous Knowledge and Duties of Intellectual Property Owners" (1997) 11 *Intellectual Property Journal* 179, p 197; Mgbeoji ICM, "Patents and Plants: Rethinking the Role of International Law in Relation to the Appropriation of Traditional Knowledge of Uses of Plants", thesis submitted in part completion of SJD at Dalhousie University, 2001, pp 375-376 (Drahos and Mgbeoji argue that intellectual property (patent) can serve a defensive purpose such as frustrating or

international intellectual property rights frameworks, the World Intellectual Property Organisation (WIPO) and the Trade-Related Aspects of Intellectual Property Rights, (TRIPs), respectively adopt a conflicting national and supranational approach to intellectual property rights.[5] However, as between the two approaches, the question is which of them is best suited to realise the objectives of protecting local knowledge, biodiversity conservation and equity in biodiversity exploitation.

This paper re-evaluates the viability of a municipal or national, and international approach to intellectual property rights towards enhancing the objective of the Convention on Biological Diversity (CBD) of protecting Indigenous knowledge relevant to the conservation of biological diversity. It appraises current debate on the protection of Indigenous knowledge. It is noted that despite the TRIPs Agreement's imposition of an international intellectual property order, a national, as opposed to global, approach to knowledge protection remains attractive in Indigenous circles and across the *developing* countries.

Perhaps the idea of a global framework for intellectual property protection is one that may have arrived ahead of its time. As the review of Article 27 of the TRIPs Agreement continues to linger,[6] Indigenous and local communities, including national governments have yet another opportunity to shape or influence the direction of the intellectual property debate in a manner to accommodate Indigenous

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regulating the appropriation of Indigenous knowledge and does not necessarily require the exploitation of the patented knowledge).

5 For perspectives on the TRIPs Agreement and the WIPO-administered conventions, see generally Gervais D, *The TRIPs Agreement: Drafting History and Analysis*, Sweet and Maxwell, London, 1998.

6 The review of article 27.3(b) of the TRIPs Agreement (dealing with patents and/or *sui generis* systems in relation to animals, plant varieties, etc) commenced in 1999 in accordance with the TRIPs timetable and it is yet to be concluded. Following several controversies (the highpoint of which was the aborted 1999 WTO ministerial meeting in Seattle), the TRIPs Council issued the Doha (Qatar) Declaration in 2001. The declaration sanctioned the continuing review of Article 27.3(b) of TRIPs and indeed the entire TRIPs Agreement pursuant to Article 71.1. Article 19 of the Doha Declaration requires the consideration of other implementation issues associated with the TRIPs Agreement including the examination of "the relationship between the TRIPs Agreement and the Convention on Biological Diversity…." For the text of the declaration, see Doha (Qatar) Declaration, WTO Doc WT/MIN/O1/Dec/ adopted 14 November 2001, <http//:www.wto.org/english/thewto e/minist e/mindecl e.htm>, (22 October 2002).

sensitivities as well as promote biodiversity conservation along the lines of the CBD. It is argued that an intellectual property regime founded upon Indigenous jurisprudence and customary protocols should be the foundation of a global intellectual property order, one that would accomplish the objectives of the CBD.

In exploring the foregoing, the paper is divided into three parts. Part one discusses the linkage between the triple concepts of biological diversity, Indigenous and local community knowledge, and intellectual property rights within the conceptual objectives of the CBD. It appraises the nature of intellectual property rights in general and isolates, for subsequent investigation in part two, the patent and trade secret regimes because of their relevance to the subjects of biodiversity conservation and Indigenous knowledge. Pursuant to CBD's reliance on international intellectual property law for attaining its objectives, part one outlines the two international regimes, or more appropriately frameworks, of intellectual property rights, the WIPO approach and the TRIPs Agreement. It notes that the two display a thematic disparity in their vision of intellectual property rights. While the former emphasises a national approach, the latter is part of a global scheme of trade liberalisation under the World Trade Organisation (WTO). It sets for global application a minimum standard of intellectual property protection based on the conventional model. As a reflection of this disparity, the WIPO framework empowers countries to determine, as a matter of national law, the nature and subject matter of intellectual property protection. The TRIPs Agreement compromises WIPO's flexibility, commending the conventional intellectual property regimes to the global arena while leaving national governments limited grounds for manoeuvring.

Part two focuses on the patent and trade secret regime of intellectual property rights. It discusses the general nature of the two regimes, broaches the scope of patentable subject matter both under the WIPO and the TRIPs Agreement. It seeks through an analysis of the three basic tests of patentability to show the practical and conceptual difficulties arising from the application of those tests to Indigenous knowledge. With regard to the trade secret regime, it remarks that TRIPs is the first ever treaty that makes reference to trade secrets. Before TRIPs, it was entirely within the powers of national governments to determine the subject matter and scope of trade secret protection. TRIPs' conventional articulation of "trade secret" for global application, like patents, creates difficulties in accommodating

Indigenous knowledge. Indigenous knowledge, being in most cases in the quasi-public domain, does not necessarily satisfy the strict requirement of secrecy under the conventional definition of "trade secret". Further, social interest and the communal orientation of Indigenous knowledge do not essentially prioritise the pursuit of independent economic value, which is a requirement of conventional trade secrets under TRIPs. Overall, the aim of this part is to underscore how patent and trade secret marginalise Indigenous knowledge, reverse the quest for biodiversity conservation and instead encourage unbridled exploitation. This, it is argued, defeats the objectives of the CBD.

Part three explores a few implications of a universal patent regime (under the TRIPs Agreement) on the conservation of biological diversity. It adopts the pharmaceutical patenting process for illustration. It observes that patent law's bias for a narrow scientific narrative excludes the cultural context in which Indigenous knowledge forms are generated. For this reason, TRIPs facilitates the concentration of patents in the critical areas of agriculture, pharmaceuticals and genetics in multinational corporations. These patent monopolies foist upon the world a monocultural hegemony by displacing Indigenous ecological and agricultural practices, which are rooted in cultural and biological diversity.

The paper concludes by making a case for a national or cross-cultural approach to intellectual property that explores Indigenous jurisprudence and knowledge protection protocols. This approach presents a realistic means of effectively incorporating Indigenous knowledge into the CBD agenda. In this connection, the lingering review of TRIPs Article 27 offers an opportunity to re-evaluate the global focus of the TRIPs Agreement in order to bring it into the cross-cultural momentum on intellectual property rights that has gained ground under the WIPO and the CBD.

PART I

1.1 Indigenous Biodiversity Knowledge And Intellectual Property Rights

The United Nations' CBD[7] has three cardinal objectives, namely, the conservation of biological diversity, its exploitation in a sustainable manner, and fair and equitable sharing of its benefits.[8] The subject of fair and equitable sharing of benefits of biological resources aims at addressing the disparity between bioresources ownership and exploitation as they correlate to the South and the North respectively.[9] Critical to this is the subject of reward for the contribution of Indigenous and local communities and their traditional (ecological) knowledge.[10] Although not directly mentioned in its cardinal objectives under Article 1, reward for Indigenous knowledge remains a focal point of the CBD in its quest for a fair and equitable scheme for

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7 United Nations Framework Convention on Biological Diversity, note 1.

8 See CBD, Article 1, note 1.

9 Commenting on this disparity, John Lash, President of the World Resources Institute observes, "[s]ince wealth and technology are as concentrated in the North as biodiversity and poverty are in the South, the question of equity is particularly hard to answer in ways that satisfy every one with a stake in the outcome." See Lash J, "Introduction" in Reid WV and others (eds), *Biodiversity Prospecting: Using Genetic Resources for Sustainable Development*, World Resources Institute, New York, 1993, p vi. It may, however, be less accurate to limit the biodiversity/poverty vs wealth/technology dichotomies to a South-North paradigm. Indeed, in truth we know that there is today "the South in the North" and *vice versa*. Indigenous peoples of Australian and North American continents are custodians of biological diversity in their ancestral territories and have maintained close links with the natural ecological order even though historically they are victims of displacements and other ecological hazards occasioned by *development* in much the same way as their counterparts in the mega biodiversity hotspots of the global South.

10 The association of Indigenous knowledge with Western scientific research analogy in the latter's recognised disciplines such as botany, pharmacology, biology, genetics, agriculture, agronomy, etc. has been variously expressed in terms of the ethno-prefixes: ethnopharmacology, ethnobotany, ethnobiology, ethno-agronomy, etc. These descriptions are often used interchangeably in legal literature without strict adherence to their scientific distinctions. But see Horton CM, "Protecting Biodiversity and Cultural Diversity Under Intellectual Property Law: Towards a New National System" (1995) 10 *Journal of Environmental Law and Litigation* 1, p 6 (restricting analysis to technical use of the term, "ethnopharmarcology"). Apart from being paternalistic, this kind of analogy is not accurate. The holistic spectrum of Indigenous worldview does not admit of such parochial disciplinary fragmentations.

appropriation of the benefits of biological resources.[11] The CBD contains elaborate provisions on, and general references to, Indigenous knowledge.[12]

Generally, the CBD recognises that the knowledge, innovations and practices of Indigenous communities are relevant to the sustainable use of biodiversity.[13] It links the sustainable development and commercial value of biological diversity with the concept of intellectual property rights.[14] Intellectual property is a basic mechanism for control and allocation of rights over knowledge. Thus, the CBD reflects the shifting application of intellectual property law from the traditional industrial and cultural terrain[15] to the pursuit of broader goals of biodiversity conservation, equitable appropriation of the benefits

11 The nature and scope of the benefits of biological resources represent a subject matter of complex inquiry and analyses outside the immediate scope of this paper. See generally Wood PM, *Biodiversity and Democracy: Rethinking Society and Nature*, University of British Columbia Press, Vancouver, 2000; Gaston KJ and Spicer JI, *Biodiversity: An Introduction*, Blackwell Science, Massachusetts, 1998; Perlman D and Adelson G, *Biodiversity: Exploring Values and Priorities in Conservation*, Blackwell Science Massachusetts, 1997; Wilson, note 1.

12 For example, paragraph 12 of the preamble to the CBD provides as follows: "Recognizing the close and traditional dependence of many Indigenous and local communities embodying traditional lifestyles on biological resources, and the desirability of sharing equitably benefits from the use of traditional knowledge, innovations and practices relevant to the conservation of biological diversity and the sustainable use of its components…." See also CBD Articles 8(j), 10(c) & 18(4), note 1 (referring generally to Indigenous knowledge of local communities).

13 See Da Costa e Silva E, "The Protection of Intellectual Property for Local and Indigenous Communities" (1997) 17 *European Intellectual Property Review* 546, p 546.

14 See Da Costa e Silva, note 13, p 526; see also Article 16(5) of the CBD, note 1.

15 Historically, intellectual property is directed at industrial and artistic concerns rather than environmental values, such as conservation of biological resources. But see Gollin MA, "Using Intellectual Property to Improve Environmental Protection"(1991) 4 *Harvard Journal of Law and Technology* 193 (arguing that there are advantages in keeping the separate focus). Whatever those advantages may be, for as long as industrial and artistic progress are essential to development, and development cannot be separated from the environment, acknowledging the role of intellectual property in environmental matters has become inevitable.

thereof[16] and the promotion of sustainable development. It upholds the idea of intellectual property as a policy instrument.[17]

Indigenous or local communities are custodians of wild habitats including their genetic resources, a role that is central to Indigenous socio-cultural and economic survival. Any system that bestows proprietary rights, with attendant economic benefits, on them creates additional incentive to conserve the habitat.[18] Michael Gollin captures this point in the following lines:

> If those who control a habitat hold proprietary rights to develop its biological resources, then they have a means for obtaining economic benefits from those resources, and, consequently, an incentive to conserve rather than destroy them…This market-based approach may also promote equity because it allows local people to share benefits deriving from their conservation and knowledge of genetic resources through biodiversity prospecting.[19]

Economic reward is integral to the CBD's recognition of Indigenous knowledge in achieving its cardinal objectives.[20] An appraisal of the objectives of the CBD is inextricably linked to the pivotal and critical role of Indigenous peoples or members of local communities in biodiversity conservation.

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16 See Gollin MA, "An Intellectual Property Framework for Biodiversity Prospecting", in *Biodiversity Prospecting*, note 9, p159.

17 This is particularly so in the general context of property law jurisprudence and the manner in which that jurisprudence gradually extended to the intellectual or intangible domain. See Mgbeoji, note 4, p 47; see also Drahos P, "The Universality of Intellectual Property Rights: Origins and Developments", 1998, <http://www.wipo.org/globalissues/events/1998/humanrights/papers/word/drahos.co>, (22 March 2002).

18 See Gollin, note 16, p 160.

19 See Gollin, note 16, p 160.

20 The CBD, note 1, seeks the application of intellectual property rights to give effect to its provisions on equitable sharing, technology transfer and to some extent, recognition of Indigenous knowledge. Those areas constitute the thrust of biodiversity and intellectual property intersection; see also Tarasofsky RG, "The Relationship Between the TRIPs Agreement and the Convention on Biological Diversity: Toward a Pragmatic Approach" (1997) 6 *Review of European Community International Environmental Law* 148, p 149 (identifying other areas of intersection).

In order to realise its objectives, the CBD relies on international law, especially as it relates to intellectual property rights.[21] In this connection, Article 16(5) provides:

> The Contracting Parties, recognizing that patents and other intellectual property rights may have 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 not run counter to its objectives.[22]

Not being an intellectual property convention,[23] the CBD's reliance on intellectual property rights is premised on national and international intellectual property regimes.[24] Intellectual property rights provide a framework for protecting and rewarding efforts that translate into the exploitation of wild species and genetic resources to useful results; and at the same time, constitute an incentive to foster their conservation. The CBD therefore lays a general foundation for a linkage between intellectual property rights and biodiversity conservation and prospecting, with a deliberate disposition towards the protection of Indigenous knowledge.[25] Ordinarily, however,

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21 See Art 16(5) of the CBD, note 1.

22 Article 16 on access to technology, and Articles 17 on exchange of information, 18 on technical and scientific cooperation, and 19 on handling of biotechnology and distribution of its benefits, make provisions that are relevant to the use and role of intellectual property rights to advance the CBD's objectives. CBD, note 1.

23 Without acknowledging this constraint, commentators have criticised the CBD as failing to provide a requisite mechanism for empirical translation of intellectual property rights into achieving its objectives. See, for example, Horton, note 10, pp 21-2.

24 The WTO/TRIPs Agreement, as the *de facto* international intellectual property law, demands national laws on intellectual property rights to comply with TRIPs' prescribed benchmarks as a form of a universal or global regime. Because most developed countries have national intellectual property laws virtually reconcilable to the TRIPs Agreement, the burden to comply with TRIPs in terms of structure and details continues to weigh heavily on developing countries. The following analysis will focus on the international intellectual property law roadmap enunciated in the TRIPs Agreement. *Agreement on Trade-Related Aspects of Intellectual Property Rights*, (TRIPs) reproduced in 33 I.L.M. 1197 (1994).

25 Article 8(j) of the CBD, note 1, gives Member States a blank cheque to create schemes capable of protecting local knowledge. This would include intellectual property rights either in their conventional or *sui generis* forms or both in a

intellectual property rights do not directly relate to conservation of biological diversity. Instead, they form part of the convergence of economic, policy and social contexts in which conservation is encouraged.[26]

1.2 Intellectual Property in Biodiversity Perspective

Intellectual property loosely refers to the products of the human intellect including the rights, duties, and economic benefits accruing thereto.[27] Rights in intellectual property are directed at "the recognition of moral and economic value of intellectual creation in the cultural, social and economic development of nations."[28] The moral, socio-cultural, economic and, sometimes, spiritual strings attaching the Indigenous peoples to their biological resources and ecological experience constitute in themselves a complete way of life and a unique feature of their identity. Thus, biological diversity has been acknowledged as one of the main causes of cultural diversity and many, if not all, Indigenous and local communities depend on biological diversity.[29] Their traditional knowledge is a product and/or function of Indigenous socio-cultural, economic and historical experiences, which arguably approximate to the general or loose concept of intellectual creation or intellectual property.

Because of the long held erroneous belief that Indigenous ecological and conservation experience are not "scientific", such efforts are deprived of innovative status within the orthodox criteria of intellectual (property) evaluation. However, contemporary realities associate the so-called "rudimentary endeavours" of traditional peoples with

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manner akin to the provisions of Article 27.3(b) of the TRIPs Agreement, note 24.

26 Tarasofsky, note 20, p 149.

27 See Philips J and Firth A, *Introduction to Intellectual Property Law*, 2nd ed, Butterworths, London, 1995, p 3.

28 Bogsch A, (Director General of the World Intellectual Property Organisation) "Opening Address" presented at WIPO Conference, Louvre, Paris 1-3 July 1994; see also Tritton G, *Intellectual Property in Europe*, Sweet and Maxwell, London, 1996, p 1 (endorsing Bogsch's articulation of the nature of intellectual property rights).

29 See Olembo R, "Cultural Diversity and Biological Diversity", in Bilderbeek S (ed), *Biodiversity and International Law: The Effectiveness of International Environmental Law*, IOS Press, Amsterdam, 1992, p 9.

innovative and efficacious results in the fields of agriculture, plant breeding, genetics, medicine and pharmacology to, mention a few.[30] The credit for these endeavours is easily appropriated under the established scientific narrative, which is often the basis for articulating and ascribing rights to intellectual property and efforts. Even the CBD's attempt to incorporate the innovations, practices and traditional lifestyles of Indigenous and local communities within the framework of its objectives seems to put more emphasis on compensation than on the acknowledgement that Indigenous knowledge constitutes an intellectual property right on its merit.[31] Nonetheless, the CBD's support for local knowledge still remains perhaps the foremost international attempt to spotlight the importance of Indigenous knowledge in general and in the specific context of biodiversity conservation.

Intellectual property is also an umbrella expression for a broad spectrum of regimes including patents, petty patents, trade secrets, copyrights, trademarks, utility models, plant variety/breeders' rights.[32] It has been extended to include any form of legal protection for knowledge and technology even if not falling neatly into the traditional categories.[33] Intellectual property continues to reflect dynamism in its scope as it assumes relevance in the context of increasing human

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30 There are numerous instance where Western science has relied on Indigenous knowledge to support its modern scientific and research endeavours in a multiplicity of fields including genetics, botany, pharmacology, agriculture, etc. For example, Horton writes that using traditional knowledge, the possibility of developing at least one marketable pharmaceutical from a thousand plant samples rose from twenty two percent to seventy eight percent or three and one half times. See Horton, note 10 p 5; Michael Balick finds that using traditional knowledge, the efficacy of screening plants for medicinal properties increased more than four hundred percent. See Balick M, "Ethnobotany and Identification of Therapeutic Agents from the Rainforests" in Chadwick PJ and Marsh J (eds), *Bioactive Compounds from Plants*, John Wiley and Sons, New York, 1990, p 22-39. Indeed, traditional healers are known to have employed most of the seven thousand natural compounds used in modern medicines today for centuries. The list of these claims is literarily inexhaustible. See also Gana RL, "Prospects for Developing Countries Under the TRIPs Agreement" (1996) 29 *Vanderbilt Journal of Transnational Law* 735, p751-752 (elaborating on how the original discoveries of therapeutic value of certain substances by Indigenous tribes are appropriated).

31 See Yano LI, "Protection of Ethnobiological Knowledge of Indigenous Peoples" (1993) 41 *University of California Los Angles Law Review* 443, p 478.

32 This is by no means an exhaustive list.

33 See Gutterman AS, "The North-South Debate Regarding the Protection of Intellectual Property Right" (1993) 23 *Wake Forest Law Review* 89, p 92.

innovations and technological advancements.[34] The CBD appears to emphasise the patent regime of intellectual property rights over other regimes because of that regime's relevance to biological diversity and biotechnology transfer.[35] For this reason, this paper also focuses on the patent.[36] In addition, it discusses perfunctorily the trade secret regime.[37] In so doing, it evaluates the relevance of trade secrets to the intersections of biodiversity conservation, Indigenous knowledge and intellectual property rights.

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34 For the impact of the ever increasing scope of human innovation on the evolution of intellectual property concepts, see Gervais, note 5, p 10; see also Bawa R, "The North-South Debate Over the Protection of Intellectual Property" (1997) 6 *Dalhousie Journal of Legal Studies* 77, pp 83-86 (discussing how globalisation and economic interdependence have boosted growth in technology, industry and innovation with snowball effects on intellectual property activities). See generally Drahos P and Braithwaite J, *Information Feudalism—Who Owns the Knowledge Economy*, Earthscan, London 2002; Cohen J and others, *Copyright in a Global Information Economy*, Aspen Law and Business, New York, 2002.

35 See Article 16(5) of the CBD, note 1. Although it is possible to analyse virtually all intellectual property regimes in relation to the CBD, the majority of the literature focuses on patents while making less rigorous analysis of other regimes considered *peripheral* for CBD purposes. It would seem that the relevance ascribed to a given intellectual property regime to biological diversity is to some extent a function of a writer's thematic perspective and emphasis. But see Gollin, note 16, p 159 (attempting a bold and comprehensive analysis of intellectual property regimes on biological diversity conservation). See generally Ritchie M and others, *Intellectual Property Rights and Biodiversity: The Industrialisation of Natural Resources and Traditional Knowledge*, (1996) 11 *St. John's Journal of Legal Commentary* 431; Horton, note 10; Downes, note 3.

36 The emphasis on the patent regime, however, is not an exhaustive discussion of all aspects of that regime. Rather, it is limited to the paper's conceptual framework. The holistic gamut of Indigenous knowledge may not be fully appreciated in a delineated analysis of a specific regime of intellectual property such as patents. Appraised in its holistic context, Indigenous knowledge fits within different regimes of intellectual property rights at the same time. For instance, the shaman's knowledge of medicinal plants and their therapeutic properties is a patentable resource, his poetic incantations and other ceremonies during therapeutic rituals are copyrightable in their fixed forms. Nonetheless, compared to patents, other mainstream intellectual property categories such as trademark, copyright and indications of origin, appear to have peripheral or indirect appeal in terms of their empirical relevance to Indigenous biocultural or ecological (as opposed to artistic) experience.

37 See Article 29(2) (a)-(c) of the *Agreement on Trade-Related Aspects of Intellectual Property Rights*, (TRIPs) reproduced in 33 I.L.M. 1197 (1994), which incorporates, for the first time, the trade secret regime into the international intellectual property system.

1.3 The International Intellectual Property Framework

WIPO and TRIPs: National and International Approach

As already noted, Article 16(5) of the CBD brings its reliance on intellectual property rights within the ambit of international law on the subject. This is, however, with the caveat that the law should not compromise the CBD's objectives.[38] The reference to international law on intellectual property is to the WIPO and the TRIPs Agreement. It should be noted that the WIPO is an administrative organ for a number of intellectual property treaties[39] and is not an intellectual property convention in the manner of the TRIPs Agreement. Thus, reference to WIPO here is not in the sense of a treaty but as an indirect reference to the relevant WIPO administered treaties and the underlying principles under which WIPO supervised those treaties before the coming into effect of the TRIPs Agreement.

The WIPO regime, which has been described as part of an "elderly"[40] convention governing intellectual property rights, existed more than 26 years before the emergence of the TRIPs Agreement.[41]

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38 There is a strong reservation regarding how this could be attained. As already noted, the CBD is not an intellectual property convention and it provides no detail or mechanism to positively employ intellectual property rights to further its objectives. It is doubtful that the CBD has the capacity and the clout within international law dynamics to influence international intellectual property regimes to the effect that they do not compromise its objectives. In fact, that is perhaps one of the most significant challenges facing the CBD.

39 See the *Convention Establishing the World Intellectual Property Organization*, (as severally revised), reproduced in 828 U.N.T.S. 3; 6 I.L.M.782 (1967), <http://www.wipo/clea/doc/en/wo/wo029en/htm> (18 June 2003). The principal objective of WIPO set out under Article 3 is "to promote the protection of intellectual property throughout the world through cooperation among States and, where appropriate, in collaboration with any other international organization." To accomplish this objective, Article 4 provides in part that WIPO "shall promote the development of measures designed to facilitate the efficient protection of intellectual property throughout the world and to harmonize national legislation in this field…". See also Leaffer MA (ed), *International Treaties on Intellectual Property*, Bureau of National Affairs, Washington, DC, 1990, p 567; Horton, note 10, p 27.

40 See Corea CM and Yusuf AA (eds), *Intellectual Property and International Trade*, Kluwer Law International, The Hague, 1998, p xvii.

41 The Convention establishing the WIPO was signed at Stockholm on July 14, 1967, while the TRIPs Agreement was signed, as part of the GATT/WTO 8th Uruguay Round of Multilateral Trade Negotiations in Marrakesh, Morocco, on June 5, 1993. WIPO note 2.

The WIPO is charged with facilitating compliance with a system of bilateral and multilateral conventions on intellectual property rights.[42] As an umbrella organisation, the WIPO administers several principal conventions.[43] Among the WIPO administered conventions,[44] the 1883 Paris Convention for the Protection of Industrial Property and the 1886 Berne Convention for the Protection of Literary and Artistic Works are perhaps the most prominent.[45] The Paris Convention[46] covers a broad range of intellectual property regimes, particularly, the administration of an international patent regime.[47]

Similarly, the TRIPs Agreement covers a broad range of intellectual property rights including patents, and makes detailed provisions on

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42 See Hurlbut D, "Fixing the Biodiversity Convention: Toward a Special Protocol for Related Intellectual Property" (1994) 34 *Natural Resources Journal* 379, p 394; see also Leaffer, note 39, p 563 (outlining the history of the WIPO Convention).

43 To date WIPO administers a total of 23 treaties. They fall within three broad categories: (a) intellectual property protection treaties (b) global intellectual protection system treaties and (c) classification treaties. An alphabetical listing of WIPO-administered treaties is available online: <http://www.wipo.org/treaties/sitemap/a-z.html>, (20 June 2003); see also Hurlbut, note 42, pp 394-395.

44 Both the Paris and Berne Conventions have undergone six major revisions since they came into force.

45 The Paris Convention, of 20 March 1833 (severally revised), as reproduced in 828 U.N.T.S. 305. Berne Convention for the Protection of Literary and Artistic Works of 9 September 1886, (severally revised), as reproduced in the Australian Treaty Series, austlii.edu.au, <http://www.austlii.edu.au/cgi-bin/disp.pl/au/other/dfat/treaties/1972/13.html> (15 March 2004); see also Gervais, note 5, p 9; Beier F and Schricker G, (eds), *GATT or WTO?: New Ways in International Protection of Intellectual Property*, Max Planck Institute, Munich, 1989. See generally Leaffer, note 39 (reiterating the pre-eminence of the Paris and Berne Conventions over other WIPO administered treaties).

46 Because of this paper's focus on the patent regime in the context of CBD, note 1, except where otherwise distinguished, reference to the WIPO is by implication to the Paris Convention, note 45, and *vice versa*.

47 The Paris Convention, note 45, must be distinguished from the Patent Co-operation Treaty (PCT) of 1970, which is also administered by the WIPO as part of the global protection system treaties. This treaty merely creates a Union for co-operation among its members in patent filings, administration and incidental matters. It did not create an international patent regime. *See* Leaffer, note 39, pp 76-124. The text of the PCT is available online: <http://www.wipo.org/treaties/registration/pct/index.html>, (20 June 2003).

substance and content.[48] One unique aspect of TRIPs, as already noted, is the extension of the concept of trade secret to international level.[49] A major point of departure between the two regimes is their conflicting emphasis on the empowerment of national and international approaches to intellectual property rights respectively. The WIPO sanctions the power of national governments to determine subject matters of intellectual property rights in general.[50] On the other hand, TRIPs aspires toward global, albeit minimum, standards of intellectual property protection. Traditionally, developing countries favour the WIPO approach. In contrast, the TRIPs initiative is perceived as the triumph of developed countries.[51] This sharp geopolitical approach to intellectual property rights underscores the difficulty inherent in the CBD's reliance on international law.[52]

The coexistence of two substantive international regimes on intellectual property rights, albeit with ostensibly varying emphases[53] requires some clarification. The TRIPs regime did not abolish the WIPO-administered conventions.[54] However, doubts exist as to the viability

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48 See Arts 9-40 of the TRIPs Agreement, note 24, for the scope of intellectual property regimes covered by the agreement; see also Corea and Yusuf, note 40, p xvii (describing the general scope of the TRIPs Agreement, the editors observe that "the TRIPs Agreement constitutes a major qualitative leap which radically modifies not only the context in which IPRs are considered internationally, but also their substantive content, and the methods of their enforcement and dispute settlement"). See generally Gervais, note 5, p 11 (describing the Agreement as "the broadest and most extensive multilateral agreement in the field of intellectual property…").

49 Articles 27-34 of TRIPs specifically deal with patent protection. However, while not specifically adopting the phrase "trade secret", article 39 deals with the subject under the heading of "Protection of Undisclosed Information". TRIPs, note 24.

50 See Gana, note 30, p 745, Hurlbut, note 42, p 394. See generally Beier and Schricker, note 45; Sell SK, *Powers and Ideas: North-South Politics of Intellectual Property and Antitrust*, State University of New York Press, Albany, 1998 (buttressing WIPO's preference for a national law approach to intellectual property rights).

51 See generally Gervias, note 5.

52 See Sell, note 50.

53 Although TRIPs purports to regulate (in accordance with its name and evolution) trade aspects of intellectual property rights, it ended up *covering the field* to a degree that has never been done in international intellectual property regulation. See Gervais, note 5, pp 11-13.

54 However, Article 70 of TRIPs, note 24, makes detailed provisions on the pre-existing obligation of members under different covenants including particularly

of the latter, especially since TRIPs has exceeded its original mandate,[55] incorporating and, indeed, tampering with subjects already provided for in WIPO administered conventions.[56] In addition, following the principles of interpretation as an instrument later in time, TRIPs Agreement provisions prevail in areas of conflict with the provisions of pre-existing WIPO-administered covenants.[57] Further, the dispute settlement mechanism of TRIPs is a component of the WTO Dispute Settlement Understanding,[58] in which the WIPO does not have any role. Consequently, as much as the developing countries would naturally be inclined to adhere to the rights under the WIPO regime, such inclination now has the potential to attract sanctions and trade concession withdrawals if they are in conflict with the WTO under its Dispute Settlement Understanding. One of the major reasons for the WIPO losing favour with developed countries was that it

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copyright obligation with respect to existing works pursuant to Article 18 of Berne Convention (1971) note 45. The overall approach of Article 70 is to gradually ease out the conflicting obligations of members in pre-existing covenants so as to bring the TRIPs framework into full operation. See also Article 65 of the TRIPs Agreement on Transitional Arrangements and Article 13 of the WIPO Convention which requires WIPO to enter into working "relations and cooperation" with other organisations. In addition to Articles 70 and 65, Article 2 of TRIPs makes specific provision regarding particular provisions of the Paris Convention and other WIPO administered treaties.

55 Gervais, note 5, pp 11-13. It is, however, not suggested that WIPO is becoming marginal in the global intellectual property agenda. As observed in note 54, it is part of WIPO's mandate to enter into working relationship and cooperation with relevant organisations. Indeed, Graham Dutfield avers that "WIPO is by far the most important international institution dedicated to IPRs, and is likely to increase its influence as WIPO builds closer ties with other institutions such as the WTO and the CBD Conference of Parties Secretariat." See Dutfield G, *Intellectual Property Rights, Trade and Biodiversity: Seeds and Plant Varieties*, Earthscan, London, 2000, p 96.

56 For example, issues such as the duration of patent, patentable subject matter, compulsory license under the Paris Convention, note 45, were essentially within the discretion of Member States. TRIPs not only provides for 20 year patent life but also leaves little room for states' discretion on some of these matters.

57 See Article 30(3) of the *Vienna Convention on the Law of Treaties*, reproduced in 8 I.L.M. 679 (1983) which provides as follows: "When all parties to an earlier treaty are parties also to the later but the earlier treaty is not terminated or suspended in operation under article 59, the earlier treaty applies only to the extent that its provisions are compatible with those of the later." For instance, since TRIPs provides for a 20 year patent life, no Member Union of the Paris Convention (invariably a member of the WTO) could any more insist on its discretion to fix patent life below that mark.

58 See Article 64 of TRIPs Agreement, note 24; see also note 59 and accompanying text.

lacked a justiceable or enforcement mechanism for the conventions it administered, a vacuum the TRIPs Agreement has since filled.[59] This state of affairs, among other considerations, gave rise to the observation that with regard to intellectual property rights, "TRIPs is the only game in town".[60] However, it remains to be seen whether TRIPs supranational emphasis on intellectual property succeeds in laying to rest the pull toward a national approach championed by the WIPO and, lately, the CBD. Meanwhile, the feasibility of the CBD's allusion to the international law on intellectual property in pursuit of its objectives can be explored in the context of TRIPs' putative global patent and trade secret regimes.[61]

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59 See Gervais, note 5; see also Article 64(1) of TRIPs, note 24, which provides that "[t]he provisions of Articles XXII and XIII of GATT 1994 as elaborated and applied by Dispute Settlement Understanding shall apply to consultations and the settlement of disputes under this Agreement except as otherwise provided specifically provided herein". The Council for TRIPs established under the WTO Institutional Framework administers the TRIPs Agreement. See the *Agreement Establishing the World Trade Organisation* 1994, Art IV(5), reproduced in 33 I.LM.1144 (1994). The Dispute Settlement Understanding (DSU) is annex 2 to the WTO Agreement and it is binding on all WTO members.

60 Horton, note 10, pp 27-28. The writer made the observation upon the background of the still-born WIPO, sponsored Patent Harmonisation Proposal whose negotiations since 1985 signified the developing countries attempt to revitalise the WIPO with the hope of checkmating the emergence of the TRIPs Agreement. The stalemate suffered by this initiative was blamed on the intransigence of the United States for not acceding to a more global *first to file* patent application system as against its practice of *first to invent*. This deadlock of the WIPO-sponsored treaty on patent harmonisation paved the way for the TRIPs regime, highly favoured by the United States and other developed countries.

61 Despite bold WTO initiatives to shift intellectual property rights from their traditional national law domain through the TRIPs Agreement, it is still highly inconceivable that intellectual property rights could completely cease to be an instrument of the political economy of states, especially the powerful ones. It is really a matter of degree how intellectual property, particularly patents, can be harmonised to accommodate the conflicting interests of states. Echoing these sentiments, Mgbeoji writes:

> Neither the Agreement on Trade Relates Aspects of Intellectual Property Rights (TRIPs), nor any other relevant international legal instrument, nor an international adjudicative panel or court has articulated a binding, authoritative or definitive interpretation of the key elements of a global patent system…With the patent law falling essentially within the domestic jurisdiction of individual nations, the TRIPs Agreement merely attempts to set a minimum standard. It failed to define or establish a global standard of novelty, inventive step, industrial applicability, enablement, and utility. These crucial elements remain susceptible to domestic politics and interests.

Part II

2.1 Patents

Nature of Patent

Patent is a significant regime of intellectual property right. It occupies a prominent consideration in the CBD[62], the WIPO[63] and the TRIPs Agreement.[64] The importance of patent arises in part from its association with the protection of innovations in both biological and other non-life industrial and technological endeavours. Generally, a patent is an exclusive right or privilege, conditionally[65] granted by the state, for an inventor to manufacture, use, sell, or to generally exploit an invention, within the national jurisdiction, for a limited number of years.[66] Patent rights are construed as a motivation for inventive endeavour and innovation.[67]

See Mgbeoji I, "Patents and Traditional Knowledge of the Uses of Plants: Is Communal Patent Regime Part of the Solution to the Scourge of Biopiracy?" (2001) 9 *Indiana Journal of Global Legal Studies* 163, pp 174, 179-180.

62 See particularly CBD, note 1, Article 16(5).

63 Patent under the WIPO framework derives from the 1883 Paris Convention for the Protection of Industrial Property Rights. See note 45.

64 See Arts 27-33 of the TRIPs Agreement, note 24.

65 The grant of patent is usually conditional upon the description or disclosure of the invention and/or its process in a documented form, through a patent application accompanied by detailed claims. This disclosure is the consideration for the grant by the state, so that at the end of the patent term, the protected information will revert to the public domain, to be accessed and worked by interested parties.

66 Most national patent laws do not strictly define patents, and where defined, it is usually in abstract and circular terms. See note 72 and accompanying text.

67 But see Oddi SS, "The International Patent System and Third World Development: Myth or Reality?" (1987) 63 *Duke Law Journal* 831, pp 837-842 (disputing the proposition). Resulting from his cost benefit analysis of the patent system, Oddi observes: "[d]espite the 500 year history of the patent system, it is still extremely difficult to ascertain whether a patent system actually results in a net social benefit to a developed country." For the jurisprudence and rationale for intellectual property rights in general, see the following: Sherwood R, *Intellectual Property and Economic Development*, Westview Press, Colorado, 1990; Drahos P, *The Philosophy of Intellectual Property Rights*, Dartmouth Publishing Co., Aldershot, 1996; Moore D (ed), *Intellectual Property: Moral, Legal and International Dilemmas*, Rowman and Littlefield Publishers, New York, 1997; Hughes J, "The Philosophy of Intellectual Property" (1995) 77 *Georgetown Law Journal* 287; Waldron J, "From Authors to Copiers: Individual Rights and Social Values in Intellectual Property Rights" (1983) 68 *Chi-Ken Law Review* 481; Gordon W, "On Commodifying Intangibles" (1998) 10 *Yale Law Journal of Law and Humanities* 135; Boyle J, "The Politics of Intellectual

Like all regimes of intellectual property rights, patent rights are subject to national law. Attempts at international harmonisation of patent regimes have always been contentious and without much success.[68] This is mainly because of the conflicting national interests of developing and developed countries as receivers and exporters of patented technologies, respectively. As observed by Rafik Bawa, the extent of a country's comparative advantage in innovation determines its strategy towards intellectual property rights.[69] Intellectual property laws across the globe are far from uniform.[70] Thus, harmonisation of intellectual property laws must strive toward a middle ground between often conflicting geopolitical perspectives on the subject. To understand the differing impacts of the WIPO and TRIPs' approaches on the patent regime toward the realisation of the objectives of the CBD, a brief evaluation of the legal framework for defining and determining patent rights within the two regimes is imperative.

Scope Of Patentable Subject Matter

Under the WIPO, domestic law is the principal determinant of subject matter of patent protection.[71] The WIPO regime is consistent with the general approach of developing countries. What constitutes a "patent" is not defined under the Paris Convention.[72] Article 1 of the

Property Rights: Environmentalism on the Net?", <http://www.noemalab.com/sections/ideas/ideas_articles/pdf/boyle.pdf>, (20 April 2003).

68 See Gutterman, note 33, p 93; see also note 60 and accompanying text.

69 Bawa, note 34, p 81. See generally Trebilcock MJ and Howse R, *The Regulation of International Trade*, Routledge, New York, 1995.

70 See Gutterman, note 33, pp 92, 104.

71 See Gana, note 30, p 748.

72 Generally there is no statutory definition of patent. Usually reference is made in statutes to "letters patent for an invention". The *Patent Act 1985 (Canada)*, R.S.C., c. P-4 s. 2, makes reference to "letters patent for an invention". What is *defined* more elaborately is "invention". This putative definition is no more than an outline of conditions for patentability within the national jurisdiction. The Canadian *Patent Act* in the same section defines invention as "any new and useful art, process, machine, manufacture or composition of matter, or improvement in any art, process, machine, manufacture or composition of matter". See also *Patent Act 1998* (US), 35 USC § 101; For a detailed analysis of the scope and jurisprudence of section 2 of the Canadian *Patent Act*, see *Commissioner of Patents v President and Fellows of Harvard College and others* [2003] 21 CPR 417. It is instructive that both the US and Canadian courts have interpreted the identical definition of patents in their statutes differently, with Canada insisting

Paris Convention leaves the definition of, and the criteria for determining, a patent within the discretion of the respective national laws of the members of the Paris Union.[73] This provides a crucial opportunity for the exercise of national policy on matters related to the grant and determination of patent rights. Members of the Paris Union are at liberty to determine for themselves the appropriate subject matters for the grant of letters patent. This situation is consistent with the role of intellectual property rights as an instrument for the promotion of crucial national and social interests.[74]

Because of the urgent need of many developing countries for vital supplies in the areas of health, food, drugs, etc, including their desire to eradicate poverty, it is commonplace for them to exercise this latitude and exclude a number of products and processes from patentability. Such excluded items are mainly in the areas of plant and animal varieties, biological processes for producing them, and medical treatments for humans and animals. Others include food and chemical products, computer programs, fertilisers, agricultural machines,

in the recent *Harvard* case that the definition of invention does not include *higher life forms*. A different jurisprudence in the US derives from the 1980 decision in *Diamond v Chakrabarty* (1980) 447 US 303; (1980) 20 USPQ 193. Thus, "invention" lacks a categorical definition, and it is open to the courts to determine whether any new and useful art, process, machine, manufacture or composition of matter…or improvements thereof amount to an invention upon which the law confers patent *privilege*. In support of this view, David Vaver, notes that "taxonomy of invention—something by definition unexpected and unforeseen—is a North American conceit. The United Kingdom never defined invention. Instead the Statute of Monopoly of 1624 spoke of granting patents for 'any manner of new manufactures', leaving the definition for judges to work out." See Vaver D, *Intellectual Property: Copyrights Patents and Trade Marks*, Irwin Law, Concord, Ontario, 1997, p 120. See generally Potts H, "The Definition of Invention in Patent Law" (1944) 7 *Modern Law Review* 113.

73 Article 1 of the Paris Convention, note 45, is couched in very general and liberal terms. Article 1(4) specifically deals with patents. It provides: "Patents shall include the various kinds of industrial patents, *recognized by the laws of the countries of the Union*, such as patents of importation, patents of improvement, patents and certificates of addition…" (emphasis added).

74 On the role of intellectual property rights, especially patents, as instruments for the promotion of national agendas, see Gadbaw MR, and Richards TJ (eds), *Intellectual Property Rights: Global Consensus, Global Conflicts*, Westview Press, Boulder,1998; Kloppenburg J, *First the Seed: The Political Economy of Plant Biotechnology 1492-2000*, Cambridge University Press, 1988; Mgbeoji, note 61, p 174; Oddi, note 67.

cosmetics and other petty inventions.[75] All of these items are permissible subjects of exclusion under the Paris Convention.[76]

The latitude to exclude does not foreclose the discretion to expand the scope of patentable subject matter. Developing countries are equally at liberty under the WIPO regime to broaden the scope of registrable patents within their jurisdictions. This discretion lends itself readily to the subject of biological diversity. By exercising this discretion, developing countries could, on their own initiative, accord intellectual property right protection to local bio-cultural knowledge forms based on prevailing jurisprudence and protocols in Indigenous and local communities. It is not mandatory that such initiatives will be patterned after conventional intellectual property rights.[77] This is more appropriate since mainstream intellectual property jurisprudence is difficult to reconcile with the idea of intellectual property rights over Indigenous knowledge forms.[78] Even if granting intellectual property right status to Indigenous knowledge may not fit within the rubric of

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75 The idea of excluding select necessities from the list of patentable subject matters is not exclusively a developing country phenomenon. For similar reasons, developed countries excluded patent rights in relation to food, chemicals, plants or animals until as recent as the late 1960s. See Biggs, note 1, pp 113, 116. Such developed countries included Germany, France, Australia and Spain; see also Gana, note 30, p 746 (reiterating the foregoing proposition) citing Ladas S, *Patents, Trademarks and Related Rights, National and International Protection*, Harvard University Press, Massachusetts, 1975, p 22. Generally, before TRIPs and under the Paris Convention, boundaries or confines of patentable subject matter were policy issues which were tempered with flexibility (both in developing and developed countries) in accordance with ethical, political and economic considerations at national levels.

76 Excluded items could be reproduced or worked without liability to royalty payments to right holders. See Gana, note 30, pp 746-749 and note 30.

77 See Drahos, note 4, p 196.

78 See, for example: Yemin F and Posey D, "Indigenous Peoples, Biotechnology and Intellectual Property Rights" (1993) 2 *Review of European Community and International Environmental Law* 141; Nijar GS and Ling CY, "The Implications of Intellectual Property Rights Regime on the Convention on Biological Diversity and GATT on Biodiversity Conservation: A Third World Perspective" in Krattiger AF and others (eds), *Widening Perspective On Biodiversity*, IUCN/International Academy of the Environment, Gland, 1994; Puri K, "Copyright Protection for Australian Aborigines in the Light of Mabo" in Stephenson MA and Ratnapala S (eds), *Mabo: A Judicial Revolution*, University of Queensland Press, St. Lucia, 1993, p 132; Coombe RM, "Properties of Culture and Politics of Possessing Identity: Native Claims in Cultural Appropriation Controversy" (1993) 6 *Canadian Journal of Law and Jurisprudence* 249; Blakeney M, "Protecting the Expressions of Australian Aboriginal Folklore Under Copyright Law" (1995) 17 *European Intellectual Property Review* 442.

conventional intellectual property right, the latitude under the Paris Convention does not prohibit the creation of a *sui generis* right.[79] A *sui generis* biodiversity or bio-cultural intellectual property right would accord desired recognition to Indigenous knowledge, with a result that will foster biodiversity conservation in accordance with the CBD's objectives. Such regimes need not necessarily be an imitation of conventional intellectual property rights.

Most developing countries,[80] with the exception of the threshold or peripheral[81] ones, did not fully exploit the opportunity offered by the WIPO latitude.[82] Arguably, if the WIPO regime enjoyed the full

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79 However, the exercise of this latitude does not necessarily mean the creation of a *sui generis* intellectual property right. Knowledge protection schemes and jurisprudence exist in all cultures and they do not have to be patterned on mainstream intellectual property rights. For a review of some relevant literature on proposed models for a special intellectual property right to protect Indigenous ecological or bio-cultural knowledge, see Gollin, note 16, pp 178-182 (insisting that none of the proposed models is satisfactory on its own); Mgbeoji, note 61 (community patents); Drahos P, "Indigenous Knowledge Intellectual Property and Biopiracy: Is Global Bio collecting Society the Answer?" (2000) 22 *European Intellectual Property Review* 245. See generally Dutfield, note 55.

80 See Gollin, note 16, pp 178-182 (referring to a Kenyan initiative, an amendment to that country's intellectual property law in 1989, which uses the instrumentality of petty patent to accord intellectual property right protection to traditional medicinal knowledge). The 1989 Kenyan Industrial Property Bill (see the *Industrial Property Act* 2001) allows petty patent relating to traditional medicinal, ie for herbal and nutritional formulation, which prove to have new effects. See Dutfield, note 55, p 19.

81 "Threshold" or "peripheral" developing countries refer to those countries that have reached or are approaching the threshold level of *development*, usually characterised as upper middle level or high-income economies. They have *per capita* GNP levels far above the subsistence level or at least twice that of the average least developed country. These countries include, Mexico, Singapore, Korea, Taiwan, Hong Kong, Brazil, Argentina, India, and China (the last two are so mainly because of their domestic scientific and technical capacity for industrial growth and capital formulation). Although not necessarily in the strict and deliberate exercise of their discretion under the WIPO regime, most of the countries under this category adopt intellectual property approaches that suit their economic and social needs. See Brenner-Beck D, "Do as I Say, Not as I Did" (1992) 11 *UCLA Pacific Basin Law Journal* 84; see also Bawa, note 34, pp 114-115. See generally Ritchie, note 35, pp 434, Gana, note 40, p 746; Biggs, note 1, p 130.

82 See Gana, note 30 (pointing out that, contrary to claims by industrialised countries, it is not true that developing countries exploit the so-called weakness of the international patent system by taking advantage of foreign patentees. In a similar vein, Mgbeoji notes that "[t]he surprising thing about re-writing and retrofitting of the patent system to accommodate certain well-established

cooperation of developed countries, an intellectual property or *sui generis* biodiversity right over Indigenous knowledge would have been entrenched to the ultimate advantage of the conservation of biological diversity. The emergence of the TRIPs Agreement has stunted, but not obliterated, the prospects of empowering Indigenous knowledge through national laws for the conservation of biological diversity.[83]

Strikingly, TRIPs prescribes a uniform standard or condition precedent for the grant of a patent right. Therefore, the condition for determining the eligibility for patentability of a particular subject matter is no longer entirely within the discretion of national governments.[84] For TRIPs, patent rights can only apply to inventions that are new, involving an inventive step and capable of industrial application.[85] This is a wholesale legal transplantation of the long established and developed tests for patentability in Euro-American jurisprudence, namely, novelty, utility and non-obviousness.[86]

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interests is that most states of the South have approached the subject of patents on plants as if the patent system was an unalterable, sacrosanct and apolitical regime." See Mgbeoji, note 4, p 323.

83 Dutfield argues that the failure to mention traditional ecological knowledge in the TRIPs Agreement does not, however, disallow a member (of the WTO) from enacting legislation to protect such a category of knowledge. The snag here, however, is that other WTO members are not required to recognise rights in other countries that go beyond the minimum standards established by the TRIPs Agreement. See Dutfield, note 55, pp 17 and 19. The United States and most developed countries have sought to interpret TRIPs provision for an "effective *sui generis* system for the protection of plant varieties" in Article 27.3(b) to conform to the higher and semi formal standard of protection for plant breeders endorsed under the UPOV, a move which developing countries continue to resist. See Sell K, "Post-TRIPs Developments: Tensions Between Commercial and Social Agendas in the Context of Intellectual Property" (2002) 14 *Florida Journal of International Law* 147, p 206; for detailed discussion of the *sui generis* debate see Leskien D and Flitner M, "Intellectual Property Rights and Plant Genetic Resources: Options for a Sui Generis System" 6 *Issues in Genetic Resources*, International Plant Genetic Resources Institute, Rome, 1997.

84 But see Mgbeoji, note 61 and accompanying text.

85 See Mgbeoji, note 61, pp179-180 who argues that despite the move toward a harmonised patent regime, "[t]hese crucial elements remain susceptible to domestic politics and interest".

86 The guidance footnote 5 to the text of the TRIPs Agreement reconciles the relevant wordings of Article 27 with novelty, usefulness and non-obviousness. See Gana, note 30, p 748 (describing the requirements of patentability under Article 27 of the TRIPs Agreement "as an outright replica of European condition for a patent grant"); see also Grevais, note 5, pp 15-14, (articulating the overbearing influence of developed countries, spear-headed by the USA, in ensuring the imposition of Eurocentric criteria for patentablity at the TRIPs

Making all products and processes the subject of patent rights whittles down the latitude that developing countries have to determine the subject matter of patents in accordance with their needs. Even where they are committed to enhance the economic value of Indigenous knowledge by means of an intellectual property (patent) right, TRIPs' Euro-American patentability[87] standards provides an overarching comparator, having been entrenched as part of the now uniform global economic bureaucracy under the WTO.

A universal patentability standard based on a conventional model has difficulties bringing traditional ecological activities in their various forms within that narrative and interpretation. It presents a challenge to the attainment of the CBD's objectives for Indigenous and local knowledge. The application of standards of novelty, non-obviousness (inventive step) and usefulness (capacity for industrial application) to Indigenous and local knowledge domain is incompatible with the ideological foundation, practices and social institutions under which that knowledge thrives. Also, these are new and rather unfamiliar standards and there is no judicial or administrative history, or local body of precedents, that has ever provided context for those terms as they apply to Indigenous knowledge. In contrast, there are highly established bodies of precedents and jurisprudence developed over a long period and applied across most developed countries with respect to those standards, now imposed on others,[88] through the TRIPs Agreement. The constraints that belie the application of each of these tests for patentability to the domain of Indigenous knowledge will be obvious from the analysis that follows.

negotiations). See generally Julio Nogues, "Patents and Pharmaceutical Drugs: Understanding the Pressures of Developing Countries" (1990) 24 *Journal of World Trade Law* 81.

87 Article 27(3)(b) of the TRIPs Agreement, note 24, provides for exemption from conventional patentability standards in relation to plant variety. It provides for a *sui generis* protection device either exclusively or in combination with patents or both with regard to plant varieties. This provision is subject to review four years after the coming into force of the Agreement, which corresponds to 1999.

88 See Gana, note 30, pp 748-749.

2.2 Tests Of Patentability

Newness/Novelty[89]

The requirement that the invention be novel is appraised in the context of the applicant or the patentee's priority of application or invention including the state of prior art in that field. The applicant satisfies the requirement in general terms if there is no corresponding or conflicting prior art with the same, identical or generally reconcilable claims. There is a strict restriction on disclosure in the determination of the novelty of an invention.[90]

The question then is: "at what point would traditional knowledge be described as new in order to satisfy the novelty requirement?" By its nature, Indigenous knowledge is a trans-generational inheritance[91] which is incremental in evolution, and a shared community resource, usually traceable to ancestral and other social affiliations.[92] It is known and usually available to a small social unit, be it family, clan, village, community, or what has been described as "a small local 'public'".[93] Frequently, traditional knowledge is published, usually by Western researchers,[94] without the knowledge of the custodians, or

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89 The two terms invoke a "distinction without difference". Sections 101 and 102 of the US *Patent Act*, note 72, provide for newness and novelty respectively. However, as a matter of judicial attitude, the two terms are treated as the same. Practically, the issue is to determine the first to invent (for the USA) and the first to file in a majority of other jurisdictions including Canada. See Yano, note 31, pp 455-456.

90 The restriction on disclosure is an integral part of the novelty requirement found in the patent statutes of most of the industrialised countries. For example, section 28.2(1) of the Canadian *Patent Act*, note 72, provides, in part, that the subject matter defined by a claim in an application for a patent in Canada must not have been disclosed in such a manner that the subject matter became available to the public in Canada or elsewhere. See *Ernest Scragg and Sons Ltd v Leesona Corp* [1964] 45 Ex CR 649, *Gibney and others v Ford Motor Co of Canada Ltd* (1967) 35 Fox Pat C 143.

91 See Tarasofsky, note 20, p 151.

92 See Brush S, "Whose Knowledge? Whose Genes? Whose Rights in Valuing Local Knowledge?", in Brush and Stabinsky, note 1, p 3 (arguing that the knowledge and biological resources of farmers, herbalists etc. have historical status as "common heritage held in trust for the public good").

93 Horton, note 10, p 15 (maintaining that traditional knowledge is usually known and used by at least "a small local 'public'" for such a long period that it transcends the typical one year grace period allowed before a patent is filed).

94 Horton, note10, p 15.

parishioners, a situation that negates further its ability to satisfy the requirement of novelty while in Indigenous custody. In many industrialised jurisdictions, publication in a written form is the basis for determining novelty.[95] Further, because Indigenous knowledge forms usually thrive among uninformed members of traditional or local communities, available documentation is primarily predatory and tends to take advantage of members' illiteracy. Generally, establishing the novelty of Indigenous knowledge has always been a difficult challenge, representing as it does, a site of appropriation.

Non-Obviousness

Simply stated, this is a requirement that the invention not be trivial,[96] and that it must contain at least a minimal element of human *ingenuity*. The test of obviousness is traditionally derived from common law and is referred to as the "Kripps Question" under which the inquiry is: whether the invention is obvious to a person ordinarily skilled in the subject matter of the invention, without undue experimentation.[97]

Although in determining the question of non-obviousness, reference is made to the state of prior art or issues of novelty, the two concepts describe different aspects of invention.[98] Non-obviousness is the requirement of an inventive step and it makes the difference between

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95 In Japan and the USA, two countries that hold the highest number of patents in the world, the "newness jurisprudence" is a veritable instrument for the appropriation of Indigenous knowledge. In those countries, newness is a geographic concept. Unless an information is published in a print form or described in an acceptable written presentation elsewhere, what is required is that an invention is not known or in use within the borders of the two countries. So, unless a local knowledge is converted into written presentation, or "published", the USA and Japan practically consider it the subject of unencumbered appropriation. See *Gayler v Wilder* 51 US (How) 477 (1850); see also *Carter Food Inc v Colgate-Palm Olive Co* 130 F Supp 557, 104 USPQ (BNA) 314 (D Md 1955); Kadidal S, "Subject Matter Imperialism? Biodiversity, Foreign Prior Art and Neem Controversy" (1996/7) 37 (*IDEA*) *Journal of Law and Technology* 371, p 390.

96 See the Canadian *Patent Act*, note 72, s. 28.3, which provides, in part, that "[T]he subject-matter defined by a claim in an application for a patent in Canada must be a subject-matter that would not have been obvious on the claim date to a person skilled in the art or science to which it pertains…"; see also the U.S. *Patent Act*, note 72, § 103 .

97 See the Canadian case of *Beliot Canada Ltd v Valmet Oy* (1986) 8 C.P.R. (3d) 289 (F.C.A.) at 294.

98 Yano, note 31, p 546.

the state of a product as a product of nature or one that is a result of human ingenuity. The former is not patentable under the conventional test of patentability that TRIPs endorses, not having undergone sufficient human intervention.[99] Thus, they are still within the public domain, they are not new on their own, and are considered obvious in their *natural* state. Lacking sufficient *human ingenuity* to sift them from the public/natural domain, they cannot be exclusively appropriated[100] as intellectual properties.

Under the TRIPs Agreement, the developed countries are wont to treat products and processes of traditional bio-cultural knowledge as those of nature, lacking sufficient human ingenuity or inventive step. In their "raw" or rudimentary state of application by the Indigenous and local communities, these products do not satisfy novelty requirements; nor do they meet the high standards for inventiveness and advanced technical and scientific requirements under the non-obviousness prescription.[101] Such standards are framed with no regard to

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99 See *Pioneer Hi-Bred Ltd. v Canada (Commissioner of Patents*) [1989] 1 SCR 1623. If the answer to the "Kripps Question" is positive then the test of non-obviousness is not satisfied.

100 There is no specific statutory prohibition against the patenting of products of nature. The prohibition arose from the inability of such products to satisfy the newness or novelty requirement. See Yano, note 31, p 453. Mgboji observes that the initial objection against patentability of the so-called products of nature was applied to plants and their derivatives. According to him, "as the ambit and clout of the pharmaceutical industries grew, the fundamental postulate of patent law began to witness cracks and ultimate collapse." See Mgbeoji, note 4, p 328. The confusion and contradiction over patents and products of nature is summed up in the following observation: "[W]hile Patent Laws across the North have developed a regime of patents on artificially purified natural substances, which ordinarily do not occur in a pure state in nature, metals of similar characteristic have been denied patent protection." Mgbeoji, note 4, p 329 (footnotes omitted).

101 See Gana, note 30, pp 750-2 (observing that one construction of Article 27 of the TRIPs Agreement would accommodate inventions with a low level of inventiveness, which may not satisfy the advanced level that usually obtains in the developed countries). She notes that there is no universal standard of novelty. Therefore, there are still prospects for developing countries to amend their laws under TRIPs to provide for non-absolute novelty inventions. It will be necessary to modify the Western standard for novelty and non-obviousness requirements in order to accommodate Indigenous efforts and boost such creative activities that do not satisfy the high inventive watermark. In this regard, petty patents may be useful. Petty patents can be encouraged through a flexible concept of novelty. Petty patents will "provide the required framework for the allocation of rights" in the use of Indigenous knowledge "to develop drugs which are patented under modern patent laws", which the TRIPs Agreement does not provide. See Gana, note 30, p 52.

traditional knowledge experience. The narrow interpretation of these standards also makes them incompatible[102] with the protocols, contexts and processes in which traditional knowledge forms are generated and practised.

Utility/Usefulness[103] (Industrial Application)

Under the TRIPs Agreement, the requirement of usefulness is synonymous with the prescription that the invention be capable of industrial application.[104] This requirement does not necessarily demand an overwhelming measure of utility. A minimum level of utility under which the invention is credited with a conceivable use satisfies this requirement. This is the pattern of case law in most of the Western legal traditions where this requirement has long been established.[105] Arguably, traditional knowledge would have little difficulty meeting this requirement. However, it should be noted that the use of the phrase "industrial application" is yet to be interpreted in the context of the WTO dispute settlement process.[106] Thus, it is

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102 See Horton, note 10, p 15.

103 See Section 101 of the US *Patent Act*, note 72 and section 2 the Canadian *Patent Act*, note 72. Section 8 of the US Constitution grants Congress the power to promote the progress of science and useful arts. This is the constitutional foundation for the US *Patent Act* provision for usefulness under § 101.

104 Article 27(1) of the TRIPs Agreement, note 24, specifically requires that the invention be "capable of industrial application." However, the guidance to footnote 5 of the text of the Agreement states that the expression is equivalent to usefulness. The note provides: "For the purposes of this Article, the terms 'inventive step' and 'capable if industrial application' may be deemed by a Member to be synonymous with the terms 'non-obvious' and 'useful' respectively."

105 See the Canadian Supreme Court decision *Mettaliflex Ltd v Rodi & Wienenberger Aktiengeesellschaft*, [1961] SCR 117; see generally Henderson GF and others (eds), *Patent Law of Canada*, Careswell, Scarborough, Ontario, 1994, pp 63-81.

106 Inventions precluded from patentability on the basis of utility are few and far between; they are usually those bordering on illegality or immorality. Those categories may also come under prohibition on the basis of *ordre* public. In the latter case, such invention may be useful in some sense but may not be patentable on *ordre* public grounds. See TRIPs Article 27 note 24 and Article 53(a) of the *European Patent Convention*, reproduced in 1160 UNTS 231; see also Fecteau LM, "The Ayahuasca Patent Revocation: Raising Questions About Current US Patent Policy" (2001) 21 *Boston College Third World Law Journal* 69, p 77; Durham AL, *Patent Law Essentials: A Concise Guide*, Quorum Book, Westport, Connecticut, 1999, p 64.

not conclusive that this would be automatically resolved in favour of all local knowledge forms. Also, since the additional requirements of novelty and non-obviousness have to be satisfied, the assurance of utility as a test of patentability is inconsequential to Indigenous knowledge that cannot satisfy the first two requirements simultaneously.

2.3 Trade Secret[107]

The trade secret regime is comparatively a weaker and less entrenched regime of intellectual property right than patents. The trade secret regime protects confidential information in the nature of formula, patterns, compilations, programs, devices, methods, and techniques or processes.[108] The possessor of these embodiments assumes a competitive advantage over others who are ignorant of the underlying secret.[109] For information to retain its value as a trade secret, it must be capable of independent economic value and be subject to a deliberate, positive and reasonable effort directed at the maintenance of its secrecy.[110] TRIPs articulates the basic features of trade secret protection under Article 39(2)(a)-(c) as follows:

> Natural and legal persons shall have the possibility of preventing information lawfully within their control from being disclosed, acquired by, or used by others without their consent in a manner contrary to honest *commercial* practices so long as such information:
>
> (a) is a secret in the sense that it is not, as a body or in the precise configuration and assembly of its components, generally known among or readily accessible to persons within the circles that normally deal with the kind of information in question;
>
> (b) has *commercial value* because it is secret; and

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107 Generally referred to as a "black box invention" incapable of reverse engineering. A classic example of a trade secret is the *Coca-Cola* formula.

108 See Gutterman, note 33, p 94.

109 See Gollin MA, Biodiversity: "Preventing an Ill-Begotten Harvest and Ownership Strategy for Conserving Biological Diversity (1994) 10 *Adelphia Law Journal* 45, p 55.

110 See Gutterman, note 33, pp 94-5.

(c) has been subject to *reasonable steps* under the circumstances, by the person lawfully in control of the information, *to keep it secret*.[111]

As a peripheral regime of intellectual property right, trade secret does not require official filing/recording or notification of its existence. Its preservation is dependent upon the prudence of the holder in sustaining the secrecy by, among other things, avoiding public disclosure, and the ability of the relevant legal system to regulate misappropriation by unauthorised persons.[112]

Trade secret is not universally recognised as an intellectual property right across countries. Until the TRIPs Agreement, there was no international agreement with respect to the nature or the appropriate subject matter of trade secret. The Paris Convention has no provisions on trade secret. Consequently, it is within the domain of the national laws of the members of the Paris Union to determine the nature and scope of recognition, if any, in relation to trade secret protection. The recognition of traditional technologies, innovations and practices of Indigenous and local communities that are conservation-friendly[113] under the CBD raises a question as to the applicability of trade secret in facilitating such recognition.

The TRIPs Agreement is the first attempt to recognise the concept of trade secret at the international level.[114] The problem is how traditional knowledge can fit into the rubric of TRIPs' conventional trade secret as spelt out in Article 39. By its nature, Indigenous knowledge is

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111 TRIPs Article 39(2)(a)-(c) note 24. (Emphasis added). Trade secret is described here as a peripheral regime not because it does not require filing (neither does copyright) but because it is not universally recognised as an intellectual property right.

112 Unauthorised persons are generally persons obtaining the information embodying the secret in an unauthorised manner whether through others who procured the information illegally or who breached their obligation not to disclose the information. This is generally described as a misappropriation of trade secret. See Guttermann, note 33, p 95.

113 That is those "embodying traditional life styles relevant for the conservation and sustainable use of biological diversity." See Arts 8(j), 10 (c) and 18(4) of the CBD, note 1.

114 See Art 39 (2) (a)-(c), CBD, note 1.

shared as a community resource.[115] Thus, it may not readily fit within a rigid scope of secrecy and subject of exclusive corporate monopoly in the manner of conventional trade secret. It is doubtful that traditional knowledge could satisfy the requirement of a reasonable and deliberate effort to sustain its secrecy applicable to conventional trade secret. At best, as a shared community resource, traditional or Indigenous knowledge is within a restrictive or partial public domain comprising a select social unit. To that extent, its ability to satisfy the strict requirement of secrecy and restriction on *public* disclosure remains hypothetical. Again, restriction of Indigenous knowledge within relevant social units is not necessarily a function of economic consideration but more of cultural and traditional protocol. Therefore, the trade secret requirement of independent economic value does not fit neatly into the Indigenous knowledge setting. [116]

Trade secret is more entrenched as an intellectual property regime in developed and industrialised countries where there is equally

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115 See Ritchie, note 35, p 432; see also Shelton D, *Fair Play, Fair Pay: Laws to Preserve Traditional Knowledge and Biological Resources*, World Wildlife Fund, Gland, 1995, p 35 (pointing to a distinction between a collectively held knowledge of a small group and the public domain and arguing that the former is wrongfully confused with the latter hence the failure to allow intellectual property right to traditional knowledge, which in the writer's view, amounts to a collectively held knowledge of a small group); Tarasofsky, note 20, p 151. Gupta A, "Getting Creative Peoples, Individual and Communities their Due: Framework for Operationalizing Article 8(j) and 10(c)" paper submitted to the Secretariat of the Convention on Biological Diversity, Montreal, 1996 (rejecting the notion that traditional knowledge should be treated as community property in isolation). According to Gupta, entitlements are not equal to all community members, as they do not make equal contribution to innovation and conservation.

116 Compare Gollin, note 16, p 163 (arguing that traditional healer's knowledge of the medicinal use of a plant or extraction method handed down over generations might be protected as trade secret). In another place, the writer argues that, "[W]here an extractive technique is handed down from generation to generation of medicine men, the applicability of trade secret protection may depend on whether others in the tribal society know the technique, and whether others outside the tribe know it"); see note 109, pp 55-6. That argument may not be entirely persuasive because traditional knowledge thriving within a given social unit, albeit tribal, community, clan etc appears to negate the requirement of secrecy. There is no predetermined size of social unit within which the secrecy of traditional knowledge is automatically guaranteed. It will also not be easy to establish the fact of deliberate effort, on the part of the custodians of traditional knowledge, to eschew disclosure outside their social units. More importantly, sustaining traditional knowledge is not necessarily a dictate of independent economic consideration because of the priority its custodians attach to social/communal interest over economic considerations.

developed jurisprudence for its enforcement. It is, however, different in the jurisprudence of many developing countries and their Indigenous communities where the approach to intellectual property is not readily amenable to a trade secret in the manner of the conventional definition of the subject adopted by the TRIPs Agreement. The prospects of adopting trade secret in the protection of traditional knowledge pursuant to the CBD may be circumscribed by the TRIPs Agreement's provision on the subject. The language of TRIPs Article 39 may be difficult to reconcile with the idiosyncrasies of traditional knowledge. Indeed, the appropriateness of TRIPs trade secret provisions to Indigenous knowledge is at best speculative.

As an intellectual property right, trade secret in some instances could be a viable alternative to patents, for example, where a patent application is delayed by a bureaucratic bottleneck. Most importantly, the use of trade secret may be resorted to where the publication of the patent may be detrimental to the competitive value of the information on the protected invention.[117] Again, because unlike patents, trade secret has no statutory life span, an organisation with a reliable mechanism for sustaining the secrecy of its trade, process, practice or invention for an indefinite period may find trade secret more attractive.[118]

TRIPs' restriction of trade secret to the latter's established Eurocentric concept, including its emphasis on commercial value, is not in the best interest of Indigenous knowledge and the conservation of biological diversity. This approach deprives that body of knowledge of the benefit of such a critical aspect of intellectual property right, which if applied to local knowledge, could consolidate its integration into the objectives of the CBD.

Allowing national governments a free hand to define and determine the scope and subject matter of trade secret would enable them to fashion a trade secret concept, not circumscribed by commercial and other limitations. Within such a flexible template, a trade secret regime capable of accommodating the local and cultural context of Indigenous knowledge is attainable. Such latitude is possible under the Paris Convention. Even though the Paris Convention makes no provision for protection of trade secret, it does not circumscribe it either. National

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117 See Gutterman, note 33, p 95.

118 For example, the *Coca-Cola* Company. See note 107.

governments are better disposed to understand the peculiarity of Indigenous knowledge and to evolve a flexible and accommodating legal regime. Under such an arrangement, for instance, the requirement of secrecy and restriction on disclosure could be defined from a more flexible perspective with regard to the context and nature of traditional practices. Knowledge within the domain of a "small 'public'" consisting of an Indigenous social unit, having cultural significance as opposed to commercial appeal, would unequivocally qualify as a trade secret.

PART III

3.0 Patents and Biological Diversity Conservation: Some Implications

A uniform test of patentability in practical terms as between, for example, a Western pharmaceutical or research organisation and its Indigenous ethnopharmarcological counterpart has implications for the biodiversity conservation initiative of the CBD. The TRIPs regime is an industrial model with a Eurocentric approach to intellectual property rights,[119] wherein the products of scientific research are the private properties of its corporate sponsors.[120] The entrenchment of this model, it has been observed, "will undoubtedly alter the manner in which plants, animals, and other biological resources are used for agricultural and pharmaceutical purposes".[121]

Articles 8(j)[122], 10(c)[123] and 18(4)[124] of the CBD encourage the use of Indigenous and local community knowledge and technologies in the

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119 Apart from the TRIPs Agreement and the patent regime, the notion of the "Eurocentric, racist, predatory, exploitative" and appropriating nature of Western intellectual property rights forms part of an unending ideological and intellectual debate on intellectual property rights in general. For a list of literature exploring this theme, see Mgbeoji, note 61, p 168 and note 20; see also Oddi S, "TRIPs—Natural Rights and A Polite Form of Economic Imperialism" (1996) 29 *Vanderbilt Journal of Transnational Law* 415; Oddi, note 67; Shiva V, *Biopiracy: The Plunder of Nature and Knowledge*, South End Press, Boston, 1997; Yano, note 31, Bawa, note 34; Sell, note 50; Drahos and Briathwaite, note 34.

120 See Ritchie, note 35, p 432 and note 6.

121 Ritchie, note 35 p, 432 and note 6.

122 Art 8(j) of the CBD, note 1, provides that:
Each Contracting Party shall, as far as possible and as appropriate: subject to national legislation, respect, preserve and maintain knowledge, innovations

pursuit of its objectives.[125] TRIPs glosses over, if not forecloses, the relevance of such "technologies". By endorsing the patentability convention based on age-old Western "scientific" narrative, TRIPs relegates Indigenous and local communities' knowledge to the periphery. In this way, intellectual property rights under TRIPs have difficulty recognising the merit of Indigenous knowledge in a manner that could advance the objective of equitable distribution of benefits under the CBD. This scenario negates the economic incentive imperative as a basis for supporting Indigenous and local communities' contribution to biological diversity conservation.

3.1 Patent Monopolies, 'Biopiracy'[126] And The Rhetoric Of Equitable Distribution

The shortcomings of TRIPs narrow patentability criteria to Indigenous knowledge find an easy demonstration in the field of pharmaceutical patents.[127] Biological diversity, especially plant biodiversity is the life

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and practices of Indigenous and local communities embodying traditional lifestyles relevant for the conservation and sustainable use of biological diversity and promote their wider application with the approval and involvement of holders of such knowledge, innovations and practices and encourage the equitable sharing of the benefits arising from the utilisation of such knowledge, innovations and practices.

123 Art 10(c) of the CBD, note 1, provides:
Each contracting party shall as far as possible and appropriate: Protect and encourage customary use of biological resources and in accordance with traditional cultural practices that are compatible with conservation or sustainable use requirements.

124 Art 18(4) of the CBD, note 1, provides:
The Contracting parties shall in accordance with national legislation, and policies encourage and develop methods of co-operation for the development and use of technologies, including Indigenous and traditional technologies, in pursuance of the objectives of this Convention….

125 See Horton, note 10, p 23.

126 A new diction in intellectual discourse, simply defined, biopiracy refers to "the unauthorized and uncompensated expropriation of genetic resources and traditional [biocultural] knowledge. It is seen as a new form of *Western imperialism* in which global seed and pharmaceutical corporations plunder the [bioresources] biodiversity and traditional knowledge of the developing world." See Sell, note 83, p 202; see generally Shiva, V, *Monocultures of the Mind: Perspectives on Biodiversity and Biotechnology*, Third World Network Penang, Malaysia, 1993.

127 On the essence of biodiversity to pharmaceutical patents, see Mossinghoff G, "The Biodiversity Convention and Intellectual Property Right: Conflict or

wire of the pharmaceutical industry. Prior to the advent of modern biomedicine, all biologically active elements were obtained from natural materials,[128] especially plants. Plant biodiversity constitutes 85 percent of the global source of drugs,[129] which between 3.5 and 4 billion people in the world rely on.[130] Thus, access to biodiversity is the sustaining plank of the pharmaceutical industry.

Most trans-national pharmaceutical researchers rely on ethnopharmacological knowledge as the starting point of their research.[131] The first-time knowledge, for example, that a specific plant contains substances having therapeutic value usually derives from Indigenous pharmacological efforts. This in itself saves a great deal of effort and resources in time, labour and finance that would have been applied in "a scatter-gun approach" consisting of the indiscriminate isolation of substances for testing as well as extensive scientific experimentation.[132]

Following Indigenous lead on the pharmacological property of a plant, the next stage of the prospecting process is a relatively easy one. It involves the formal procedure of isolating, extracting and purifying the active substances.[133] An artificially purified chemical is not a product

Harmony" *Patent World*, October 1998, pp 27- 28; see also Bosselmann K, "Plants and Politics: The International Legal Regime Concerning Biotechnology and Biodiversity" (1996) 7 *Colorado Journal of International Environmental Law and Policy* 111.

128 Groombridge B and Jenkin MD, *Global Biodiversity: Earth's Living Resources in the 21st Century*, World Conservation Monitoring Press, Cambridge, UK, p 69.

129 Farnsworth NR, "Screening Plants for New Medicines" in Tomlinson TR and Akerele OO (eds), *Medicinal Plants: Their Role in Health and Biodivesity*, University of Pennsylvania, Philadelphia, 1998, p 29.

130 Farnsworth, note 129.

131 The use of cultural knowledge to facilitate innovative process is an acknowledged feature of contemporary scientific research. This is substantially documented in specialist literature and studies in the field. For example, hot pepper is the most effective treatment for post therapeutic neuralgia, a discovery deriving from the use of hot pepper by South American Indigenous tribes. Similarly, *Pilocarpine*, used in the treatment of glaucoma, was first used in Brazil. The "exploits" and "travails" of the turmeric and the neem seed amongst the Indian local communities *via a vis* multinational seed and pharmaceutical companies is now common knowledge. Indeed the examples are many, see Gana, note 30, pp 751-2; see note 30 and accompanying text.

132 Yano, note 31, pp 448-9.

133 Yano, note 31, p 458.

occurring in nature.[134] This differs from plant species in the hands of Indigenous peoples; they still have a number of impurities. It is on the basis of this distinction the trans-national researcher applies for patent protection to the exclusion of Indigenous knowledge holders. This is because a patent claim to a purified drug is generally drawn in terms of the absence of impurities and the enhanced effectiveness of the drug in its purified state.[135] Thus, Indigenous experience with the plant is seen as a process limited to raw extract with all its impurities. In that state, the plant is described as a product occurring in nature, and as such, within the public domain. Therefore, it does not satisfy the Eurocentric patentability test, because as a product of nature, it is not novel; it is obvious and could not be the object of human ingenuity.[136] "Invention" or "human ingenuity" is determined on the basis of the labour of purification and not on the plant itself or, least of all, on the original discovery by the Indigenous people of the therapeutic value of the plant species,[137] or even on Indigenous cultural experiences, which are not easily expressed within this narrow scientific "epistemic" paradigm.[138]

In this state of affairs, the source of the substance may change to its artificial derivative, and the purified substance or end product may be

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134 See Gollin, note 109, p 56. Part of the inconsistency surrounding the product of nature debate is that while patent may be granted to artificially purified natural substances, which do not ordinarily occur in nature, metals, which are similarly inclined, have not benefited from patent protection. The most cited example is the metal tungsten, which is used as electric bulb filament. Purified tungsten is not patentable on the basis that results from an obvious and acknowledged laborious purification process of the element is evaluated as *mere natural qualities of pure tungsten*. It makes no difference that a naturally impure metal was brought to a pure state. See *General Electric Co v Deforest Radio Co* 28 F. 2d 641 (3d Cir. 1928) Cert. Denied, 278 US 656 (1929); Yano, note 31, p 460, Mgbeoji, note 4, p 332.

135 Gollin, note 109, p 56.

136 See Gana, note 109, p 748; see also Yano, note 31, pp 457-460 (applying analytically the tests of patentability to ethnobiological knowledge of Indigenous peoples).

137 See Gollin, note 1090, p 56; see also Gana, note 30, p 750. For decisions enunciating this principle, see *Diamond v Chakrabarty*, 44 US 303 (1980); *Hodesh v Block Drug Co* 786 F 2d 113.

138 With regard to the intricate nature of Indigenous therapeutic experiences, see Oguamanam C, *International Law, Plant Biodiversity and Protection of Indigenous Knowledge: An Examination of Intellectual Property Rights in Relation to Traditional Medicine*, Dissertation submitted in part completion of PhD in law at the University of British Columbia, April 2003.

renamed a convenient Western brand name. Invariably, however, it is targeted to the same ailment or applied to the first use made of it by Indigenous knowledge practitioners.[139] But the authentic *discoverer* is not recognised in this act of usurpation. Rather, the process is defined and described in scientific and legal jargon that excludes Indigenous and local communities' experience.[140] Thus, the exclusion of local knowledge practitioners in the intellectual property equation is antithetical to the CBD's agenda to integrate, promote and reward local knowledge in biodiversity conservation.

A disproportionate number of biotechnology-related patents in the developing countries is granted to multinational corporations.[141] These corporations are not obliged to share the royalties arising from those patents with those whose knowledge is often not only the basis of the patents, but who also bear the social costs of preserving the biological diversity and bioresources that make the technologies possible.[142] The intricate socio-cultural scheme and context of traditional practices relating to the use of plants and other components

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139 Yano, note 31, p 458.

140 On how the patent system systematically filters traditional and cultural practices in medicinal, pharmaceutical and other bio-cultural experiences, see Oguamanam, note 138; see also Agrawal A, "On Power and Indigenous Knowledge" in Posey D (ed), *Cultural and Spiritual Values of Biological Diversity: A Complementary Contribution to Global Biodiversity Assessment*, Intermediate Technologies, London, 1999, p 178.

141 See Bulard M, "Defining World Public Property: The Apartheid of Pharmacology" *La Monde Diplomatique*, January 2000, pp 11-12 ("Two-thirds of the world pharmaceutical market is in the hands of large 20 Western based groups, a concentration that is proceeding apace with the recent spate of mergers of big names such as HMR and Rhone Poulenc, and lately, Glaxo Wellcome and SmithKline Beecham. Of the 25 drugs most widely sold, 20 are American. And US drug prices are among the highest in the world, with effective impact in determining the world drug prices."); also, figures derived from both the WIPO and the Patent Cooperation Treaty lend credence to the tale of disproportionate patent filings globally; see also Dutfield, note 55, p 58.

142 Hope, however, appears to have been ignited by the May 2000 decision of the European Patent Office, which revoked a patent, granted six years ago, to the US Department of Agriculture and a multinational agricultural corporation, W R Grace. The patent protected a method of using *neem* tree (prevalent in India) for fungicidal purposes. The *neem* tree extracts have been applied to various therapeutic uses by Indigenous peoples as, among others, insecticides, tooth cleaner and contraceptives for centuries. Hailed by Green Party politicians and various pressure groups, this decision promises to awaken a re-thinking of the injustice of *biopiracy*. Similar patents for *Turmeric*, *Ayahuasca* and *Quinoa* have been revoked.

of biological diversity in Indigenous cultures cannot be interpreted or validated by a patent regime based on narrow Western scientific tradition. That tradition's standard of patentability is inappropriate for application to Indigenous knowledge.[143] The TRIPs approach secures legal protection almost exclusively in favour of Western multinational corporations and their Southern based affiliates. Consequently, Indigenous and local epistemic narrative and their relevance to biodiversity conservation, agricultural, pharmaceutical and even therapeutic experiences are shunned.[144] We are faced with a situation where TRIPs global intellectual property scheme is at cross purposes with the CBD objectives, and thus in conflict with the latter's caveat under Article 16(5).[145]

The TRIPs' regime of legal protection is based on the Western or conventional intellectual property model. It facilitates Western-based multinational corporations filing sweeping pharmaceutical and agricultural patents in the developing countries.[146] There is increased transformation of traditional uses of plant medicine into modern drugs.[147] Similarly, the application of genetic modification technology to agricultural production usurps the natural genetic evolution and revolution in traditional farmers' fields and practices from time immemorial. With vital patents in pharmaceuticals and agriculture in the hands of few trans-national corporate convergences, traditional knowledge, biodiversity conservation and cultural diversity are all threatened. This form of industrial approach to nature exploitation breeds a creeping monoculture syndrome in which, in the words of Horton, "one specie and one economic system, together with one view of humanities' relationship with nature increasingly dominate over others".[148]

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143 See Yano, note 31, p 58. This is so even where the true details of the intricate nature of Indigenous knowledge in its ramifications is yet to be authoritatively explored.

144 See Oguamanam, note 138.

145 To the effect "that such rights are supportive of and [do] not run counter to [the CBD] objectives." CBD, note 1, Article 16(5).

146 Over 80% of patents in the third world are owned by foreign, mainly trans-national, corporations. See Ritchie, note 35, p 439.

147 See note 30.

148 Horton, note 10, p 6.

A legal regime that places the Indigenous epistemic approach to dealing with nature to the periphery activates the negative aspect of the relationship between biodiversity and intellectual property rights. It facilitates a bioprospecting "gold rush". In this empowered state, trans-national corporations and their agents make rapacious incursions into Indigenous communities with tempting offers in various forms. They often end up disrupting the Indigenous communities, their traditional ecological ethics and practices, and the irreplaceable traditional balance which they have with the ecosystem.[149] More emphasis is placed on exploitation than on the conservation of biological diversity and sustainable development.[150]

Competition arises between the multinational corporations in their bid to monopolise markets for newly patented plant varieties. TRIPs provides for patents on plant varieties.[151] These patents are granted even though the process of developing new plant varieties does not involve much more than the mere isolation of samples from the field to laboratories, and, thereafter, some form of genetic transplantation or manipulation within the same cell. The resultant variety readily satisfies the requirement of a patentable invention.[152] Any such variety that generates a desirable trait becomes an object of monopoly and the subject of price manipulation with no consideration of Indigenous and local communities' immemorial and continuing contribution to genetic transformation.[153]

The price manipulation is entrenched because by virtue of the national treatment principle[154] under TRIPs, discrimination between imported

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149 See Ritchie, note 35, p 445.

150 Ironically, the CBD is critiqued on this count as a regime which purports to conserve biodiversity but is also one that facilitates biodiversity exploitation and commercialisation. See Shiva V, *Monocultures of the Mind: Perspectives on Biodiversity and Biotechnology*, Third World Network Penang, Malaysia, 1993, p 153.

151 See TRIPs, note 24, Article 27 (1) and 27 3(b).

152 See Ritchie, note 35, p 435; see also Kadidal S, "Plants, Poverty and Pharmaceutical Patents" (1993) 103 *Yale Law Journal* 223.

153 Lamenting this trend Bulard observes that "[W]e are moving towards a situation in which a handful of firms have monopoly on life and have seized control of genetic diversity. There is a great danger that rich countries will form a technological and financial directorate, a sort of 'G8' for drugs, deciding everything from the level of research to whether or not a particular product will be launched." See Bulard, note 141.

154 See Art 3 of TRIPs, note 24.

and locally manufactured or generated products is prohibited. This prohibition is so, notwithstanding the generally asymmetrical nature of the socio-economic factors, especially in a North-South setting. The result is that biologically engineered substitutes for most of the hitherto medicinal plants, export and cash crops of the developing or non-industrialised countries now dominate the global market.[155]

A feature of TRIPs-facilitated trans-national corporate patent monopoly is that commercial or market traits determine what varieties are isolated. Therefore, plants ordinarily occurring in nature, but lacking in commercial biotechnological advantage, are allowed to "fizzle" into extinction.[156] Traditional farming, prior to genetic engineering, has for different reasons sustained amazing varieties of crops within their biological diversity. Traditional farmers have generated and continue to generate more genetic varieties than are known to genetic engineering. These trends are often ecosystem-induced or result from factors such as soil differences, climatic conditions, evolutionary traits, and deliberate cultural preferences or peculiarities.[157] The tendency to persist on the part of traditional or ethical inclination to genetic diversity and ecological inviolability would become, in a globalised economic and knowledge order, simply unattractive. Products resulting from such ethical and cultural loyalty are not commercially competitive.[158] Left with an increasingly

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155 Such products as ground nuts, cocoa, sugarcane, cashew nuts, plant oils, which constitute the main cash crops of many African and Latin American countries, no longer hold much economic relevance for those economies because of the genetically engineered substitutes. See Ritchie, note 35, p 441; see also Ajai O, "Access to Genetic Resources and Biotechnology Regulation in Nigeria" (1997) 6 *Review of European Community and International Environmental Law* 42 (arguing that "[r]eplacing natural products trade with bio-engineered products may cause serious socio-economic challenges for countries that are heavily dependent on export of primary products for economic subsistence").

156 A survey of seed banks in the US revealed that some varieties of non-commercial crops including, *chufas*, *martynia*, and *rampion* have been completely lost. See Ritchie, note 35 p 446.

157 Ritchie, note 35, p 446.

158 However, apart from the controversy over the genuineness or certainty of claims to organic status in the midst of ubiquitous genetically modified crops and related practices, the recent increase in the patronage of organic produce does not improve the lot of traditional farmers. The existence of intermediaries in the organic farm produce trade compromises traditional farmers' expectation of commercial advantage from their effort. Moreover, organic farming is now a business for industrial corporate convergences and not necessarily that of marginalised traditional farming communities.

dwindling and unprofitable practice, the fast-depleting traditional knowledge practitioners' frustration is compounded by difficulties, because of monopolistic restrictions, in accessing the seed stock even of the varieties patented by the multinational corporations.[159] Either way, traditional knowledge practitioners are fast becoming an endangered species of sorts.

This trend is a threat to the conservation of biological in general and genetic diversity in particular. As much as technology, specifically genetic engineering, would seem to provide the answer to the global food problem, this is at the expense of irreparable losses to biological and cultural diversity. With an attractive short-term appeal, the sustainability of this form of technology remains questionable. Genetic modification often results in crops that have a uniform susceptibility to disease, which renders them at risk of being exterminated in one fell swoop.[160] Also, engineered organisms, being for all practical purposes aliens to the ecosystem, may have

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159 Fears are rife, and indeed well founded, that the so-called *terminator technology*, that is, technology for the control of gene expression, otherwise known as Genetic Use Restriction Technologies (GURTs) is a threat to customary seed savings and exchanging practices of traditional farming communities worldwide. Terminator technology prevents a seed variety from being propagated by farmers without seed purchase. The device produces transgenic plants with a lethal gene the seeds of which are incapable of germinating. Accordingly to Dutfield, "[t]he main purpose of the technology is to make it impossible for farmers to save, replant or sell seed." The aim is to foster monopoly of proprietary seed in the hands of the US multinational seed companies and to open up seed markets in Second and Third World countries for those companies. See Dutfield, note 55, pp 48, 51-52. Presently, the CBD is holding expert consultation (in which this writer is involved) to advise it on the Potential Impact of GURTs on Smallholder Farmers, Indigenous and Local Communities and on Farmers' Rights. The Convention convened the first ever Ad Hoc Technical Expert Group on GURTs at Montreal on 19-21 February 2003. The report of the group will be submitted to the 7th Conference of Parties (COP) Meeting of the CBD in 2004. For the CBD's programs on GURTs, see The Convention on Biological Diversity, "Ad Hoc Technical Expert Group Meeting on the Impact of Genetic Use Restriction Technologies on Smallholder Farmers, Indigenous and Local Communities and on Farmers' Rights, <http://www.biodiv.org/doc/meeting.asp?wg=TEGURT-01>, (21 June 2003).

160 See Horton, note 10, p 5. As early as 1970, corn harvest in the US fell short by 15% which accounted for a net economic cost of US$1b. This was as a result of a leaf fungus that spread to the monocultural stock. The National Research Council writes that "[s]ince then, breeders have taken greater precautions to ensure heterogeneous array of genetic strains are present in the fields, but problems due to reduced diversity still occur." See National Research Council of the United States, note 1, p 46.

unpredictably harmful impacts on other naturally occurring species.[161]

The pre-eminence of Western or conventional intellectual property rights as endorsed via the TRIPs facilitates genetic monoculturism and not diversity. As already noted, commercial consideration is opposed to diversity influence species patronage or breeding.[162] Situations such as this have negative consequences on biological diversity and its conservation. Significantly, this monocultural trend distracts and indeed displaces traditional knowledge in shifting the emphasis from biodiversity conservation to unbridled exploitation and a dangerous

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161 Ritchie, note 35, p 446, for example, reports that an Oregon State University scientists' engineered variety of bacteria for decomposing plant material that procures soil efficiency in converting agricultural wastes to ethanol fuel was found to be destructive to the beneficial fungus essential for the recycling of nitrogen through plant roots. This carries the potential for decertification throughout that product range; see also Ajai, note 155, p 42. See generally Reid W, *Generic Resources and Sustainable Agriculture: Creating Incentives for Local Innovation and Adaptation*, ACT Press, Nairobi, 1992 (making a general reference to the negative effects of centralised crop breeding).

162 One example of this trend in a slightly different context is the story of the Pacific yew tree (*Taxus brevifolia*). For years, the yew had no significant economic value. In the 1980s however, taxol, an important agent in the treatment of Ovarian cancer, was discovered to be present in the yew bark at a commercial quantity, thus precipitating a mad rush for the yew to a point of threatening the yew's sustainability. See Joyce C, "Taxol: Search for a Cancer Drug" (1993) 43 *BioScience* 133; see also Perlman and Adelson, note 11, pp 50-55. It may be argued that patent's empowerment of industrial and Western scientific narrative does not in and of itself forbid traditional bio-cultural activities. (see Paterson R and Karjala DS, "Looking Beyond Intellectual Property Rights in Resolving Protection of Intangible Cultural Heritage of Indigenous Peoples" (2003) 11 *Cardozo Journal of International Law and Comparative Law 633*) This may not be entirely true. Patent's industrial and narrow scientific focus makes it attractive despite its parochialism. Thus, Indigenous knowledge is *compelled* to look to the narrow scientific paradigm for validation. Moreover, patents, for example, on traditional plants, are known to erode traditional medicinal culture associated with the patented plant. A case in point is *kwao kruae*, a popular Thai herbal preparation used in Thai traditional medicine for years. In fact, it sustained a number of local organisations/enterprises that thrived on *kawao kruae* medicinal preparations. However, a patent on *kwao kruae* resulted in the stifling of all other traditional and entrepreneurial activities associated with the remedy. See Subcharoen P, "Indigenous Knowledge and Intellectual Property: Thai Study" paper presented at the International Regional Workshop on Intellectual Property in the Context of Traditional Medicine, Bangkok, Thailand, 6-8 December, 2000. For the Report of the Workshop, WHO Doc. WHO/EDM/TRM/2001.1

scramble in the form of "biopiracy".[163] This trend is outside the contemplation of the CBD. Under this monopolistic regime, the question of equitable sharing of the benefits of biological resources is hardly compelling since the contributions of local knowledge practitioners are sidelined at best, or appropriated at worst.

The concentration of critical patent in the areas of pharmaceuticals, food and agriculture in the hands of multinational corporations does not guarantee the working of those patents locally in order to alleviate the needs and imbalances the system has created. The vulnerability of these patent monopolies to abuse through price manipulation is quite obvious. The multinational corporations could, in the course of business, license their production process to manufacturers in the developing countries. However, this is usually subject to stringent conditions including export restriction.[164] Restrictions of this nature freeze the potential for growth and prospects for expansion by local companies and other local entrepreneurial initiatives. The "pricing triangle" between multinational licensor and local licensee is often designed for tax evasion purposes by the former through deliberate over invoicing of the prices of materials supplied by it under the operating contract. For the multinational licensor, the local licensee is no more than a marketing outlet.[165]

3.2 Compulsory Licence and Long Patent Term

Under the WIPO dispensation, specifically the Paris Convention, national governments had the option to exercise the discretion of compulsory licensing for the working of a patent locally, where the patentee had failed to do so in the jurisdiction, often within a specified period of time.[166] The option of compulsory licensing ensured that

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163 This coinage is credited to FAO Assistant Director General, Obaidullah Khan in 1994. It is a reference to the inequitable pattern of bioprospecting and appropriation of Indigenous bio-cultural knowledge. See Ritchie, note 55, pp 445-6. Dutfield provides a working definition of the term as "the unauthorised commercial exploitation of the knowledge and biological resources of [I]ndigenous peoples and/or developing countries." See Dutfield, note 55, p 41.

164 Under the GATT rules, this does not amount to a trade restriction. See Ritchie, note 35, p 446 and note 80.

165 For an overview of the politics of "transfer pricing", see Ritchie, note 35, p 440.

166 Article 5 (A)(2) of the Paris Convention, note 45, provides:

developing countries were not held to ransom by patent monopoly-wielding multinational corporations. Developing countries could issue compulsory licences to third parties for the working of such patents in their jurisdictions, even without the consent of the patent holder, where the issue of the licence would serve the "public interest".[167] Countries were at liberty to grant foreign patents subject to a local working requirement.[168]

Most developed countries, led by the United States,[169] persistently objected to the compulsory licensing of patents. Their desire was realised through the TRIPs Agreement, which abolished compulsory licence in principle.[170] It, however, creates exceptions in situations where a compulsory licence is justifiably a measure of last resort. The recent controversy surrounding South Africa and United States over the former's initiative to use a compulsory licence to procure costly and much-needed HIV/AIDs drugs had its roots in TRIPs' tightening of compulsory licence powers. It underscored the difficulties that the TRIPs Agreement poses for developing countries.[171] It is a controversy that would not have arisen under the Paris Convention in the pre-TRIPs era. That the imbroglio was resolved politically gives credence to the perception of TRIPs Agreement as an econo-political tool of the industrialised world, especially the United States; an instrument that places developing countries at the mercy of these

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> Each country of the Union shall have the right to take legislative measures providing for the grant of compulsory licences to prevent the abuses which might result from the exercise of exclusive rights conferred by the patent, for example, failure to work.

167 A number of developing countries usually issued compulsory licences on the basis of their definition of public interest. However, this trend was not limited to developing countries. Even Japan was known to exercise the power of compulsory licence before the TRIPs Agreement. Indeed, compulsory licensing was one of the devices that facilitated Japanese technological advancement.

168 See Gana, note30, pp 755-6.

169 See Gutterman, note 33, p 94.

170 See Art 31 of the TRIPs Agreement, note 24.

171 For detailed discussions of the SA/US impasse over HIV/AIDs drug, see various contributions in the symposium edition of the Florida Journal of International Law entitled "Intellectual Property, Development and Human Rights" appearing in volume 14 of the 2002 edition. See especially, Winston P Nagan, "International Intellectual Property, Access to Health Care, and Human Rights: South Africa v United States" (2002) 14 *Florida Journal of International Law* 147; Sell note 83; James Thuo Gathii, "Rights, Patents, Markets and the Global AIDS Pandemic" (2002) 14 *Florida Journal of International Law* 261.

powerful states and their multinational corporate allies. The nature of conditions for the exercise of a compulsory patent licence under the TRIPs Agreement is so stringent that it is not attractive to many developing countries that may use it to check the abuse of patent monopoly by foreign right holders.[172]

A universal and extended patent term under TRIPs has an equally detrimental effect on biological diversity. Under the Paris Convention, the patent-granting country determined the term of the patent through its national law.[173] Usually, this was dictated by policy considerations. The nature of the subject matter of a patent, its need locally and so forth were among the factors that influenced the term to be granted. For understandable reasons, developing countries tended to grant shorter patent terms than their developed counterparts.[174] Through the grant of a shorter patent term, a developing country could check the abuse of patent monopolies. By so doing, they were more likely to empower Indigenous knowledge, foster the cause of biological diversity conservation and quicken technology transfer.

Therefore, even where modern genetic engineering practices succeed in disrupting or distracting Indigenous bio-cultural activities, such a distraction would not permanently endanger local knowledge if the term of the patent monopoly were shorter. A shorter patent term, because of obvious residual significance, holds a deal of prospects for local initiatives and cultural peculiarities that support biological diversity. It assures a quick interaction of local and foreign practices and by so doing facilitates technology transfer,[175] in contrast to an unreasonably long term of patent monopoly.

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172 See Art 31 of TRIPs, note 24 . Compulsory licence under TRIPs is subject to adequate remuneration of the patent holder, and judicial review. Products or processes subject to compulsory licence are restricted to the domestic market, and to the specific purpose for which it is granted. Compulsory licence must be non-exclusive and non-assignable. See Horton, note 10, p 26.

173 The Paris Convention, note 45, did not specify a particular term for a patent.

174 Patent terms were usually about five years for developing countries. See Gutterman, note 33, p 93

175 Technology transfer and access are cardinal to the CBD. Its intellectual property provision under Article 16(5) is actually in the context of "access to, and transfer of technology" which is the title of Article 16 of the CBD text. See Arts 17 and 18 on "exchange of information" and "technical and scientific cooperation" respectively. Both concepts are complementary to technology access and transfer objectives.

Similar to the subject of compulsory licensing, developed industrialised nations favour a longer patent term. Specifically, the United States advocated, during the GATT negotiations on the TRIPs Agreement, for a minimum patent term of 20 years.[176] Consequently, under the TRIPs Agreement the term of patent monopoly is 20 years commencing from the date of filing.[177] Where the patent granted covers or includes a process, new entrants cannot work the patent using the same process, even at the expiration of the 20 year term. An interested manufacturer has to devise a process different from that of the original patentee. This option is certainly unattractive to a secondary manufacturer in a developing country. Worse still, the burden of proof lies on the secondary manufacturer to establish the uniqueness of its process.[178] This is a legal bias that aggravates the asymmetrical relationship between the patent holder and the secondary manufacturer. The latter ordinarily does not have the established clout or financial muscle to engage the former in a legal dispute.

A long-term patent holds diminished commercial prospects for a secondary manufacturer and is not conducive to technology transfer. The tempo and dynamism of technological innovation continue to increase over the years, such that it is very unlikely that a product or process patent could commercially be profitable through the same technology that sustained it from inception beyond a 20 year period.[179] There is hardly any viable technology transfer in this kind of scenario. Therefore, a universally entrenched system of long patent term such as that in the TRIPs Agreement is a disservice to the secondary manufacturer, Indigenous knowledge and, ultimately, to the conservation of biological diversity, particularly within the objectives of the CBD.

176 Guttermann, note 33, p 93 and note 23.

177 See Art 33 of TRIPs, note 24.

178 See Art 34 of TRIPs, note 24.

179 In addition, patent owners continue to indulge in the practice of "evergreening" of patents. This is a deliberate tendency to modify existing patents in a manner that will indirectly extend their life beyond the 20 year period.

Conclusion

The CBD seeks to use the instrumentality of international intellectual property rights to achieve its principal objectives, namely biological diversity conservation, sustainable use of its components, and equitable sharing of genetic resources benefits. The use of intellectual property rights is conditional upon those rights, in the words of the CBD, being "supportive of and do not run counter to its objectives".[180] The two international intellectual property regimes, the WIPO and TRIPs, have different approaches to intellectual property rights. The WIPO regime gives latitude to governmental policy initiative at national level in defining and determining the nature of intellectual property rights. This latitude, properly exercised, is best suited to accommodate and reward Indigenous communities and their knowledge as credible agents for biodiversity conservation within the rubric of the CBD objective. The TRIPs regime, on the other hand, is activated in the context of the recent expansion of international trade agreements.[181] It establishes a global regime of intellectual property rights. TRIPs adopts the Western model of intellectual property rights and inherits its insensitivity to the socio-cultural peculiarities of Indigenous epistemic narratives.[182] The TRIPs scheme of a universal patent and trade secret regime is a wholesale legal transplantation of the Eurocentric origins of those concepts. Their very nature conflicts with the ideological foundation, practices and social institutions under which Indigenous knowledge thrives.

Because the TRIPs Agreement is a component of the WTO scheme, its provisions are meant to be applicable internationally among Member States of the WTO. By undermining cultural or Indigenous knowledge, the TRIPs Agreement creates a protective legal incentive mainly suited to Western-based multinational corporations. The

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180 See Art 16(5) of TRIPs, note 24.

181 See Drahos, note 17.

182 There is no express provision under the TRIPs Agreement relating to Indigenous knowledge and local communities. However, Article 27(2) provides for an exemption from patentability on the basis of *ordre* public or morality (see Tararasofsky, note 20, p 151) and Article 27 (3)(b)'s provides for a *sui generis* scheme of protection for plant varieties thus providing avenues for the consideration of Indigenous knowledge under TRIPs. TRIPs, note 24. It has been argued, however, that this omission (or commission) on the part of TRIPs may not be necessarily prejudicial to Indigenous ecological knowledge. See note 83 for Dutfield's argument in this regard.

consequences include a thriving monocultural practice, and a concentration of patent monopolies in the critical areas of pharmaceuticals, agriculture and genetic engineering in the hands of those corporations. This has the potential to undermine biological and cultural diversity in the same measure as it aggravates the socio-economic imbalance between the North and the South. By empowering conventional intellectual property rights, TRIPs stifles and sidelines Indigenous effort and facilitates a regime of trans-national corporate patent monopoly and "biopiracy",[183] instead of enhancing biodiversity conservation as the CBD intends.

One major lesson from this trend is that the attempt under the TRIPs Agreement to shift intellectual property from the domain of national law is problematic. In the context of the CBD's desire to use international intellectual property regime to promote the objective of empowering traditional knowledge relevant to biodiversity conservation, the TRIPs platform is at cross-purposes with that objective. Invoking CBD's caveat that its patronage of intellectual property regime is conditional upon that regime not compromising its objectives, the TRIPs Agreement fails the test.

In order to advance the objectives of Indigenous knowledge protection and other ideals of the CBD, there is a need to re-visit the TRIPs Agreement's attempt to tamper with the traditionally national character of intellectual property. The TRIPs Agreement's marginalisation of the powers of national governments under the broader WTO platform may have accomplished the objectives of its promoters. However, it has aggravated the customary and ever-lingering controversy surrounding intellectual property rights on a global geo-political scale. Indigenous and local communities and governments of developing countries do not subscribe to the TRIPs imposition of conventional intellectual property rights for global application. In the context of biodiversity conservation, the impetus for an alternative approach to intellectual property is amply articulated in Article 8(j) of the convention, which provides in part that:

> Each Contracting Party shall, as far as possible and as appropriate: Subject to its national legislation, respect, preserve, and maintain knowledge, innovations and practices of Indigenous and local communities embodying traditional

183 See note 126.

> lifestyles relevant to conservation and sustainable use of biological diversity.[184]

This salient provision signals the relevance of a national approach to knowledge protection and by extension, intellectual property, as a basic device for the allocation of rights and the protection of knowledge. Article 8(j) is arguably the most important provision of the CBD and the singular most important source of its jurisprudence. Inherent in that jurisprudence is the idea that knowledge protection mechanisms exist in every culture. Such mechanisms need not be in the mould of Western intellectual property rights. Because Article 8(j) is akin to a guideline, the Conference of Parties (COP), the governing organ of the convention, since 1994 has been preoccupied with modalities for giving effect to that provision. These efforts crystallised in the activities of its Working Group dedicated to Article 8(j) and Related Provisions of the Convention.[185]

The COP through its Working Group has forged an alliance with the WIPO's renewed focus on the national approach to knowledge protection, especially under its Global Intellectual Property Issues Project and the Intergovernmental Committee on Intellectual Property Rights, Genetic Resources, Traditional Knowledge and Folklore (IGC).[186] The global intellectual property issues initiative is WIPO's

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184 CBD Article 8(J), note 1.

185 CBD Article 8(J), note 1. In 1994, through an intersessional working group, the second COP opened discussions on the implementations of Article 8(j); see "Knowledge Innovations and Practices of Indigenous and Local Communities: Implementation of Article 8(j)" note by the Executive Secretary of the CBD to the Third COP, 4-15 November 1996, UNEP/CBD/COP3/19, available online: <http://www.biodiv.org/cop3/html/COP-3-19-e-htm>, (14 May 2002). Since 1994, Article 8(j) has remained a permanent subject of subsequent COPs. Decision IV/9 of the 4th COP held in Bratislava, Slovak Republic, 1-5 May 1998, formally established the Working Group on Article 8(j) and related provisions of the CBD. See "Implementation of Article 8(j) and Related Provisions" being the title of Decision IV/9 of the 4th COP available online: <http://www.biodiv.org/decisions/default.asp?lg=0&dec=IV/9>, (22 June 2003).

186 The IGC was established at the Twenty-Sixth Session of the General Assembly of the WIPO Member States, Geneva, 25 September – 3 October 2000, shortly after the release of the Report of the Fact-Finding Missions. The IGC provides a forum for WIPO Member States to hold discussions on three agenda items, namely (a) access to genetic resources and benefit sharing; (b) protection of traditional knowledge, innovations and creativity; and (c) the protection of expressions of folklore. At its first session, the IGC resolved that its mandate would be carried

strategic program of action for meeting the intellectual property dynamics of the 21st Century especially in the areas of traditional and cultural knowledge. Pursuant to this initiative, WIPO conducted global fact finding missions in which it explored the intellectual property needs and expectations of traditional knowledge holders.[187] The thrust of the needs and expectations identified by WIPO included a call for the "[s]tudy of customary laws and protocols in local and traditional communities, including conclusions relevant for the formal IP system".[188] This is indeed an endorsement of a cross-cultural approach to intellectual property rights. The IGC was set up as a forum for WIPO members to deliberate on some key subjects including protection of traditional knowledge, innovation and creativity.[189]

The CBD's COP, through its working group on Article 8(j), the WIPO's initiative, and the IGC have intensified efforts toward a cross-cultural approach to intellectual property rights or, more appropriately, knowledge protection. There is an apparent realisation within these organs of the value of pre-existing customary mechanisms at local levels for the preservation of the integrity of local knowledge. The thrust of this thinking is to place Indigenous peoples in a position where they "will continue to be major voices in articulating alternative vision for intellectual property rights".[190] These coordinated and concerted initiatives are in part reactions to the failure of the TRIPs Agreement to accommodate Indigenous knowledge forms within its formal or conventional intellectual property framework. Thus, the

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out in conjunction with the CBD Secretariat and the FAO's Commission on Genetic Resources for Food and Agriculture (CGFRA). That session noted that the work of the IGC, would be consistent and complementary to the activities of the CBD. The report of the first Session of the IGC is available online: <http://www.wipo.org/globalissues/igc/documents/index.html#1>, (22 June 2003). Since inception, the IGC has held five sessions. The list of all IGC sessions is available online: <http://www.wipo.org/globalisues/igc/meetings/index.html>, (22 June 2003).

187 See note 2; for further insight into the Fact-Finding Missions, see Wedland W, "Intellectual Property, Traditional Knowledge and Folklore: WIPO's Exploratory Program" (2002) 33 *International Review of Industrial Property and Copyright Law* 393 pp 393-560.

188 See Fact-Finding Missions, note 2, pp 6, 232.

189 See Fact-Finding Missions, note 2.

190 See Coombe RJ, "The Recognition of Indigenous Peoples' and Community Traditional Knowledge in International Law" (2001) 14 *St Thomas Law Review* 275, p 285.

focus on national and cross-cultural approaches to intellectual property rights is indicative of the pyrrhic victory that the TRIPs Agreement achieved in undermining Indigenous knowledge.

However, the opportunity is not yet lost to re-think the TRIPs Agreement in a direction that gives serious consideration to traditional knowledge. Article 27 of the TRIPs Agreement is the most relevant provision, albeit an indirect one, on local knowledge. It is, without doubt, the TRIPs Agreement's most debated and disputed provision. This is evident in the botched and lingering attempts since 1999 to review Article 27.3(b).[191] Article 27.3(b) provides:

> Members may exclude from patentabilty: Plants and animals and other microrganisms, and essentially biological processes for the production of plants or animals other than non-biological and microbiological processes. However, members shall provide for the protection of plant varieties either by patents or by effective sui generis system or by combination thereof….

This provision raises contentious issues. However, the reference to *sui generis* intellectual property (patent) system is of particular interest here. There is no agreement on the model of *sui generis* right required under this provision, even though the United States favours a *sui generis* standard equivalent to the conventional patent paradigm or its closest semblance.[192] Indigenous communities and developing countries have distanced themselves from that approach.[193]

The *sui generis* provision provides a window under the TRIPs Agreement to seriously re-think its failure to recognise the unique nature of Indigenous knowledge forms. As the review of the TRIPs Agreement continues to raise both hope and anxiety in Indigenous and local community circles, the opportunity must not be lost to seek a concrete clarification of the *sui generis* provision in the agreement in a manner that will advance the ability of national governments to entrench the cross-cultural momentum on intellectual property rights. The WIPO, the CBD, the United Nations Environmental Program

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191 See note 6 and accompanying text.

192 See Sell, note 83 at 203; see also Sutherland J, "TRIPs Cultural Politics and Law Reform" (1998) 16 *Prometheus* 29, p 295.

193 See Sell, note 83, p 206.

(UNEP) and other relevant intergovernmental organisations realise that Indigenous knowledge and interests are better served by *sui generis* rights concepts not necessarily imitating formal intellectual property. It is conceivable that a progressive interpretation or elaboration of the *sui generis* clause would draw the TRIPs Agreement closer to the cross-cultural momentum on intellectual property rights.[194] Surely, a knowledge protection scheme based on the jurisprudence and context in which the knowledge is generated is required to empower the Indigenous and local communities pursuant to the objectives of the CBD. A truly global approach to intellectual property rights must build from the bottom up in order to accommodate complex multi-cultural matrixes in which knowledge is generated and constructed. The resistance to the TRIPs Agreement's supranational focus by " a coalition of cross-cultural lobby" groups is a vindication of the WIPO's original disposition in favour of the national character of intellectual property rights.

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194 The review of Article 27 of the TRIPs Agreement holds the key to the much-desired aim of reconciling the TRIPs Agreement with the CBD for the benefit of traditional knowledge holders and broader conservation objectives.