BIOLOGICAL DIVERSITY AND INTELLECTUAL PROPERTY RIGHTS: THE CHALLENGE OF TRADITIONAL KNOWLEDGE

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A THESIS SUBMITTED IN PARTIAL FULFILMENT OF THE REQUIREMENTS

FOR THE DEGREE OF

MASTER OF LAWS

In

THE FACULTY OF GRADUATE STUDIES

(Faculty of Law)

We accept this thesis as conforming to the required standard

THE UNIVERSITY OF BRITISH COLUMBIA, VANCOUVER, CANADA

August 2000

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Date 15th August, 2000

ABSTRACT

The abundance of wealth and technology in the North, and biological diversity and poverty in the South provokes an inquiry into an appropriate modality for the equitable harnessing and allocation of biodiversity dividends. Over the years, the traditional knowledge relating to biological diversity has been regarded as part of the "global intellectual commons", open to exploitation by all, and subject to validation by formal methods. That knowledge has remained the source of both increasing knowledge and critical discoveries of the therapeutic values of most components of biological diversity. There is a consensus between the North and the South that an effective biodiversity conservation strategy should be one capable of providing incentives to the traditional custodians of wild habitat. Intellectual property is generally recognised as an appropriate framework to implement this objective. However, as a perennial subject of North-South disagreement, there is no consensus on the relevant details or mechanisms for deploying intellectual property rights to effectuate the objective.

The United Nations Framework Convention on Biological Diversity (CBD) signifies a global regime embodying the ideals of incentivising the traditional custodians of the wild habitat as well as equitable sharing of the benefits of biodiversity. Arguably, it marks an end to the idea of regarding traditional knowledge as part of the global intellectual commons. This thesis contends that the CBD regime carries with it the burden of unresolved North-South perspectives on intellectual property rights. It argues that the heart of the conflict is the reluctance of the North to accord intellectual property status to traditional knowledge. This is partly because of the latter's informal nature but most

importantly it derives from an inherent geo-political ideological conflict on the subject of intellectual property rights.

Presently, the recognition of rights over traditional knowledge is approached on a *sui generis* basis. This thesis takes the position that the approach with its several limitations is not persuasive. It contends that on the merits, traditional knowledge is, and ought to be recognised as a subject matter of intellectual property rights. The recent elevation of intellectual property (a traditional subject matter of national law) to the international level under the WTO/TRIPs Agreement further undermines traditional knowledge. This has posed a setback not only to the global biodiversity conservation initiative, but also to the quest for equitable allocation of its dividends. It is my thesis that a national approach offers a better option for accommodating the intellectual property status of traditional knowledge and consequentially for advancing the quest for biodiversity conservation as well as equitable allocation of the dividends arising therefrom.

TABLE OF CONTENTS

Abstract.....ii

Table of Contents.....iv

Acknowledgements.....vii

Dedication.....viii

Chapter One Introduction: Conceptual Framework and Methodology.....1

I. Conceptual Framework.....1

i. Research Issues.....13

ii. Arrangement of Chapters.....14

II Research Methodology.....17

i. The North-South.....18

ii. The Ideological Conflict.....19

a. A caveat.....19

b. A foregrounding.....20

iii. The North: A Privativistic/Individualistic Approach.....23

iv. The South: A Social Interest/Communal Approach.....29

Chapter Two Operating Legal Regimes.....35

I. The CBD: A Historical Overview.....35

II. The CBD: An Analysis of Intellectual Property Provisions.....42

III. The WIPO and WTO/GATT-TRIPs: Legal Relationship With CBD.....48

Chapter Three Patents and Trade Secret: The Status of Traditional Knowledge.....54

I. Introduction

i. The Relevance of Traditional Knowledge.....54

ii. Delimitation of Analysis to Patent and Trade Secret.....56

iii. National vs. International Approach.....56

II. Patents.....58

i. Nature of Patents.....58

ii Scope of Patentable Subject Matter.....59

iii. Pharmaceutical Patents in Perspective.....64

iv. Tests of Patentability.....65

a. Newness/Novelty.....65

b. Non-Obviousness.....67

c. Utility/Usefulness.....68

v. The Neem--A Rallying Symbol of Traditional Knowledge.....69

vi. Universal Test of Patentability: Implications for Biodiversity.....79

vii. Compulsory Licensing of Patent.....87

viii. Patent Term.....88

III. Trade Secret.....91

Chapter Four CBD and TRIPs: Overcoming the Challenges.....97

I. Recognising Ideological Differences.....97

II. Divergent Goals and Legal Relationship Between the CBD and the TRIPs Agreement.....104

i. Divergent Goals.....104

ii. Legal Relationship.....106

a. The Priority Rule.....110

b. The *Lex Specialis* Principle.....111

c. The Practical Imperative.....112

d. Synergistic Approach.....113

III. A Biodiversity Protocol: How Viable?.....124

IV. Sovereign Right to Natural Bioresources.....128

i. Indigenous/Local Peoples vs. National Governments.....136

ii. What Manner of *Sui Generis* Right?.....140

Chapter Five Conclusions.....147

I. Restating Issues for the Research.....147

II. Articulating the Conclusions.....149

Bibliography.....164

ACKNOWLEDGEMENTS

In writing this thesis, I have received help and tremendous support in various forms and from various people to whom I am sincerely indebted. I may not completely express the extent of such help and support that I did receive, or even name all the providers, yet it goes without saying that the enabling environment from which this thesis evolved could not have been possible without some institutional support and outstanding personal sacrifices of some distinguished persons. To this end, I thank the Law Society of British Columbia whose Law Foundation Fellowship provided the financial support for my LL.M program. Also, I thank the faculty and staff, including the librarians of the law school for their tremendous support and assistance. I thank Professors M. D. Copithorne, Q.C., Joel Bakan, Steve Salzberg, Jutta Brunnee, Claire Young, Bob Reid, Obiora Okafor, Stewart Uyi; Justice O. O. Oke and Mr. Michael Gollin, who in several ways (peculiar to my several experiences with them) provided me with warmth and affection not easily forgotten. To Dean Joost Blom, my secondary supervisor, I am indebted for his informed comments, and ever-ready disposition to provide assistance on a short notice despite a very busy schedule. To my primary supervisor, Professor Karin Mickelson, I say "what concerns us most should be last reserved". I deliberately thank you last, after all it is our project. I don't think I can ever thank you enough for your unqualified commitment; your patience, personal sacrifices, and tender heartedness which transmitted all your criticisms, comments, and suggestions with the harmless touch of a dove. I count it a God-ordained privilege to have worked with you. Above all of these, I confess the unseen but ever present hand of my Lord Jesus Christ to the success of this project. This project is indeed a memorial of gratitude!

DEDICATION

Leaving my family to which I am irrevocably attached in order to undertake this project brought to the fore the deep bond that has held us together as a family. This is the lesson of the loneliness and psychological deprivation that have been my experience through the length of this project. In dedication, I offer this project to my family: my father, John, my mother, Appolonia, and my siblings: Eunice, Florence, Tunde, Edwin, I.K. and Ngozi. I spare a thought to the memory of my first cousin, Ifeanyi, the news of whose death was conveyed to me while this project was nearing completion. And to all the unsung labourers in the bioresource vineyard, and all others who are genuinely concerned with the unconscionable plundering of biological diversity, I also dedicate this project.

CHAPTER ONE

INTRODUCTION

CONCEPTUAL FRAMEWORK AND METHODOLOGY

I. THE CONCEPTUAL FRAMEWORK

The use of intellectual property rights as a framework for the conservation of biodiversity and equitable sharing of the dividends arising therefrom is an inherently contentious idea. First, intellectual property rights are a traditional subject of North- South disagreement.[1] There is a mutual suspicion between the two geopolitical groupings on the subject, specifically with regard to its general nature and the extent to which it serves their various interests[2]. Second, the sophistication and aggression which modern genetic science has brought to biodiversity prospecting pose a threat not only to genuine biodiversity conservation but also run the risk of complete exclusion of the traditional custodians of wild habitat. Third, the recent global harmonisation of intellectual property rights recognises the Western formal approach in the application and use of biodiversity components at the expense of the South's informal method. Fourth, the operative principal legal regimes on the subjects of intellectual property rights and biological diversity, namely the Convention on Biological Diversity (CBD) [3]and the World Trade Organisation (WTO)-sponsored Trade Related Aspects of Intellectual Property Rights

[1] See A.S. Oddi, "The International Patent System and Third World Development: Myth or Reality" (1987) Duke L.J. 831.
[2] Ibid at 837-855.
[3] 31 I.L.M. 818 (1992).

(TRIPs) Agreement[4], reflect certain aspects of the sharp geo-political tension on intellectual property rights.

As much as the use of intellectual property rights for conservation and equitable sharing of the benefits of biodiversity is desirable on the face of it, a more accommodating, and less exclusive approach to those rights between all stake holders in biodiversity is essential if these objectives must be achieved and sustained. The inquiry into this desired approach must of necessity broach the inherent sensibilities that sustain the conflict. Despite the difficulties involved in such an undertaking, it is well worth pursuing because it has the prospect of opening up to much needed consensuality as opposed to continued mutual opposition which threatens to undermine the primary objectives, about which there is no disagreement.

The imperative for the twin objectives of biodiversity conservation and equitable sharing of its benefits is pursued on two premises: (a) by far the majority of the earth's biological diversity is concentrated in the South, (b) irrespective of this geographic disquilibrium, biological diversity is critical to humanity's survival with astonishing and limitless versatility for appropriation. It is within those contexts that the linkage between biodiversity and intellectual property rights is underscored.

The term "biological diversity[5] refers to the diversity or variability of life forms within and among the various ecosystems. All the useful components of those 'life vagaries'

[4] For the text of the TRIPs Agreement, see Annex IC of the WTO Agreement 33 I.L.M. 1197 (1994). The

represent bioresources,[6] while their technological exploitation is within the sphere of biotechnology[7]. The urgency associated with the conservation of biological diversity at the global level today has never had any parallel in human history. Humanity has been nonchalant with respect to this vital aspect of its subsistence and is now confronted by the stark reality of the emergence of what has been likened to "the fourth horseman in the environmental apocalypse".[8] The nonchalance is hardly justifiable because the concept of biological diversity is at the centre of all other on-going efforts directed at environmental protection and awareness.

Stemming the increasing tide of bioresource depletion is fundamental to the global agenda for sustainable development now being executed on all fronts[9]. Biological

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preceding WTO Agreement is at 1144.

[5] Also used interchangeably with "biodiversity". The original use of this phrase is credited to scientists; see Calestous Juma (Executive Secretary of the Convention on Biological Diversity), "Foreword" (1997) 6:3 RECIEL iii. However, the introduction of the phrase to modern international legal usage is credited to the United States; see McConnel Fiona, *The Biodiversity Convention: A Negotiating History* (The Hague; London Boston: Kluwer Law International, 1996) at 5. Article 2 of the CBD defines the term as "the variability of life among living organisms from all sources including, *inter alia,* terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are part; this includes diversity within species, between species and of ecosystems." See also D. Farrier, "Conserving Biological Diversity on Private Land: Incentives for Management or Compensation for Lost Expectations" (1995) 19 H.E.L.R. 303.

[6] Art. 2 ibid defines biological resources to include "genetic resources, organisms or parts thereof, populations or any other biotic components of ecosystems with actual or potential use or value for humanity" This definition is an outright endorsement of an anthropocentric view since it views bioresources within the parameter of their actual and potential use to humanity and not their intrinsic relevance.

[7] Art. 2 ibid defines biotechnology as "any technological application that uses biological systems, living organisms, or derivatives thereof, to make or modify products or processes for specific use". See A.T. Bull, G. Holt & M.D. Lilly, *Biotechnology: International Trends and Perspectives* (Paris: O.E.C.D., 1982) at 21, where biotechnology is evaluated as "the application of scientific and engineering principles to the processing of materials by biological agents to provide goods and services."

[8] Farrier, supra note 5 at 304 identifies three major environmental crises on which attention has hitherto concentrated namely, (a) accumulation of toxic waste, (b) green House Effect, (c) depletion of the ozone layer and argues that biological diversity is the fourth and neglected one whose appearance at the scene is like the fourth horseman which represents death -a biblical analogy espoused by E O Wilson, "Biodiversity, Prospecting and Value" in F H Boreman & R K Stephen, eds., *Ecology, Economics, Ethics: The Broken Circle* (1993) at 3- cited by Farrier. For the biblical root of this comparison, see precisely Rev. 6: 7-8.

[9] 42 million acres of tropical forest disappear yearly; this is said to be four times the size of Switzerland. Species depletion is currently estimated at a rate of 10 to 150 daily, faster than the rate of forest destruction

diversity conservation represents the focal point of one of the most recent of the global initiatives on sustainable development. It is principally addressed under the United Nations Framework Convention on Biological Diversity[10], which came on the heels of previous piecemeal initiatives aimed at nature conservation.

Humanity is dependent on biological diversity for its sustenance. Whether we take a narrow anthropocentric or broader intrinsic value[11] perspective on the environment in general or biological diversity in particular, this cannot be denied. We depend upon biological diversity for our food security and agriculture, pharmaceutical necessities including health and associated scientific and research endeavours, climatic stability and fresh-water security. It has been estimated that more than 40% of the world's economy and some 80% of the needs of the world's poor are derived from biological diversity.[12]

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because of the fragmented rate of the remaining habitat, at the current rate of deforestation one million species may be extinguished in less than 30 years ahead. See C.M. Horton, "Protecting Biodiversity and Cultural Diversity Under Intellectual Property Law: Towards a New National System" (1995) 10 J. Envtl Law & Litig.1 at 4. See generally, World Resources Institute et al, *Global Biodiversity Strategy* (New York: WRI, 1992). Of the estimated 30 million species on earth, only 1.4 million have been described and the United Nations Environmental Programme (UNEP) estimates that another quarter of these face extinction; see further S. Biggs, "The Biodiversity Convention and Global Sustainable Development" in R. Kiely., & P. Marfleet, eds., Globalisation and the Third World (London: Routledge, 1998) at 116

[10] Pursuant to this framework convention, a protocol on biosafety is due for signature between May 12, 2000 and June 4, 2001. Efforts are also gathering momentum for a Framework Convention on Forestry since the pioneer initiative of the United Nations Conference on Environment and Development (UNCED) in 1992 (Chapter 11 of Agenda 21)--The "Forest Principles". Forestry is arguably an integral part of biodiversity.

[11] An Anthropocentric approach to the environment suggests a human centred view to the effect that the environment serves no other utilitarian purpose than to meet the needs of man. Conversely, the intrinsic approach suggests that the environment on its own has intrinsic value without reference to human exploitation, which value ought to be preserved for its sake. See Farrier supra note 5 at 305.

[12] See, S. Johnston, "The Convention On Biological Diversity: The Next Phase" (1997) 6:3 RECIEL 219; see also Biggs supra note 9 at 116. For a comprehensive analysis of the extent and nature of dependence on biological diversity by the rural poor in Africa, see *African Biodiversity: Foundation for the Future*-- a Biodiversity Support Program (BSP) Report (Maryland: BSP Consortium, 1993) at 4-9 [hereinafter BSP Report]; see generally Okafor, J. & Ham, R., "Identification, Utilization, and Conservation of Medicinal Plants in Southeastern Nigeria" (1999) *Isues in African Biodiversity* (BSP) No. 3 Ref. 38. Available online at: <http://www.bsponline.org/publications/showhtml.php3?38>. (The BSP is a USAID-funded consortium of World Wildlife Fund, The Nature Conservancy and World Resources Institute).

Notwithstanding the concentration of biodiversity in the South, all of humanity is dependent upon it. It is therefore hardly surprising that the subject of biological diversity has provoked a great deal of passion, anxiety and mutual distrust between the North and South[13]. As one writer has captured it tersely, "since wealth and technology are 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".[14] This requires striking a delicate balance in the exploitation, conservation and distribution of the benefits of biological resources between the North and the South. A critical factor in the search for balance is that the technological wherewithal for bioresource exploitation is almost exclusively a Northern stronghold, whereas the Southern approach to exploitation is moderately informal, without technological aids. Despite the informal approach of the South, its traditional knowledge is a source of tremendous information for the North,[15] sustaining the latter's scientific exploits. This knowledge has largely been treated as part of the so-called "global intellectual commons", with no reward attached to the value of this traditional knowledge. The aggressive nature of the North's formal scientific methods of exploitation has climaxed in the current debate on biotechnology, specifically, genetic engineering and associated ethical issues

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[13] The first major echo of the North-South conflict on the subject of environment and development was in the report of the working paper of panel of experts convened by the Secretary General of the United Nations hels in Founex, Switzerland in June 1971 as a pre-conference preparation to the United Nations Conference on Human Environment (UNCHE) which later held in Stockholm in 1972. See P.W. Birnie & A. E. Boyle, *International Law and the Environment* (Oxford: Clarendon, 1992) at 40 [hereinafter *International Law and the Environment*].

[14] See John Lash (President of the World Resources Institute), "Preface", W.V Reid et al, eds., *Biodiversity Prospecting: Using Genetic Resources for Sustainable Development* (New York: World Resources Institute, 1993) at vi [hereinafter *Biodiversity Prospecting*].

[15] See Horton, supra note 9 at 5; see also *infra* note 296 and accompanying text.

concerning the patenting of life forms[16] and most recently, the human genome project.[17] No longer willing to accept the expropriation of its traditional knowledge as "intellectual commons", the South seeks a reward mechanism for its traditional knowledge, mindful of its amazing economic potential and importance in biodiversity conservation. Thus, the status of traditional knowledge of indigenous and local communities now forms a pivotal aspect of biodiversity conservation discussions.[18] The subject received a tremendous boost under the CBD, which seeks the use of intellectual property rights as a viable

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[16] The question of patenting life forms in now taking the centre stage of ethical and environmental concerns across Europe and the United States. The courts in the USA have taken a proactive and radical disposition in this regard as evidenced since the revolutionary 1980 Supreme Court decision in *Diamond v. Chakrabarty* 20 U.S.P.Q. 193, which has been followed by a line of other decisions. In Canada, the courts appear to be more cautious. See the Supreme Court of Canada decision in *Pioneer Hi-Bred Ltd. v. Commissioner of* Patents (1989), 25 C.P.R. (3d) 257. Within the European Union, a similar cautious trend could be gleaned. There, the controversial *Harvard Mouse Application* was reluctantly accepted with strong qualifications. Note that the latter case was until August 3, 2000 on appeal to the Federal Court of Appeal in Canada after it has been rejected by the Federal Court, Trial Division see *President and Fellow of Harvard College v. Commissioner of Patents* (1989), 79 C.P.R. (3d) 98 *sub nom, Harvard Mouse*. In the Appeal Court's ruling delivered on Thursday August 3, 2000, the Court reversed the cautious trend in Canada and upheld the Harvard University's patent claim for *oncomouse*--the modified mouse. The court, per Rothstein, J. held that the modified mouse could be classified as an invention under the Canadian Patent Act. He observed that "the language of the patent law is broad and general and is to be given wide scope because inventions are necessarily unanticipated and unforeseeable". The court acknowledged the concern that lies in the potential extension of the decision to human beings, but observed that since patenting is a form of ownership, ownership concept does not apply to human beings. How far this goes, only time will tell. For highlights of the Federal Court of Appeal ruling, see "Court Allows Patents on Life Forms", *National Post* 3 August 2000 at A1 &A6. In the *Hi- Bred* case, supra, the Supreme Court of Canada, per Lamer J commenting on biotechnology observed that "(it)... is regarded by many as the latest technological system to be developed in the 20th century and the harbinger of a new era, and we must therefore be very cautious regarding the scope of our pronouncements" For further reading on the debate and biotechnology and genetic engineering trends see generally, Jeremy Rifkin, *Boisphere Politics: A Consciousness of a New Century* (New York: Crown, 1991); *The Biotech Century, Harnessing the Gene and Remaking the World* (New York: Jeremy Tarcher/Putnam, 1998).

[17] At the official announcement of a decade long research project on a rough draft of the human genetic code with the ultimate objective to decode the genome, despite acknowledging the promise of the revolutionary project for medicine, US President Bill Clinton made a remark on its ethical implications. In his words, "We must guarantee that genetic information cannot be used to stigmatise or discriminate against any individual or group". Similarly, his British counterpart, Tony Blair, observed, "Our job is to try to develop the possibilities and thwart the dangers" See the headline news items of the following publications: National Post online: www.nationalpost.com 27 June 2000; The Guardian (Nigeria): www.ngrguardiannews.com 26 June 2000, and Washington Post 29 June 2000.

[18] Article 8(j) of the CBD identifies "innovations and practices of the indigenous and local communities embodying traditional life styles relevant for the conservation and sustainable use of biological diversity" as integral to bioresource conservation and enterprise. See further, Eugenio da-Costa-e-Silva, "The Protection of Intellectual Property for Local and Indigenous Communities" (1995) 17 EIPR 546.

device for equitably rewarding the unsung labourers in the bioresource vineyard—the indigenous and local communities of the South.[19]

To understand the suitability of intellectual property rights for this purpose, a consideration of the general nature of those rights would be appropriate. Analytically, the term, "intellectual property" presupposes a distinction between two types of property, namely tangible and intangible properties. The former refers to physical objects such as realty,[20] while the latter includes intellectual property and is used loosely in this thesis in reference to the products of the human intellect including the rights, duties, and economic benefits accruing thereto.[21] Intellectual property is an umbrella expression for a broad spectrum of regimes or categories including patents,[22] petty patents (sometimes called utility models), trade secrets, copyrights and neighbouring rights,[23] and plant variety

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[19] D. Posey, The Relationship Between Cultural Diversity and Biological Diversity" in S. Bilderbeek, ed., *Biodiversity and International Law* (Amsterdam: IOS Press, 1992) at 45 [hereinater Biodiversity and International Law] Here the writer argues that the first document specifically calling for the just compensation of native peoples for their knowledge and the legal defence of indigenous intellectual property rights is the Declaration of Belem, Brazil in July 1988. See *infra* note 458.

[20] See Rafik Bawa, "The North-South Divide Over Intellectual Property" (1997) 6 Dal. J. Leg. Stud. 77 at 79; see also Allan Gutterman, "The North-South Debate Regarding Protection of Intellectual Property Rights" (1993) 23 Wake Forest L. Rev. 89.

[21] See J. Philips & A. Firth, *Introduction to Intellectual Property Law* 2nd ed. (London: Butterworths, 1995) at 3. See also article. 2(viii) of the World Intellectual Property Organisation Convention of July 4, 19967 (as amended) [hereinafter WIPO] which makes reference to a plethora of industrial and intellectual property rights and uses the expression, "inventions in all field of human endeavour". It would appear that the original attempt to distinguish between industrial and intellectual property rights by the Paris Convention for the Protection of Industrial Property Rights, 1883 (as severally revised) has been extinguished by WIPO's holistic articulation of intellectual property which is inclusive of industrial property. See the following for further discussion on this point: M.L. Blackney & McKeough, *Intellectual Property Commentary and Materials* (Ontario: Careswell, 1989) at 1-2, and Ricketson, *The Law of Intellectual Property* (Sydney: The Law Book Company, 1983) at 2-14. The text of the Agreement on Trade-Related Aspects of Intellectual Property Rights [hereinafter TRIPs] would seem to follow the WIPO approach in this regard.

[22] This list is by no means exhaustive.

[23] A neighbouring right takes the form of a *quasi* intellectual property right. It is an incidental and component right that derived from a particular copyrighted material. An example of a neighbouring right is performer's right.

protection.[24] It has been extended to include any form of legal protection to knowledge and technology even if not falling neatly into the traditional categories.[25] It continues to reflect the dynamism associated with the increasing scope of human innovations and technological advancements.[26]

Rights in intellectual property are directed at "the recognition of the moral and economic value of intellectual creation in the cultural, social and economic development of nations".[27] The moral, socio-cultural, economic and sometimes, spiritual strings that attach indigenous peoples to their biological resources amount to the total essence and unique feature of a people's identity. Thus, biodiversity has been acknowledged as one of the main causes of cultural diversity and many, if not all, traditional peoples depend on biological diversity.[28] Their traditional knowledge is a product and or function of their socio-cultural economic and often historical experiences, which often have some intellectual property significance.

Because of the informal nature of indigenous peoples' involvement with the exploitation and conservation of biological diversity, which hardly conforms to Western scientific

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[24] There is a noticeable statutory and judicial tendency toward a separation of plant breeder's rights from conventional intellectual property rights. See *Pioneer Hi-Bred Ltd. v. Commissioner of Patents* supra note 16.

[25] See Gutterman supra note 20 at 92.

[26] For the impact of the ever-expanding scope of human innovation on the evolution of intellectual property concept, see Daniel Gervais, *The TRIPs Agreement: Drafting History and Analysis* (London: Sweet & Maxswell, 1998) at 10, Rafik Bawa, supra note 20 at 83-6. See generally Susan K, Sell, *Powers and Ideas: North-South Politics of Intellectual Property and Antitrust* (New York: State University of New York Press, 1998).

[27] See Arpad Bogsch, Director General of WIPO's Address at WIPO Conference, Louvre, Paris 1-3 July 1994; see also G. Tritton, *Intellectual Property in Europe.* (London: Sweet & Maxwell, 1996) at 1.

[28] See *Biodiversity and International Law*, supra note 19 at 9.

formalism and legal standards, their efforts are deprived of innovative status under the orthodox criteria of intellectual property. However, the so-called "rudimentary" endeavours of traditional peoples are in fact associated with many of the most innovative and efficacious results in the fields of agriculture, pharmacology and other indeterminate areas of scientific exploits adopted by orthodox methods.[29] The credits for those exploits are exclusively appropriated by the predatory Western orthodox system whose formalism is amply articulated and recognised by the extant international intellectual property legal framework. Even the CBD's attempt to incorporate innovations, practices and traditional lifestyles of indigenous and local communities[30] within the framework of its objectives seems to put more emphasis on compensation than on the intellectual property right value of indigenous knowledge.[31] Literature and arguments on alternative so-called *sui generis* rights are premised on ownership of bioresources rather than on the unique role of indigenous knowledge in transforming those resources for therapeutic uses. Several decades of either deliberately orchestrated neglect or an outrageous "conspiracy of global ignorance" have deprived indigenous peoples of the benefit of their unique contributions, not only to biodiversity preservation through time tested sustainable methods, but also of their insightful ingenuity in the application of biodiversity components to therapeutic uses. The imperative for intellectual property rights or alternative rights to traditional knowledge is aptly expressed along the following lines:

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[29] There are numerous scientific studies substantiating the reliance on indigenous knowledge by modern scientific and research endeavour in a multiplicity of fields including genetics, botany, pharmacology, and agriculture biology. See Horton, supra note 9 at 5; see also Ruth L. Gana, "Prospect For Developing Countries Under the TRIPs Agreement" (1996) 29 Vand J. Transnat'l L. 735 at 751-2.

[30] See generally CBD arts. 8(j), 10(c) and 18(4).

[31] See Lester I. Yano, "Protection of Ethnobiological Knowledge of Indigenous Peoples" (1993) 41 UCLA Law Rev. 443 at 446 & 478.

> ...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.[32]

The linkage between biodiversity and intellectual property rights is appraised within the context of two central legal regimes, namely the CBD itself and the TRIPs Agreement. The former seeks to rely on the latter to accomplish its objectives. An overview of the two regimes sets the backdrop for an ideological conflict to intellectual property rights and raises some doubts about the degree of mutual harmony between the two central legal regimes in the biodiversity and intellectual property agendas.

The Convention on Biological Diversity envisions a harmonious link between conservation, intellectual property, environmental protection, research and development, and international financial aid.[33] The CBD identifies three cardinal objectives, namely, the conservation of biological diversity, its exploitation in a sustainable manner and the fair and equitable sharing of its benefits. Specifically, the CBD endorses an equitable sharing of the benefits of biological resources among all the stakeholders in the North-

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[32] See M.A Gollin, "An Intellectual Property Rights Framework for Biodiversity Prospecting" in *Biodiversity Prospecting,* supra note 14 at 160; see also J. Robertson & D. Calhoun, "Treaty on Biological Diversity: Ownership Issues and Access to Genetic Materials in New Zealand" (1995) 5 EIPR 219; see generally Mcneely, J., *Economics and Biodiversity: Developing and Using Economic Incentives to Conserve Biological Resources* (Gland, Switzerland: IUCN, 1988). It may not be correct however to suggest that without external incentives, traditional methods undermine the conservation of biological diversity. See the BSP Report, supra note 12; see generally Anderson, D. & Richard, G., eds., *Conservation in Africa: People, Policies and Practice* (New York: Cambridge University Press, 1987).

South geopolitical divide. It highlights the economic values that attach to traditional knowledge of the indigenous peoples and recognises them as attracting benefits, which are subject to being shared upon their appropriation.[34] However, since only intellectual effort can enjoy protection as intellectual property rights, wild species or products existing in nature *per se* cannot attract this protection.[35] Intellectual property rights therefore provide a sound framework for protecting and rewarding efforts that translate into their useful exploitation and at the same time constitute an incentive to foster conservation. Despite constraints or reservations on CBD's identification with the value of traditional knowledge, its approach remains more than that of any other regime, a laudable effort at realistically underscoring the importance of traditional knowledge in the bioresource agenda. It has therefore laid a general foundation for a linkage between intellectual property rights and biodiversity prospecting while recognising the role of indigenous peoples in that context.

Nevertheless, the Convention is not an intellectual property convention, and could not provide the relevant mechanism for the translation of intellectual property into furtherance of its objectives. It relies substantially on international regimes on intellectual property rights in order to give effect to its bid to incorporate traditional knowledge within the scheme of its objectives. Regrettably, however, the extant international regime on intellectual property, specifically the TRIPs Agreement, would seem to conflict with

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[33] See M A Gollin, "Convention on Biological Diversity and Intellectual Property Rights" in *Biodiversity Prospecting* supra note 14 at 290 where the writer observes that the CBD objectives constitute a complex and long-term undertaking by any standard.
[34] CBD Article 8 (J), see also E. da- Costa-e-Silva, supra note 18 at 219.
[35] For example, the entirety of Wilderness Biodiversity; see Gollin supra note 32 at 182.

CBD's approach and cannot be relied upon to give effect to the Convention's lofty objectives, particularly with regard to traditional knowledge. This is because TRIPs' ideological framework and jurisprudential orientation contrast with the Southern notion of intellectual property rights, which is based on social interest considerations.

This conflict is one of ideological disparity between the North and South's concepts of intellectual property rights. The two substantive international legal regimes on intellectual property right namely the World Intellectual Property Organisation (WIPO) and the WTO/GATT TRIPs regimes can be said to represent the competing ideological perspectives. The WIPO regime would seem to accommodate national latitude for states in determining the nature and subject matter of intellectual property rights. This disposition is ideologically inclusive and as such, accommodates the social interest ideological perspective of the South. On the other hand, the WTO/GATT-TRIPs dispensation has a Western privativistic and free market approach to intellectual property rights. With the elevation of intellectual property to the centre stage of international trade under the aegis of the WTO regulatory and sanctions mechanism, the Western ideological bent toward intellectual property right is now universalised under the TRIPs Agreement. The CBD's aspiration toward equitable sharing of biodiversity benefits which is tied partly to the integration of traditional knowledge would appear to strike a grave difficulty with an intellectual property dispensation that is not ideologically oriented toward the peculiarities of traditional knowledge.

The TRIPs Agreement covers all conventional regimes of intellectual property rights. In addition, it represents the first ever attempt at elevating trade secret regime of intellectual property to international level. While not discounting other regimes of intellectual property rights, the CBD appears to conceive of their relevance to biological diversity and biotechnology transfer as peripheral in comparison with the patent regime.[36] This thesis adopts this conceptual approach in its analysis. It does not however foreclose completely incidental discussions on other regimes that may arise from the ensuing analysis. In addition to patent, special attention is also given to the trade secret regime. The thesis seeks in so doing to evaluate the implication of a universal regime of trade secrets, within the TRIPs framework, to the subject of biological diversity and traditional knowledge as articulated under the CBD.

(i). RESEARCH ISSUES.

The major research issues for this thesis include:

(a). Appraising the principal conceptual objectives of the CBD in relation to intellectual property rights with an emphasis on patents and trade secret regimes.

(b). Attempting an analysis of the North-South ideological foundation of intellectual property rights in the context of the extant international regimes of intellectual property rights, namely the WIPO and the WTO/GATT-TRIPs dispensations.

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[36] See CBD art. 16(5). There is a preponderance of literature on the subject that often attempts a wholesale analysis of the CBD in the context of broader regimes of intellectual property rights. The observable trend in the majority of the literature is a dominant attention to patents and often an over stretch of analysis to include other regimes, not substantially connected with biodiversity. It would seem that the relevance of a given intellectual property regime to the subject of biodiversity is a function of the analytical perspective of the writer's driving emphasis. But see however, M.A. Gollin, supra note 32 at 159 in a bold attempt at a near all-embracing analysis of several intellectual property regimes to biodiversity conservation. See generally, M. Ritchie, K. Dawkins & M. Vallianatos, "Intellectual Property Rights and Biodiversity: The Industrialization of Natural Resources and Traditional Knowledge" (1996) 11 St. John's J.L. Com. 431; Horton, supra note 9.

(c). Identifying and surveying the underlying conflicts between the CBD and the TRIPs Agreement particularly from the North-South perspective.

(d). Evaluating how and to what extent the perceived conflicts between the CBD and the TRIPs Agreement impact on aspects of the objectives of the former with specific regard to its integration of traditional knowledge.

(f). Re-appraising the prospects and options for the attainment of the objectives of the CBD in the light of the identified conflicts.

(ii). ARRANGEMENT OF CHAPTERS

In addressing these research issues, this thesis is organised into five chapters. This includes the foregoing Chapter One, which is generally introductory. The chapter sets out the scope of this thesis. The first part of the chapter outlines the thesis' conceptual framework. It defines the concept of biological diversity and intellectual property rights and provides an overview of the governing international legal regimes on both subjects. It foreshadows the theoretical grounding of the legal regimes and sets out the research issues the thesis is to address.

The second part identifies the methodological approach adopted in addressing the identified research issues. This approach is in the form of a North-South analysis. It situates the ideological divide that underlies the North-South approaches to intellectual property rights observing that intellectual property ideology is usually an extension of the

general concept of property rights.[37] Thus, while the North's intellectual property right approach is premised on individualistic and privativistic considerations, the dominant Southern approach is essentially social interest oriented.

Chapter Two provides a historical overview of the CBD. Part two of this chapter underscores the intellectual property imperative of biological diversity within the context of select provisions of the CBD. Part three spotlights the WTO/GATT TRIPs Agreement and its relationship with the WIPO dispensation and argues that the CBD's reference to, and reliance on, international law on intellectual property law applies to both regimes i.e. WIPO and TRIPs. However, since the TRIPs incorporates by reference most of WIPO administered Conventions and is an integral part of the WTO sanctions and dispute mechanism, the TRIPs overshadows the WIPO as a practical matter.

Chapter Three evaluates the general nature of patents and trade secrets both under the TRIPs Agreement and in the context of traditional knowledge. It argues that because of the ideological schism that underlies the nature of traditional knowledge and the Western orthodox concept of intellectual property rights, both of them cannot operate under a uniform scheme like the TRIPs. It argues that the Eurocentric triple test of patentability, namely novelty, non-obviousness (inventive step) and usefulness,[38] adopted by the TRIPs Agreement, is not reconcilable with the nature of traditional knowledge. Using the neem tree oil as a case study, it highlights the inability of western orthodox intellectual property

[37]See David Hurlbut, "Fixing the Biodiversity Convention: Toward a Special Protocol for Related Intellectual Property" (1994) 34 Nat. Resources J. 379 at 383.
[38] TRIPs art. 27.

regimes to recognise traditional knowledge as a prior art capable of impeaching the practice of biopiracy among Western based multinational corporations. It concludes by reviewing the implications of a universal intellectual property regime under the TRIPs for the conservation of biological diversity.

Chapter Four argues that the perceived tension between the two intellectual property regimes and the conceptual disposition of the CBD is principally rooted in the underlying ideological chasm. It disclaims the superimposition of any one ideology on another,[39] contending that an intellectual property framework that accommodates North-South ideological pluralism is best suited to achieve the objectives of the CBD.

The chapter attempts a rationalisation of conflict between the two intellectual property regimes by a legal analysis of their relationship as international treaties[40], concluding that a legalistic perspective has little practical relevance in resolving the conflict. It revisits the call for a protocol to the CBD and doubts its viability to "fix" the Convention with regard to its recognition of traditional knowledge among other issues. Similarly, while acknowledging that a *sui generis* right could enhance the value of indigenous knowledge, it argues that this is not persuasive enough, because of certain limitations. It contents that on the basis of principle of permanent sovereignty over natural bioresources, a national law approach, despite its disadvantages, is a suitable basis for broaching the issue of intellectual property rights protection for traditional knowledge. In conclusion, it argues

[39] For discussion on the moral equality of ideologies see Hurlbut, supra note 37 at 387-8.

that in seeking a reappraisal of intellectual property rights to advance the CBD objectives, such a scheme whether a *sui generis*[41] right or intellectual property right *strictu sensu,* must be so recognised within the framework of the TRIPs Agreement.

Chapter Five re-articulates the research issues in the thesis and outlines the conclusions reached in the exercise.

II. THE RESEARCH METHODOLOGY

The methodological approach of this thesis is largely a combination of an inter-disciplinary legal analysis and a North-South approach. This is the logical dictate of the inherent tension between the global North and the global South on the subjects of intellectual property rights, as well as the environment in general and biological diversity in particular. An inquiry of this nature into a specialised topic such as biological diversity within the larger context of international environmental law and intellectual property rights is logically an interdisciplinary legal exercise. The North-South approach is an attempt to unmask the often unseen ideological undercurrents that have provided impetus to the traditional geopolitical tensions that have characterised international negotiations on biological diversity and intellectual property rights, as well as the resulting

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[40] For aspects of the analysis of the legal relationship of the two treaties see Richard G. Tarasofsky, "The Relationship Between the TRIPs Agreement and the Convention on Biological Diversity: Toward a Pragmatic Approach" (1997) 6:2 RECIEL 148.

[41] For references to *sui generis* and analogous rights see Gollin, supra note 32 at 178. See also B. Belcher, "Living Inventions" (1992) 7 IDRC Reports at 20-2 (also cited by Gollin).

instruments. It is believed that these approaches will provide a satisfactory platform for the treatment of the questions that the thesis set out to address.

(i) THE NORTH-SOUTH[42]

For the purpose of this thesis, the term North is used as a loose reference to the developed countries of the Northern Hemisphere, but also includes Japan, Australia, and New Zealand. The influencing factor for this categorisation is the level of industrialisation and development as indicators of economic prosperity more than geographic contiguity. Those countries fall within the rubric of what is sometimes referred to as the first world. The term is therefore used interchangeably with the words "Western", "Industrialised" and "Developed" countries.

Conversely, the term South refers to most of the countries of the Southern Hemisphere. This generally includes countries of Africa, Asia, and Latin America, the majority of which were colonised by some of the countries of the North. They are also referred to in descriptive but controversial terms such as "Less Developed", "Developing", Underdeveloped", and Third World" countries. Again, these expressions are used in this thesis interchangeably.[43] Similarly, the influencing factor for the purpose of this

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[42] For a more detailed discussion and attempt at a theoretical categorisation and distinctions between countries within this rubric, including a critique of the categorisations, see K. Mickelson, "Rhetoric and Rage: Third World Voices in International Legal Discourse" (1998) 19 Wis. Int'l L.J. 353 at 356-62. Although Mickelson's approach is with regard to articulating a third world identity, her foregrounding to that passionate quest includes an insightful discussion of the North or developed countries in the context of a third world analysis.

[43] As recurring terms of descriptive and analytical expression, there is a tendency to use the terms North and South among scholars in a way that is convenient to a favoured analytical perspective. However, there is an emerging critical scholarship tending toward a more appropriate and general use of the terms. See generally Hurlbut, supra note 37. For the critical approach see Mickelson, ibid.

categorisation is the level of economic backwardness in comparison with these states' Northern counterparts at the opposite side of the geopolitical and economic divide.

(ii) THE IDEOLOGICAL CONFLICT:

(a). A CAVEAT

In this thesis, the use of the term, "ideology" is in the broadest sense, without any pretension or claim to the Marxist or post Marxist trend of conceptual thought. This approach distances itself from the theoretical or abstract complexity and limitations associated with the technical nature of that expression.[44] Thus, for the purpose of this project, ideology is used simply as a loose reference to a conceptual perspective characteristic of, and discernible from, a socio-cultural, geo-political or economic group, specifically, the North and South.

In approaching an analysis of the North-South ideological divide over the subject of intellectual property rights, there is no presumption whatsoever made of ideological uniformity among the countries on each side of the ideological divide. There are variant ideological slants from individual constituent countries and legal traditions on each side even as the level of industrial and economic advancement among the referent countries is not and could hardly be uniform.[45] To a some extent, the level of a country's comparative

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[44] For a flexible and broad application of the term, "ideology" without a strict adherence to its technical confines, see generally Terry Eagleton, *Ideology (*London: Longman, 1994); see also Terry Eagleton, *The Ideology of the Aesthetic* (London: Blackwell, 1989) at 4-22.

[45] Even among the developing countries, there is a pattern of categorisation based on the level of their development. In this regard three categories are identified even though the criteria used remain questionable in some quarters. The categories are: (a) threshold countries i.e. those approaching the level of development comparable to those of developed countries. About 15 countries are generally identified under this group. They include Mexico, Argentina, China, Brazil, Venezuela, and India. (b) those that have the potential to attain an advanced stage of development given the right circumstances over a long period. Countries in this group are in the majority. (c) the last category, comprising about 25 countries are said to be extremely poor

advantage in innovation, as opposed to imitation and or adaptation of innovation of others, is a decisive factor in its strategy toward intellectual property.[46] Consequently, a certain degree of consistency of approach to intellectual property is discernible particularly where the economic (growth) indicators, are not in radical disparity within each side of the divide.

(b) A FOREGROUNDING

The end of the cold war in the late 1980s freed nations from the stranglehold of ideological limitations.[47] Globalisation, particularly in the economic sphere, received a major boost with the collapse of communism, leading to the reactivation of the GATT system. The emergence of the WTO in 1995 heralded a full-blown regime of global trade liberalisation[48] as an idea whose time had come. This all-inclusive world trading system became the touchstone for the co-opting of intellectual property into the global trade framework.

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countries. See Michele Powers, "The United Nations Framework Convention on Biological Diversity: Will Biodiversity Preservation Be Enhanced Through Its Provisions Concerning Biotechnology Intellectual Property Rights?" (1993) 12 Wis Int'l L.J. 103 at 108. See particularly, Walter L. Williams, "International Development and Technology: The Role of Law and Policy" 40 (1978) (cited also by Powers).

[46] See Bawa, supra note 20 at 81.

[47] See A. Quellette & D. Livermore, "Foreign Policy Without the Nation State?" (1993) 1:3 Canadian Foreign Policy 29. The writers observed that developments since the end of cold war has set the stage for a radical shift from the way global societies are organised at all levels. The major political revolution of the last century, the end of cold war, they contended, had freed the underlying social and economic forces from ideological constraints opening the way for fundamental change in the system of states that has dominated international relations for more than 300 years.

[48] Since the signing of the General Agreements on Tariffs and Trade [hereinafter GATT] in Geneva on Oct. 30, 1947, until the entry into force of the Agreement establishing the World Trade Organisation [hereinafter WTO] on Jan. 1 1995, GATT applied provisionally as an agreement among a limited number of countries. The WTO introduced an all-inclusive regime of global trade liberalisation among other things within an institutional framework. See Gervais supra note 26 at 4-5.

The level of innovation in technology and export components in the last century in the North[49] and its prospect for continued growth this century underscored the need for concerted action to protect and maximise technology as a vulnerable form of trans-national wealth that is increasingly sought after by the developing countries. Not to do so has been alleged to be highly detrimental to the North's retention of a major share of the global market and by extension, the global economy.[50] Thus, for the first time in the history of multilateral agreements, GATT negotiators proceeded under a new recognition, championed by the United States[51] and the EC, that intellectual property constituted a significant aspect of international trade.[52] The elevation of intellectual property rights and the components to the forefront of international trade under one single instrument with a strong enforcement framework, proceeded under a realisation that the future economic strength of the developed countries might be at stake, if intellectual property protection is not universally accepted.[53]

Apart from the developing countries' inherited colonial legal system, with its Eurocentric intellectual property orientation, the latest attempt at a global standard of intellectual property rights under the auspices of the WTO/GATT-TRIPS framework reopens the

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[49] Bawa, supra note 20 at 83 observes that during the last century, "faster and more efficient transportation and communication mechanisms have allowed local economies to extend themselves into international realm of commerce in the fashion of what has been termed 'economic globalisation.' This trend is accompanied by increased reliance among nations on trading policies of other countries and, in turn, a consequent reduction of orthodox trade barriers between countries."

[50] Ibid at 89.

[51] Ibid at 91. The United States search for a new uniform standard for the protection of intellectual property led it to take up the issues at the GATT to the discomfort of developing countries who preferred the WIPO, a specialised agency of the United Nation, as the appropriate forum.

[52] See K. M. Meessen, "Intellectual Property in International Trade" (1987) 21:1 JWTL 67; see also P.S. Randhawa, "Punta del Este and After, Negotiations on Trade and Services and the Uruguay Round" (1987) 21:4 JWTL 163.

ideological conflict between the North and the South. The reason for a strong intellectual property regime fashioned after Northern ideological preferences is deliberately disguised by the North. The argument presented by the North is not premised on the latter's overriding economic survivalist tendency as reviewed above. On the contrary, the North justifies this intellectual property drive as a design to jump-start and accelerate economic growth in the South. An altruistic endeavour indeed!

The Northern argument is that intellectual property protection guarantees adequate compensation for sustainable creative innovation,[54] and that an effective intellectual property protection is the best assurance of the technology transfer badly needed by the South. The cost effectiveness of intellectual property as a guarantee of adequate compensation for creative innovation is questionable.[55] Similarly, the empirical reality of the second claim is highly doubted by the developing countries.[56] This economy of confidence in the intellectual property argument stems from the conflicting geopolitical ideological perspective at work on the subject of intellectual property.

(iii) THE NORTH: A PRIVATIVISTIC/INDIVIDUALISTIC APPROACH

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[53] Bawa, supra note 20 at 91; see also J.H. Reichman, "Intellectual Property in International Trade: Opportunities and Risks of GATT Connection" (1989) 22 Vand J. Transnat'l L. 747 (cited also by Bawa).
[54] See G. Mossinghoff, "The Biological Diversity Convention and Intellectual Property Rights: Conflicts or Harmony?" (1989) Patent World 27 at 29.
[55] For the doubts in this regard, see. Oddi supra note 1. The writer lists and discusses in detail seven cost elements that do not lend credence to the claim that intellectual property protection operates ultimately in the interest of innovation and owners of new technology. The seven elements are: (a) administrative cost of having a patent, (b) underutilisation of inventions that would have been readily available without patent protection, (c) abuse of patent monopoly, (d) research expenditure by competitors incidental to avoiding existing patents, (e) blocking or defensive patents, (f) inhibition of inventive activity, (g) over emphasis on applied research as opposed to basic research.

The fundamental idea underlying intellectual property protection, simply stated, is to discourage the exploitation of original ideas or goodwill without adequate compensation. Intellectual property protection mediates between two competing social objectives: the encouragement of innovation and the society's desire to appropriate the benefits. In the North, intellectual property is construed as akin to, if not totally the same as, the right to tangible property. Therefore, the Eurocentric view of physical property in its strict sense as espoused by leading philosophers and economists is brought to bear upon intellectual property rights.

Most leading Western philosophers and renowned political economists, including Adam Smith,[57] John Locke,[58] G.W.F. Hegel,[59] and John Rawls[60] espoused the central role of property in determining the rights and status of the individual in the Western social tradition.

For Hegel, property was one of the principal means by which an individual asserts his identity and (exclusive) self-expression in society, which acknowledges the individual on that basis. The crux of the Hegelian conception of property was its relevance to the personality of the individual. The individual existed in the Hegelian society with a

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[56] Ibid. See generally Gana, supra note 29.
[57] See generally, Adam Smith, *The Wealth of Nations: An Inquiry Into Nature and Causes* (Dublin: Whitestone, 1776). Mossinghoff supra note 54 at 27(writing as an American) observes that "...Adam Smith taught us that the wealth of nations rested on labour, capital and natural resources. Our generation has added a fourth pillar: intellectual property in all of its form..." Unknown to Mossinghoff, within Adam Smith's three pillars, intellectual property was already incorporated and there was no need for the chest beating.
[58] See generally, J. Locke, *Second Treatise of Government* (London: Blackwell, 1967).
[59] See generally G. Hegel, *Philosophy of Right* trans. T.M. Knox (Oxford: Clarendon Press, 1967).
[60] See generally, J. Rawls, *A Theory of Justice* (Cambridge Mass.: Belknap Press of Harv. Univ., 1999).

principal aspiration to establish a unique place and identity through the acquisition of property.[61]

Adam Smith, the great British philosopher and economist, writing in his landmark work, "The Wealth of Nations" in the year of American independence in 1776, argued that the wealth of nations rested on a tripod of labour, capital and natural resources.[62] The central role of the individual in generating and harnessing those three elements need hardly be emphasised. Similarly, labour was the pivot of wealth in the Lockean tradition. Thus, for Locke, in primitive society, resources were collectively held by the society. The resources became transferable or convertible into individual property by an act of appropriation through labour. Labour was later to be expressed in the form of money as means of exchange. However, the mental process of the individual exercising the act of appropriation through labour still remained useful and determinative of the individual's title and claim over the object. The individual will was a central and pivotal element in defining a property right.

In his appraisal of the Hegelian and Lockean analysis of Western tradition of property, David Hurlbut observes:

> The 'quiddity' of property is an intellectual phenomenon that arises from the way individuals conceived of themselves in their material environment. Property may therefore be the exertion of will over the transformation of material things, or it may be the exertion of intellect to create new ideas."[63]

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[61] Supra note 59 at 41-4.
[62] Supra note 57.
[63] Hurlbut, supra note 37 at 384.

Therefore, the bestowal of the status of property upon intangibles as a fundamental concept was originated, developed and accepted in the West.[64]

What appears to be important in this analysis is the conquest and adversarial relationship between the individual and the society. The individual must arise above the constraints and limitations imposed by the society for self-assertion through the acquisition of property. In this scenario, market forces played and continue to play a crucial role as an arbiter of sorts; by which means an individual voluntarily exchanged his or her own will (as represented and expressed by property which is earned through labour). Fundamental to this system is the recognition that a property right is only transferable in exchange for consideration.[65]

Because the right to private property is sacrosanct, the society has a limited authority to restrict the individual's fair accumulation of property and the general exercise of the rights incidental thereto.[66] Society's interference with the individual right was on the basis of fair compensation. Such interference could also be justified on the grounds of

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[64] Bawa, supra note 20 at 80. In my view, this claim may be true to the extent that it refers to the Western concept of intellectual property. It would be too sweeping a claim that most countries of the South do not accord any recognition to what may have the semblance of European concept of intellectual property. That is why the word 'fundamental' is an important qualifier to the statement.

[65] See M. A. Gollin, "Biodiversity: Preventing Ill-Begotten Harvest and Ownership Strategies for Conserving Biological Diversity" (1994) 10 Adelphia L.J. 45 at 47.[hereinafter "Ill-Begotten Harvest"].

[66] See K. W. Baer, "Theory of Intellectual Property and the Biodiversity Treaty" (1995) 21 Syracuse J. Int'l L. & Com. 258 at 266. The incidental rights include: right to protection and promotion of personality, right to labour of the individual's body, right to the reward of the individual desert, right to plan and exercise autonomy. See also Jeremy Waldron, "From Authors and Copiers: Individual Rights and Social Values in Intellectual Property" (1993) 68 Chi-Kent L. Rev 841 at 844 --(cited by Baer ibid).

preventing the individual's exercise of a right to property, where the exercise would infringe upon the expression of other peoples' freedom in the society.

In this context, the Rawlsian theory of distributive justice[67] is readily put in focus. Rawls' basis for the limitation of individual freedom is premised on two principles. The two principles in a nutshell seek equal right to basic liberty to all peoples and the redistribution of inequalities in a manner that accords priority to those with lesser opportunity.[68] Rawls' consideration was driven neither by a Lockean bias for labour, nor by a Hegelian dictate of personality but by the inalienable rights of the individual as a free and autonomous agent, in the Kantian tradition.[69] By his corrective treatise on the Hegelian personality theory of property rights, Rawls appears to strike a harmony with the Lockean concern for maintaining and furthering public good by way of restricting individual property rights. Rawls' position tempers and moderates the labour and individualistic paradigms of property rights by his principles of fairness.[70]

An allusion has been made by Baer to Hohfeld in an attempt, albeit doubtful, to further provide the basis for a justifiable qualification of an unrestricted individualistic concept of intellectual property in the Hegelian and Lockean sense. The Hohfeldian theory of

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[67] See generally John Rawls, supra note 60.
[68] Ibid. The two principles that justify the limit of freedom are to the effect that: (a) each person is to have equal right to the most extensive basic liberty compatible with a similar liberty for others; (b) social and economic inequalities are to be arranged in that they are both (i) reasonably expected to be to everyone's advantage, and (ii) attached to positions and offices open to all. For a further elaboration of this theory and its application in the context of biological diversity see Baer supra note 66 at 265-6.
[69] For a discourse on autonomy and categorical imperative, see generally Immanuel Kant: The Critique of Reason trans., Thomans Kingsmill (London: Abbott, 1909). Rawls acknowledged the closeness of his theory to Kant's doctrine; see also Baer ibid at 268.
[70] Ibid.

correlatives establishes that every right has a corresponding or correlative duty--an imperative, although not intended by Hohfeld, that Baer associates with the modification of property rights.[71] Baer[72] has extended this analysis to the field of intellectual property rights in terms of the duties due or owed to right owners and those justifiably imposed on or flowing from them. Such qualifications and restrictions are said to constitute the theoretical foundation for an intellectual property ethic.[73]

Therefore, the acknowledged right to property, both intellectual and tangible, is of necessity subjected to certain duties. Principally these are duties owed to the property owner which are aimed at creating an enabling environment for maximum enjoyment of rights attaching to ownership of property. The other side of the coin is that such rights are not completely unfettered as their exercise justifies imposition of certain duties.[74] Duties on property rights are based on the social function of those rights; hence intellectual property rights although privativistic in nature, are limited by social purposes. This need for the limitations is a prescription of public good dictated *inter alia* by the principles of distributive justice within the confines of national laws and administrative enforcement mechanisms.

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[71] In the Hohfeldian square of opposites, rights correlate with duty, powers with liability; immunity with disability; privileges with no rights. It must be pointed out that the Hohfeldian scheme is however not intended for extension outside its original syntactic objctive. For a discussion and analysis of the Hohfeldian Scheme, see R. W. M. Dias, *Jurisprudence* (London: Butterworth, 1976) at 33-65.

[72] Supra note 66 at 267 & n. 38.

[73] Baer supra note 66 at 266-281 finds the Hohfeldian correlatives as suitable for adoption in spelling out the ethics of intellectual property, both at individual and corporate levels, and she applies the concept to biological diversity in a very interesting and persuasive manner.

[74] Ibid at 267.

From an historical perspective, it is clear that the regulatory system for intellectual property was principally a domestic or municipal affair.[75] Only royalty, and in some cases, the ruling aristocracy,[76] had the exclusive right to bestow patent monopolies to enterprises and individuals. Long before 1883, the need for trans-national recognition of patent rights among European trading partners had been acknowledged. The 1883 Paris Convention for Protection of Industrial Property Rights was a formal endorsement of this need in Europe. The notable difference was that the Convention marked the co-opting of most European colonies into this trans-national approach to intellectual property rights. Colonialism included in its unholy package an unchallenged extension and imposition of the concept of intellectual property in the Hegelian and Lockean framework.[77] This was necessitated mainly to safeguard the imperialist interests of Northern offshore colonial corporations.[78]

(iv) THE SOUTH: A SOCIAL INTEREST/ COMMUNUAL APPROACH.

The European colonial outposts of Africa, Asia and the Americas, having emerged, at least in theory, from colonialism, constitute what are presently referred to as developing

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[75] See *Ill-Begotten Harvest,* supra note65 at 49; Oddi, supra note 1 at 91; A. Adewopo & C. Oguamanam, "The Nigerian Trade Marks Regime and Challenges of Economic Development" (1999) 30: 6 IIC 632 at 645. In England, in the 17th century, the Statute of Monopolies, 1623 (21 Jac. I, c3) declared all monopolies void, except "any letters patents and grants of privilege for the sole working or making of any 'Manner of manufactures' within the Realm".

[76] As was the case with the Italian city-states during the Renaissance. See Hurlbut, supra note 37 at 384; see also, R. Sherwood, *Intellectual Property and Economic Development* (1990) cited by both Hurlbut ibid and Gana, supra note 29.

[77] See Hurlbut ibid at 385.

[78] Gana ibid at 737 observes that "As former colonies, developing countries were involved in the international economic system through policies of individual colonial authorities. The result of this participation in the international economic system placed the direction and growth of developing countries'

countries. The constituent socio-political elements in these developing countries have always had their own cultural approach toward property rights, both tangible and intellectual. The approach does not reflect the imposed one.

Although these non-European cultures do not have identical ideological approaches to property, certain generalisations can be made. The prevalent approach does not assume an adversarial and conquest-based relationship between the individual and the society. The individual does not enjoy the supreme commanding heights in property matters. Instead of the individual, it is the community or the larger society that is pivotal. Personality or individualism was recognised by the society not necessarily on the premise of property acquisition but more on the individual's positive contribution towards the improvement of the society.[79]

In traditional Africa, for instance, the role of physical property was limited and not centrally determinative of the individual's relationship with the society. Most crucial aspects of property, such as farmlands, residential settlements, economic trees,[80] even houses, were held often as tribal, communal, clan or family inheritances. Under this holding structure, an equitable system of accommodation, and access to the utilities by each and every member of the community based on need and other considerations was

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economies in primarily European hands, where developing countries were used as producers of raw materials".

[79] In the traditional Igbo (Nigerian) society, a man's social value was measured by factors such as the size of his barn, the number of his wives, children, domestic animals, and ultimately, by his ability to feed and to provide for all of them; including other members of his extended family. See a detailed true-to-life account of the way of life of this dynamic people, who constitute the large part of secessionist Biafra in the Nigerian civil war of the 60s, fictionalised in Chinua Achebe's *Things Fall Apart* (London: Heinemann, 1971).

guaranteed. This holding system is analogous, to some degree, to the Western concept of trust.

In this respect, one scholar made the following observation:

> In Ghana and other African countries, many indigenous societies considered tribal land and other economic resources as the property of the tribe's ancestors. The symbol of communal ownership was the stool in which the tribal chief sat; the chief was the personification of the living generation who had a fiduciary trust for future generations. Extended families and sometimes individuals could obtain a right of usufruct for tribal property such as land. A tribe member could then engage in agriculture and other economic activities that would benefit the user's extended family in particular and the tribe in general. Returning benefits to the tribe was the moral rationale behind the right to usufruct.[81]

A noticeable tendency of many a Western writer is the claim that intellectual property is virtually an unknown concept in most developing countries. Hurlbut, for example, claims that "intellectual property was not a particularly relevant concept for the Africans themselves because their tradition had no need for it."[82] Nothing could be further from the truth, unless the perception of intellectual property is limited to the Northern concept. And it ought not to. What may be meant is that innovation, in the sense of Western scientific tradition, is not a major source of economic activity in the developing

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[80] Economic trees, such as the *iroko* can only be sold by the consent of every member of the family. It does not matter that it grew in a member's exclusive portion of the family farmland.

[81] Hurlbut, supra note 37 at 385. See particularly G. Sipa-Adjah Yankey, *International Patents and Technology Transfer in Less Developed Countries* 104-106 (1987) cited by Hurlbut ibid. [hereinafter *International Patents*].

[82] Ibid. See also Sherwood, supra note 76 at 37-39.

countries.[83] However, unknown to many, intellectual property has been a complementary aspect of economic and socio-cultural life in most countries of the South.

As with tangible or physical property, the dominant Southern approach to intellectual property is oriented toward the social interest rather than the individual. The tendency to describe intellectual property in developing countries as weak is premised on an evaluation from a northern perspective. This reflects some level of ignorance of or insensitivity to the dominant cultural reality in the South.[84] Among many Africans, intellectual property is regarded as within the quasi public domain. It is regarded as a clan, communal or family collective property, as the case may be. For example, most ethnopharmacological practitioners in the South, particularly in Africa and the Americas,[85] practise their trade and skill as an aspect of ancestral inheritance. They consider themselves to be under a traditional and moral obligation in the practice of their vocation. Consequently, they regard themselves as trustees or custodians of hidden knowledge and mysteries. This knowledge must be handed over to the select younger members of the family or clan, for purpose of trans-generation preservation.[86] Such a

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[83] See Bawa, supra note 20 at 88.
[84] Consider Sherwood, supra note 76 at 181-191.
[85] See Yano, supra note 31 at 445. Yano, a native Hawiian, generally discusses the unjust nature of the imposition of Western intellectual property standard on ethnobiological knowledge of indigenous peoples. Mention need be made that Hawaii as the 50th state of the United States of America, was surreptitiously annexed by the United States for purely economic and strategic reasons. Native Hawiians are most appropriately associated with their counterparts in the pacific with whom they share (Melanesian) cultural affinity. For a perspective on the US annexation of Hawaii, see B. M. Morse & K. A. Hamid, "American Annexation of Hawaii: An Example of Unequal Treaty Doctrine" (1990) 5:2 Conn. J. Int'l L.407 See also Adam Pertman "Hawaiian Sovereignty Movement Steadily Gaining Speed" *The Globe and Mail* March 21, 1996.
[86] Ibid. Yano observes: "Since the advent of modern medicine, knowledge of native remedies has been passed from generation to generation in spite of the assimilation of native culture into Western Society"

benefiting member of the new generation often must exhibit manifestly discernible ancestral inspiration.

Therefore, knowledge of nutritional and medicinal uses of plants, results of plant breeding, and other ethnobotanical *cum* pharmacological information deriving from naturally occurring species are shared as community resources.[87] This knowledge may not be classified as an intellectual property, in the form of a trade secret along the lines of the Western concept. Under the latter, a trade secret protects confidential information, and gives the possessor a competitive advantage over those who do not know it.[88] As a shared resource, traditional knowledge is not an exclusively shielded secret like the Coca-Cola formula, and cannot be subject to exclusive corporate monopoly. However, the fact that it is partially in the public domain, does not mean that everybody can appropriate it.[89] The element of communal or clan restriction is not necessarily a function of economic consideration. It does not follow that because this communal emphasis conflicts with Western privativistic approach, then what obtains in the Southern societies is not intellectual property. To hold otherwise, amounts to a superimposition of one ideological view upon another.

Apart from reasons of North-South economic disparity and the latter's need for technology transfer, the Southern preference for what is perceived by the North as a weak

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[87] See Ritchie et al., supra note 36 at 432.
[88] See "Ill-Begotten Harvest" supra. note 65 at 55.
[89] Traditional knowledge is often considered as an ancestral bequest, a spiritual gift only known to members of a clan, family or a certain community, which must be used for overriding social interest. Among

intellectual property regime is a dictate of the social interest ideological orientation of the South.[90] Long before the emergence of the modern society, and the extant momentum for globalisation, developing countries had a well-refined cultural orientation to intellectual property. This orientation prioritised social welfare, particularly the alleviation of poverty among their peoples, above individual appropriation of monopoly rent arising from a mere idea.

The social interest orientation of the South to intellectual property incorporates the Rawlsian approach as it relates to intellectual property ethic, without much philosophising. The primacy of social interest is easily reconcilable to justice on the face of it. And the non-exclusionary nature of the social interest approach matches the imperative for distributive justice. Such a system as prevailed in the South adequately meets the fundamental objective of intellectual property rights, namely, striking a balance between encouraging innovation and the society's desire to appropriate the benefits thereof.[91]

This thesis is not inclined to discredit either of the two ideological orientations. In fact, as they derive substantially from cultural backgrounds of the peoples, neither may assume a moral high ground above the other.[92] Nor would an evaluation of the cost effectiveness[93]

Africans, it is commonplace to associate particular social units with certain peculiar skills such as those of blacksmiths, sculptors, musicians, rainmakers, herbalists, hunters, magicians etc.

[90] Bawa, supra note 20 at 78 identifies economic, political, philosophical and social factors as determinants of the North-South ideological disparity over intellectual property.

[91] See M. Powers, supra note 45 at 114. On the role of intellectual property in the balancing of private and public interests, see generally, Sherwood supra note 76 at 28-46.

[92] See Hurlbut, supra note 37 at 406.

of the two ideological approaches serve the purpose of the present effort. Nevertheless, what is questionable as well as objectionable is the foisting of one of the ideologies upon the other. The resultant inequity in the system as well as its negative impact on biodiversity preservation shall be demonstrated in the course of this project. Apart from the economic consequences, the requirement "to conform to a system and philosophy of laws and values that are alien and in some cases, in direct conflict with the frameworks which historically has sustained these (Southern) societies"[94] will continue to be resisted no matter the nobility of the intention. An appreciation of this truth by the North may be all that is required to set the stage for a more realistic approach to global economic integration as well as the cause of biodiversity conservation.

[93] For a general reading and arguments on the cost effective analysis of intellectual property protection from both Southern and Northern perspective, see generally Oddi, supra note 1; Gutterman, supra note 20.
[94] See Gana, supra note 29 at 770, describing the implications for the developing countries of the global regime of intellectual property as represented in the Northern initiated WTO/GATT, Trade Related Aspects of Intellectual Property Rights (TRIPS) Agreement.

CHAPTER TWO

OPERATING LEGAL REGIMES

I THE CBD: A HISTORICAL OVERVIEW.

Locating a starting point for articulating a historical overview of the CBD poses a choice between how far backwards[95] one may be inclined to go and how close to contemporary sources one chooses to remain. This choice would appear to be dependent upon one's sphere of contextual emphasis. The use of biological diversity as an umbrella term for the degree of nature's variety[96], is an extremely recent phenomenon. However, long before the conclusion of the United Nations Framework Convention on Biological Diversity in 1992, the international community, had been concerned with the problem of conservation of biological diversity, albeit with varying emphasis. This selective or patchwork approach could be located in a number of international and regional treaties aimed at nature conservation and by extension, the conservation of biological diversity.[97]

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[95] As far back as 1370 B.C., in Egypt, setting aside land for nature reserve has been a practice. In Babylon, as long ago as 1900 BC, reference has been made to the existence of forestry conservation laws. The 1885 Convention for Uniform Regulation of Fishing in the Rhine has also been cited as one of the early attempts relevant to the subject of biological diversity. See generally S. Lyster, *International Wildlife Law: An Analysis of international Treaties Concerned With Wildlife* (Cambridge: Grotius, 1985) at xxi; *International Law and the Environment* supra note 13 at 421; M. Bowman & C. Redgwell, eds., *International Law and Conservation of Biological Diversity* (The Hague; London; Boston: Kluwer Law International, 1996) at 7 (hereinafter, *International Law & Conservation*)

[96] See M. Bowman, "The Nature, Development and Philosophical Foundation of the Biodiversity Concept in International Law" in *International Law & Conservation,* supra note 95 at 5; see also J. A. McNeely et al., *Conserving the World's Biological Diversity* (Gland; Washington D.C.: IUCN; WRI; CI; WWF; World Bank, 1990) at 17. See the CBD's definition of biological diversity in its article 2, supra, note 6 and accompanying text.

[97] The so-called patchwork regime include the following treaties and instruments: the 1902 Convention for the Protection of Birds Useful to Agriculture, the 1900 Convention for the Preservation of Wild Birds and Fish in Africa, the CITES Convention, the Ramsar, Berne and Bonn Conventions. There are also regional Conventions such as the ASEAN Convention, the South Pacific Convention, the Kingston and East African Protocols and the Antarctic Environment Protocol. The more recent 1992 Helsinki Convention on the Protection of the Marine Environment is also worth mentioning. This list is by no means exhaustible and is not intended to be. All of these instruments have in common nature conservation with a varying degree of

The CBD is the first international treaty to explicitly address almost all aspects of biological diversity. This includes sustainable use of biological resources, a reward scheme for traditional knowledge of indigenous peoples, intellectual property rights, transfer of technology, access to genetic materials and biotechnology, international financial aid and safety of activities related to modified living organisms. It has been described as representing, at least in principle, an attempt to internationalise, in a more comprehensive and inclusive way, the conservation and sustainable use of nature, based on the concept of biological diversity.[98]

In the late 1960s[99], a couple of developments sustained the increasing focus towards a biological diversity approach to international policy on nature conservation.[100] The early 1970s witnessed the United Nations Conference on Human Environment of 1972[101] which is generally acknowledged as constituting the genesis of modern international environmental law.[102] Although the UNCHE did not make a direct reference to biological

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selective emphasis. See generally for additional insight and discussion of a number of these treaties, Lyster supra note 95; see also *International Law and Conservation* supra note 95 at 16 and 43.

[98] See A. E. Boyle, "The Rio Convention on Biological Diversity" in *International Law and Conservation,* supra note 95 at 33.

[99] Most policy documents appear to locate this biodiversity consciousness from the 70s, see for example, Netherlands Ministry of Foreign Affairs, *Biological Diversity: Sectoral Policy Document of Development Cooperation,* (The Hague Information Department, 1995) at 1.

[100] In September, 1968 UNESCO convened an Intergovernmental Conference of Experts on the Scientific Basis for Rational Use of the Resources of the Biosphere. This conference established a programme tagged "Man and the Biosphere". One of the principal aims of this programme was the fostering of a holistic ecosystem approach to nature conservation. For a more detailed perspective on the UNESCO initiative, See R. Boardman, *International Organization and Conservation of Nature* (Bloomington: Indiana Univ. Press, 1998) at 65-6; see also Bowman, supra note 96 at 7.

[101] Subsequent reference in this work to the convention shall be to UNCHE.

[102] This is a view very popular among leading scholars in this field. See Bowman, supra note 96; J. Brunnee, *Acid Rain and Ozone Layer Depletion: International Law and Regulations* (Dobbs Ferry: Transnational Publishers, 1988) at 83-4; M. Pallemaerts, "International Environmental Law from Stockholm to Rio: Back to the Future" in P. Sands ed., *Greening International Law* (London: Earthscan Publications, 1993) at 2.

diversity in the resulting Stockholm Declaration, it has been associated analytically with the shifting attention to biodiversity.[103]

In the 1980s, "biodiversity consciousness" was spearheaded mainly by non-governmental organisations.[104] To a significant extent, the activities of those organisations influenced subsequent developments in the adoption of the phrase "biological diversity" under the emerging international conservation instruments. Noteworthy are the UNGA adoption of the World Charter for Nature (WCN) in 1982[105] and the World Conservation Strategy (WCS)[106] formulated by the non governmental associations whose languages endorsed directly the concept of preservation of biological diversity for sustainable development[107].

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[103] A stretching of the key conservation provisions under principle 2, 3, and 4 of the Stockholm Declaration arguably constitute the biodiversity nexus of the Declaration. Principle 4 is more directly relevant. It provides: "Man has a special responsibility to safeguard and wisely manage the heritage of wildlife and its habitat which are gravely imperiled by a combination of adverse factors. Nature conservation including wildlife must therefore receive importance in planning and economic development" See Bowman, supra note 96 at 8.

[104] The devotion and tenacity of several international bodies, majority of them non governmental, resulted in several landmark documents bearing on the conservation of biological diversity. The coalition of the UNEP (United Nations Environment Programme), WWF (World Wide Fund for Nature), FAO (Food and Agricultural Organisation), and the UNESCO (United Nations Educational Scientific and Cultural Organisation) under the initiative of the IUCN (International Union for Conservation of Nature) formulated the now famous World Conservation Strategy (WCS) .The WCS approach to conservation is based on the preservation of, among other things, the diversity of life forms and genetic diversity. See World Conservation Strategy (Gland; Washington D.C.: IUCN/UNEP/WWF, 1980).

[105] The United Nations General Assembly (UNGA) Res. 37/7 (1982) provides: "every life form is unique, warranting respect regardless of its worth to man and to accord other organisms such unique recognition, man must be guided by moral code of action". See generally, R.F. Nash, *The Rights of Nature: A History of Environmental Ethics* (Madison, Wisconsin: Univ. of Wisconsin Press,1989). The Charter makes reference to the maintenance of genetic viability of the earth through the conservation of unique ecosystems and the habitats of endangered species.

[106] See supra note 104.

[107] See particularly the revised WCS titled *Caring for the Earth* (Gland; Washington D.C.: IUCN/WWF/UNEP, 1991).

Outside the direct realm of biodiversity conservation however, biodiversity consciousness also seems to have had a cross-cutting influence over developments in the related sectors of food, agriculture and plant genetic resources. Specific mention can be made here of the Food and Agricultural Organisation (FAO) resolution of 1982 which adopted an undertaking on Plant Genetic Resources (PGR)[108]

From the various initiatives of non governmental and inter governmental organisations including the UNESCO which climaxed in the joint report of the IUCN[109], WWF[110], WRI[111], Conservation International and the World Bank titled "Conserving the World's Biological Diversity", to the report of the World Commission on Environment and Development (WCED), the Brundtland Commission[112], the concept of biological diversity has arisen out of the observation that an exponentially increasing number of species is threatened with extinction as a result of human activity.[113] This threat is

[108] The "biodiversity consciousness" in the 1980s may not be unconnected to the FAO conference resolution which adopted an Undertaking on Plant Genetic Resources. See FAO Res. 8/83 (1983). As far back as 1994, 107 countries were signatories to the Undertaking, most of them developing countries. Although the undertaking is not binding, most developed countries have never hidden their contempt for this resolution over which their positions remain reserved; see A.E. Boyle, supra note 98 at 34. The FAO undertaking established a governing commission on plant and genetic resources, see FAO Res. C 9/83 and FAO Doc. C/83/REP (1983). For a detailed discussion on the FAO and Plant Genetic Resources, see G. Rose, "International Regimes for the Conservation and Control of Plant Genetic Resources" in *International Law and Conservation,* supra note 95 at 145-69. See generally, C, Fowler & P. Mooney, *The Threatened Gene: Food, Politics and Loss of Genetic Diversity* (Tuscan: University of Arizona Press, 1990). The FAO conceived the genetic resources as Common Heritage of Mankind. The objective was to ensure that their exploitation, application and general scientific utility should be accessible to all, particularly farmers from developing countries. See Ritchie et al supra note 36 at 444-53, where writers present their perspective on the FAO/PGR initiative as well as highlight the lukewarm attitude of Western countries to that initiative.

[109] International Union for Conservation of Nature.

[110] World Wide Fund for Nature. (presently World Wildlife Fund).

[111] World Resources Institute.

[112] The Brundtland Commission Report is titled *Our Common Future* (Oxford; New York: Oxford University Press, 1987).

[113] There have been divergent estimates of the extent of the threat of species extinction, warranting one writer to refer to the estimates as 'guestimates'. In the Revised WCS supra note 107, it is estimated that up to 25% of the world species will be extinct by the middle of this century. For a perpective on some of the

exacerbated by the preponderance of species in the tropical rain forests of the South.[114] Thus, the preservation of habitat is significantly central to any policy initiative on biological diversity.[115] This single fact is pivotal to the undercurrents, intrigues and replay of North-South tensions during the negotiations of the CBD[116].

The impetus for a global biodiversity strategy took a crucial turn following the report of the WCED, which favoured a new approach to species and ecosystem conservation. It made a case for a properly funded "Species Convention"[117] similar to the 1982 UNCLOS[118] initiative. Alan Boyle describes the WCED as the first body to propose specific legal principles on the subject of biological diversity.[119]

The WCED proposal,[120] coupled with the UNEP Executive Director's report on the rationalisation of international conventions on biological diversity, led the UNEP General Council, in 1987, by a resolution to establish an *ad hoc* working group to examine "the

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estimates, see supra, note 9. From all the studies and estimates, one point is clear: it is not the veracity of the estimates that matter, but the reality that underlie them.

[114] The point needs stressing. See for e.g. M. A. Powers supra, note 45 at 108.

[115] Articles 8 and 9 of the CBD deal with *in situ* and *ex situ* conservation respectively. *In situ* conservation is defined as "the conservation of ecosystems and natural habitats and the maintenance and recovery of viable populations of species in their natural surroundings, and in the case of domesticated or cultivated species, in the surroundings where they developed their distinct properties." *Ex situ* conservation is defined as "conservation of components of biological diversity outside their natural habitats". The convention conceives *ex situ* conservation as complementary to the more important and more natural *in situ* measures. See Boyle supra note 98 at 43. For more detailed discussion on the *in situ* and *ex situ* conservation see L.M. Warren, "The Role of Ex Situ Measures in the Conservation of Biological Diversity" in *International Law and Conservation,* supra note 95 at 129-144.

[116] For a very detailed and meticulous account of the negotiations, see McConnell supra note 5

[117] Ibid at 5.

[118] United Nations Convention on the Law of the Sea, 21 I.L.M. 1261 (1982).

[119] ibid at 35. Those principles "required states to maintain ecosystems essential to the functioning of the biosphere 'in all its diversity', to maintain 'maximum biological diversity' by ensuring the survival and promoting the conservation of all species of flora and fauna in their natural habitat, and to observe the principle of 'optimum sustainable yield' with regard to the exploration of living organisms".

[120] The IUCN also proposed a draft convention in 1987, which it revised in 1989, whereas the FAO proposed its own draft in 1990; see Boyle, supra note 98 at 35.

desirability and possible form of an umbrella convention to rationalize current activities in the field and to address other areas which fall under such a convention."[121] Resolution 14/26 of 1989 endorsed a co-ordinated and effective implementation of existing legal instruments in the form of a framework convention designed to ensure a global biodiversity convention. By 1990, a consensus for such a convention to build on, (as opposed to consolidate, or replace), existing international treaties, had been agreed upon.[122]

What followed was the establishment of an Expert Working Group that was later transformed into an Intergovernmental Negotiating Committee (INC) in which seventy countries participated. In 1990, by UNGA[123] Resolution 42/228[124] the conservation of biological diversity was brought within the mandate of UNCED[125]. Consequently, the negotiations under the auspices of UNEP would result in a UN Convention expected to open for signature at the Earth Summit due to be held in Rio de Janeiro, Brazil, in June 1992. The imminence of the Earth Summit, which did not originally envisage the

[121] See UNEP Res. 14/26 (1987).
[122] This is the basis for Article 22, which deals with the CBD's relationship with other international conventions. It provides under (1): "The provisions of this convention shall not affect the rights and obligations of any Contracting Party deriving from any existing international agreement, except where the exercise of those rights and obligations would cause a serious damage or threat to biological diversity". Boyle argues that generally conservation agreements are unlikely to be inconsistent with the convention. He points out that the convention is intended to operate as a loose framework for other more specific conservation regimes. His only point of reservation would seem to be with regard to fisheries agreements and the International Convention for Regulation of Whaling, wherein excessive exploitation of stocks continue to be carried out albeit outside (and occassionally within) the agreements.
[123] United Nations General Assembly.
[124] The Resolution has the significance of adopting the most authoritative use of the phrase, "Biological Diversity". Subsequent arguments as to the appropriateness of the phrase during the CBD negotiations were to be resolved by an appeal to the Resolution's endorsement of the use of the phrase.
[125] See supra note 10.

conclusion of such a convention,[126] posed a major time constraint to the negotiations and general build up to the CBD[127]. This state of affairs was compounded by the controversial, complex and novel nature of issues central to the Convention. In addition to North-south tension on the subject of environment and development in general, there were also the equally controversial issues of intellectual property rights, technology transfer, and equitable allocation of bioresource benefits. Other issues included indigenous knowledge and international financial aid.

One of the most common criticisms of the CBD is centred on the hurried nature of the Convention's negotiations. This is said to be at the expense of a more considered and elaborate negotiation process commensurate with the highly significant nature of the Convention.[128] Whatever the case may have been, by Friday, May 22, 1992, at Nairobi, Kenya, through a tortuous, chequered and often dramatic negotiation processes, the Final Act Conference of the INC formally adopted a text of the CBD. At the time of its adoption, the UNEP Executive Director openly acknowledged the fragility of the process

[126] Before the negotiation for the CBD, agendas had been set for the UNCED (also known as the Earth Summit) which was in the main scheduled as the 20th anniversary of the UNCHE (the Stockholm Declaration) of 1972. Part of the crystallised agenda was the Convention on Climate Change as well as the enunciation of the now famous Agenda 21 as a global environmental policy outlook for the 21st century. For an interesting account of how the foundation of the Biodiversity Convention was laid, virtually unnoticed and the latter's emergence as "the surprise baby of the Earth Summit", see McConnell, supra note 5 at 4-6.

[127] Ibid at ix. McConnell records that within the short space of time before the Rio Conference, there were three General Councils of the UNEP, four Preparatory Conferences of the UNCED on the subject of biodiversity, seven negotiating sessions of the INC lasting almost fourteen weeks, and the Rio Conference itself, which was for two weeks.

[128] See Boyle, supra note 98 at 34-49, for a general critique of the CBD including comments on the timing constraints, wherein he concludes that much work is still needed "to convert it (the CBD) from an instrument of political symbolism into an effective conservation regime". The subject of timing constraints has severally been cited by United States also as part of the reason for its consistent lack of faith in the CBD. This is however a smokescreen for the issues at stake on the part of the U S. See Hurlbut supra note 37 at 379 especially the abstract thereto.

that brought about the regime.[129] The controversy that surrounded the emergence of the text left unpredictable the possibility of the CBD resulting from the Earth Summit, then roughly a week away.[130] That the CBD emerged from the Summit after all is a tribute to the dynamism and resilience of the international process.[131]

II. THE CBD: AN ANALYSIS OF INTELLECTUAL PROPERTY PROVISIONS

The CBD is not an intellectual property convention. However, intellectual property is an indispensable element for the purpose of attaining its objectives.[132] Article 1 outlines the objectives of the convention as follows:

> The conservation of biological diversity, sustainable use of its components and the fair and equitable sharing of the benefits arising out of the utilization of

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[129] At the close of the conference, Dr. Tolba the Executive Director of the UNEP declared: "The negotiations were tough because there was really something to be negotiated. On the one hand the agreement reached was not one-sided, because it will require give and take on both sides, North and South." He alluded to the weakness of the First Ozone Layer Convention (Vienna 1985) which was strengthened by the Montreal Protocol (1987). He foresaw a similar future for the BCD; see also McConnell, supra note 5 at 102. See further Hurlbut, supra note 37 at 382 (proposing a CBD protocol along the lines of 1987 Montreal Protocol for the Elimination of Substance that Deplete the Ozone Layer). Articulating her impressions of the CBD, Biggs, supra note 9 at 119, comments, "two ongoing and highly significant conflicts between developed and developing countries occupied centre stage both during the negotiations and at the convention, and they are still being fought over at post-convention meetings-Conference of Parties meetings (COPs)." She identified the two conflicts as (a) ownership and access to genetic resources and, (b) access to biotechnology and extensive patents.

[130] It is remarkable that even a few days before the beginning of the Earth Summit, it was still not clear which countries would sign the BCD particularly within the rank of developed countries, except the U. S. whose opposition was a common knowledge. Dramatically, it would seem that all most of the developed countries needed was the U. K. initiated interpretative statement on articles 3 and 21 with emphatic regard to the financial mechanism, which 19 of them adopted as a joint declaration; thus paving the way for the signing of the Convention. See McConnell, supra note 5 at 111.

[131] Ibid. At the end of the Summit in June 1992, an unexpected 156 countries and the EC signed the BCD thus exceeding the number of signatories to the Convention on Climate Change! By September 30 1992, it had been ratified by the requisite 30 member nations and then came into effect December 29 1992. One year later, on June 5, 1993 the USA signed the convention subject however to interpretative statement on articles 15 and 16 insisting generally that technology transfer will be at the discretion of the owner of intellectual property rights. The US Senate has yet to ratify the interpretative statement and therefore the convention; hence that country is not technically a member of the CBD.

[132] See Powers, supra note 45 at 112; see also Horton, supra note 9 at 21.

> genetic resources, including by appropriate access to genetic resources and by appropriate transfer of relevant technologies, taking into account all rights over those resources and to technologies, and by appropriate funding.[133]

From this, three principal objectives can be identified, namely, (a) the conservation of biological diversity, (b) the sustainable use of its components and, (c) the fair and equitable sharing of the benefits arising out of genetic resources.[134] On a closer scrutiny, it becomes clear that the second layer of the article 1 provisions discloses the means by which the objectives could be realised. Thus, references regarding "access to genetic resources", "transfer of technology", "rights over resources" etc. are facilitated by intellectual property rights which have been described as "the currency of technology transfer".[135]

There are at least six principal articles of the Convention whose provisions arguably bear some measure of relevance to the subject of intellectual property rights.[136] Out of those six, three can be further isolated as central to the intellectual property aspects of the CBD.

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[133] Articles 20 and 21 of the CBD deal with Financial Resources and Financial Mechanism respectively. Issues relating thereto generated a great deal of controvery during the negotiation for the conference particularly, with regard to the status of the World Bank administered Global Environmental Facility (GEF), and the nature of the Developed Countries financial commitment among others, resulting in the UK led initiative for an interpretative statement to article 20, which was approved by 19 other developed nations. See generally McConnell, supra note 5; see also supra note 130.

[134] Those are the principal objectives of the CBD directly under its Objectives provision. There are other subsidiary objectives of the Convention that are obvious from a holistic appraisal of the entire text of the Convention. See generally Mossinghoff, supra note 54. The writer has a slightly different restatement of the three principal objectives of the CBD. See however Ritchie et al, supra note 36 at 444. Compare Horton, supra note 9 at 21 where the objectives are discussed from a human rights perspective.

[135] See Gollin in *Biodiversity Prospecting* supra notes 14, 32 & 33 at 160, 289 & 301 respectively; see also Horton supra note 9 at 21& 23. For a general discussion on intellectual property and technology transfer, see Sell, supra note 26.

[136] Article 12 (Research and Training), Article 15 (Access to Genetic Resources), Article16 (Access to Transfer of Technology), Article 17 (Exchange of Information), Article 18 (Technical and Scientific Co-operation) and Article 19 (Handling of Biotechnology and Distribution of Its Benefits).

They are articles 15, 16, and 19.[137] These articles are based on the premise that developing countries are the repository of the bulk of the earth's biological diversity, and those countries generally lack the technology to directly exploit their genetic resources.[138] By the provisions of those articles, the CBD seeks to make genetic resource endowed developing countries partakers of benefits arising from their resources through mechanisms such as shared royalties for products created out of the resources. It seeks to facilitate access to those countries to the technologies used in the development of the resources. It generally aims at increasing developing countries ability to exploit genetic resources.

A textual analysis of the key intellectual property provisions of the CBD presents a number of interpretation problems,[139] not within the scope of this project except where it becomes necessary for specific analysis. A review of those provisions follows.

Article 15 deals with access[140] to genetic resources,[141] which are within the domain of developing countries. It restates the sovereign right of resource owning nations over their

[137] As to the centrality of those articles to the CBD, see the following: Hurlbut, supra note 37 at 394, Horton, supra note 9 at 21; Tarasofsky, supra note 40 at 149 & 151; *Biodiversity Prospecting,* supra note 14 at 309

[138] See Powers, supra note 45 at 108.

[139] See Gollin, supra note 33 at 303-324 for a textual analysis of the CBD.

[140] Access shall be subject to prior informed consent of the resource owning country.

[141] Article 2 defines genetic resources as genetic material of actual or potential use. Genetic material is defined in same article as any material of plant, animal, microbial or other origins containing functional units of heredity. Traditionally, such naturally occurring genetic materials are within the public domain and readily available for exploitation. The Convention by putting a reward value to it has taken it out of the public domain. Powers, supra note 45 at 111, describes this as a radical measure by the Convention. This approach by the Convention challenges intellectual property rights to created products and processes and amounts to definition of property rights to naturally occurring species themselves; see also R. L. Margulies, "Protecting Biodiversity; Recognizing International Intellectual Property Rights in Plant Genetic Resources." (1993) 14 Mich. J. Int'l L. 322 at 326.

genetic resources.[142] It provides that access to the resources should be predicated on technology transfer to the resource owning country, the latter's participation in scientific exchange[143], and fair and equitable sharing of proceeds from commercial use of genetic resources on mutually agreed terms.[144]

Article 16 deals with access to, and transfer of technology which it recognises as essential elements for the attainment of the objectives of the Convention.[145] It therefore provides for technology transfer to developing countries "under fair and most favourable terms" and on concessional and preferential basis "where mutually agreed and where necessary"[146] by parties. Under this article, such technology transfer would seem to be restricted to only the applications that use the genetic material in question.[147] A significant feature of this article is the requirement that intellectual property rights be subject to national legislation and international law[148] and not be allowed to defeat the objective of the convention.[149]

Article 16 is a manifestation of the political intrigues that characterised the Convention negotiations. And arguably, it could rank as the most contentious article of the

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[142] See also Article 3.
[143] Art. 15 (7).
[144] This is in the form of royalty payments from intellectual property rights, usually patent. Gollin, supra note 32 at 294 lists trade secrets, petty patents and utility models.
[145] Art. 16 (1).
[146] Art. 16 (2).
[147] Art. 16 (3).
[148] The question of international intellectual property regimes will be highlighted under discussions on WIPO and TRIPs.
[149] Article 16 (5) provides, "Contracting parties, recognizing that patents and other intellectual property rights may have an influence on the implementation of this convention, shall cooperate in this regard subject to national and international law in order to ensure that such rights are supportive of and do not run counter to its objectives."

Convention.[150] It is also an illustration of the attempt at reaching a compromise amidst sharply conflicting interests. Within the same provision are elements tending to undercut the principles of free trade as well as those that have a free market orientation. It speaks of the pre-eminence of the CBD objectives over other legal regimes, national or international. It would seem to encourage compulsory licensing while creating a "complex bargaining triangle" scheme.[151] It is perhaps due to this article more than any other that intellectual property ranks as one of the most controversial aspects of the CBD.[152]

The United States for its own self serving reasons[153], decided to interpret the rather ambiguous provisions of article 16 according to a precautionary, worst case scenario approach. Despite the preponderance of reasons to the contrary, the US construed articles 15, 16 and 19 as imposing compulsory licensing[154]. This is the substantive reason underlying its refusal to sign the Convention at the Earth Summit. Its signature a year after under the Clinton Administration was subject to a so-called interpretative statement, which is yet to be ratified by the Senate[155].

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[150] See *Biodiversity Prospecting,* supra note 14 at 190.
[151] See Powers ,supra note 45 at 112.
[152] Ibid at 111.
[153] The United States' lack of commitment to the CBD was arguably because of then on-going 8th Uruguay Round of the Multilateral Trade Negotiations of the GATT where she was championing the TRIPS Agreement, which was to make intellectual property directly an international trade affair. The latter situation is not readily reconcilable with CBD's conceptual orientation. See Mossinghoff, supra note 54 at 29.
[154] Notice the consistent use of relevant qualifies, e.g. "mutually agreed terms". See *Biodiversity Prospecting,* supra note 14 at 294-299. For additional discussions on the US interpretative statement, see generally, see Powers, supra note 45 at 112; see also Hurlbut, supra note 37 at 380; Ritchie et al, supra note 36 at 445; Horton, supra note 9 at 22. Mossinghoff ibid.
[155] Mossinghoff ibid at 28 comments: "The Clinton interpretative statement paid particular attention to intellectual property rights. With respect to Article 15 of the Convention regarding sharing of genetic resources 'on fair and equitable basis', the Clinton administration asserted that such sharing of the results of research and benefits 'must take fully into account exclusive rights to technology that a party may posses,

Finally, article 19 makes provision for a North to South technology transfer with specific reference to biotechnology. It adopts the familiar qualifying phrases of preceding articles 15 and 16; i. e. such transfer must be subject to "mutually agreed terms", "where feasible" and must be on a "fair and equitable basis". This article generally seeks to integrate the genetic resource provider countries into biotech research and development and to ensure that they not only receive proper benefits, but also develop human resource utilising capacity.[156] Again, this article is open to dual interpretations. One such interpretation perceives it as inclined towards a compulsory technology transfer as condition precedent to access to biodiversity habitat. The other views it as favouring a voluntary biotech transfer based on mutually agreed terms. The latter is more persuasive in view of the prevalence of the usual qualifiers, which incorporate the principles of negotiation and flexibility as opposed to those of compulsion.

From the review of the CBD intellectual property provisions, it is evident that what is principally at issue is the evolution of an enabling mechanism through which resource owning developing countries can actively participate and benefit from the use of their resources. This will involve among other things, their integration into relevant research and technology transfer processes and schemes without excluding equitable and fair sharing of resulting financial benefits from the exploitation of the resources.[157]

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and that transfer of proprietary technology will occur only at the discretion of the owner of the technology'" For the text of the statement see 103 Cong. Treaty Doc. 103-20, November 1993.Up to the time of writing, the U S Senate has yet to ratify the CBD.

[156] See Gollin, supra note 33 at 298-299; see also Powers, supra note 45 at 113.

[157] See. J.H. Duesing, "The Convention on Biological Diversity: Its Implication on Biotechnology Research" (1992) 3: 4 Agro Food Industry Hi-tech. 19.

Intellectual property as the traditional "currency of technology transfer" is the most appropriate mechanism to facilitate the desired objectives. What may be quite crucial is the conflicting ideological perspective that underlies the North-South approach to intellectual property rights.

III. THE WIPO AND WTO/GATT-TRIPs: RELATIONSHIP WITH CBD

Article 16 of the CBD requires the co-operation of the parties to ensure that relevant national legislation and international law do not operate against the interest of the Convention's objectives.[158] This reference to international law raises an unsettled question.[159] There are presently two international intellectual property regimes with radically contrasting orientations with regard to the subject matter. They are the World Intellectual Property Organisation (WIPO)[160] and the WTO/GATT-sponsored Agreement on Trade Related Aspects of Intellectual Property Rights (TRIPs).[161] The WIPO is a United Nations-affiliated organ charged with administration of a number of intellectual property conventions, including the facilitation of compliance by parties to those conventions.[162] Both of those regimes fit into the rubric of Article 16's reference. But

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[158] Article 16 (5) of the CBD provides: "The contracting parties, recognizing that patents and other intellectual property rights may have an influence on the implementation of the Convention, shall cooperate in this regard subject to national legislation and international law in order to ensure that such rights are supportive of and do not run counter to its objectives."

[159] See Hurlbut, supra note 37 at 394.

[160] The WIPO Convention of July 14, 1967 came into force in 1970. WIPO became a specialised agency of the United Nations in 1974 (was amended in September 28, 1979). Each member has equal voting power. This assures a majority for developing countries for which they maintained dominant voice in WIPO deliberations. For the text of the Convention see 6 ILM 782 (1967), For a brief review of relationship between WIPO and TRIPS, see Horton, supra note 9 at 27 –28.

[161] See supra note 4.

[162] The two principal international intellectual property conventions administered by WIPO are the 1883 Paris Convention for the protection of industrial property (last revised by the Stockholm Revision of 1967), and the Berne Convention for the Protection of Literary and Artistic Works (last revised in 1971 at Paris).

how influential either of them is in the context of the CBD remains an unsettled as well as an unsettling question.

The United States[163] championed the incorporation of intellectual property rights into the Uruguay Rounds of Multilateral Trade Negotiations under the GATT during the course of the eight year proceedings (1986-1994); beginning from Punta del Este and ending on April 5, 1994 at Marrakesh, Morocco.[164] This was amidst scepticism from most parties to the GATT about undermining the WIPO[165]. The compelling argument for the proposal hinged on the manifest weakness of the WIPO enforcement mechanism,[166] which made unilateral action by states the only practical alternative, a development that nations will traditionally avoid in preference to multilateral mechanisms such as those embodied in the GATT system. Thus, the shortcomings of the existing intellectual property regime set the stage for the TRIPs negotiations. The GATT negotiations (on the TRIPs) proceeded under a new realisation, sponsored by the Northern industrialised nations,[167] that

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For a list of WIPO administered treaties, see online: <http://www.wipo.org/eng/main.htm>, Hurlbut, supra note 37 at 394; see also Gervais, supra note 26 at 9; Adewopo, & Oguamanam, supra note 75 at 645.

[163] Japan played a prominent role as an ally along with the EC; while strong opposition from the developing countries was spearheaded by Argentina and Brazil. See generally Gervais, supra note 26.

[164] For the history of the Uruguay Rounds, see generally Randhawa ,supra note 52; Adewopo & Oguamanam, supra note 75 at 645.

[165] The United States and most members of the EC have not ratified a number of the WIPO instruments, and with the emergence of TRIPs, the reason for ratification remains unattractive. Hurlbut, supra note 37 at 395, lists a number of developed countries with lukewarm disposition to the WIPO. They are among those that championed the emergence of the TRIPs Agreement.

[166] Also the evolution of the world trading system, the sky-rocketing importance of intellectual property and technological advancements in particular, computer information systems and digital technology are cited as reasons compelling the updating of international intellectual property rules. The WIPO initiative in responding to these and similar developments through the Patent Law Treaty and the proposed Protocol to the Berne Convention *inter alia* was not successful. See Gervais, supra note 26 at 10. The Dispute mechanism under WIPO is based on the International Court of Justice. It appears most unlikely that States could bring an intellectual property dispute before the ICJ. See Hurlbut supra note 37 at 395; see also F. Beier & G. Schricker, eds., *GATT or WTO?: New Ways in International Protection of Intellectual Property Right* (Munich: Max Planck Institute 1989) at 35 [hereinafter *GATT or WTO*?].

[167] The TRIPs negotiations reflected conflicting approaches to intellectual property between the North and the South. The former favoured a single structured agreement under the TRIPs framework while the latter

intellectual property constituted a significant aspect of international trade. The TRIPs was therefore designed to elevate an aggregation of the Northern concept of intellectual property,[168]in one instrument, to the forefront of international trade. The irony in all of this is that at the early stage of the GATT, intellectual property was considered as an acceptable obstacle to free trade.[169] Earlier mention of intellectual property rights at the GATT was referred to the WIPO as the most appropriate forum.[170]

The WIPO regime recognises principles compatible with national intellectual property laws of developing countries.[171] It is based on the understanding that intellectual property is fundamentally a domestic law subject. Thus, under the relevant WIPO administered treaties, for instance, member states have the latitude to exclude certain products or processes from patentabilty.[172] This meant that the excluded items were not subject to protection in the excluding countries and could be copied.[173] By means of patent exclusion and compulsory licensing[174], among others, under the WIPO framework, acquisition of new technology by a developing country is facilitated on a cost benefit

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preferred a framework that will still leave WIPO active and more relevant. The WIPO regime is considered friendly to the developing countries. At the end, it was the US and EC proposed blue print that emerged substantially in the TRIPs Agreement. For general discussion on this, see Gervais, supra note 26 at 12-25.

[168] This includes the integration of components of intellectual property rights such as copyrights and neighbouring rights, patents, geographical indications, industrial designs, and trademarks.

[169] This remained the case until the Tokyo Round of the GATT, (Trade in Counterfeit Goods) 1973-1979. See Gervais, supra note 26 at 8.

[170] Ibid at 9.

[171] See *GATT or WIPO ?*, supra note 166 at 224.

[172] For instance, pharmaceutical products and processes, plants and animal varieties as well as biological processes for producing them, medical treatments for human food products,and chemical products could be excluded by countries under the Paris convention. See Hurlbut, supra note 37 at 395 for a more inclusive list.

[173] See Biggs, supra note 9 at 133 where she observes that " most developing countries have weak patent laws especially in relation to food and drugs. Many deliberately do not allow medicines or food to be patented because they are fundamental to any society's needs. For similar reasons, developed countries did not allow patents on food, chemicals, plants or animals until the 60s, and then only after much heated debate".

[174] Hurlbut, supra note 37 at 395.

basis.[175] Unfortunately, however, the TRIPs Agreement has abolished the list of vital exemptions and has created very stringent conditions for compulsory licensing.[176]

The GATT/TRIPs approach operates under the national treatment and most-favoured-nation principles[177]. Therefore, a standard of equal and non-discriminatory treatment applies across the board between domestic and foreign interests. However, under the WIPO, an approach more amenable the developing countries' interests was the principle of reciprocity.[178] This guarantees some leverage and flexibility that are common with negotiations, and as such, accommodates the unique conditions of the country in question.

Developed countries prefer the national treatment and most-favoured-nation approach. The approach is overwhelmingly in their favour. Most local subsidiaries of the trans-national corporations are by this approach recognised as nationals of the developing countries (which they are at least theoretically), a status that confers a lot of competitive edge to them. The idea of a genuine Southern trans-national corporation operating in the North is an exception to a general rule. This results in limited access to technology in the South, increased leverage for the multinational corporations, and unconscionable pricing of products in the domestic market.[179]

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[175] See generally Oddi, supra note 1.
[176] See TRIPs arts. 21, 30, 31,and 39; see also arts. 20 and 21 with specific regard to trademarks.
[177] See TRIPs arts. 3 and 4 respectively. However, the national treatment principle is not peculiar to TRIPs exclusively. It was part of the Berne and Paris Conventions administered by WIPO. See art. 2 (1) of the latter, see further Oddi, supra note 1 at 856.
[178] Ibid at 843-- Oddi, however doubts the viability of this argument.
[179] For more elaborate exposition of the precarious position of the developing countries in this scenario, see generally C. Raghavan, *Recolonization; GATT, the Uruguay and the Third World.*114-141 (1990). See further Hurlbut, supra note 37 at 396.

The TRIPs Agreement that came out of the Uruguay Rounds was not limited to the trade aspects of intellectual property as the name suggests. Rather, what emerged at the end of the negotiations was, in the words of Gervais:

> The broadest and most extensive multilateral agreement in the field of intellectual property, covering basically the entire area and adding enforcement, acquisition and most favoured nation obligations to new existing rules and incorporating those rules in what could be considered the only truly effective and binding dispute settlement mechanism (was) negotiated on the basis of a limited mandate.[180]

Arguably, what the TRIPs Agreement did was to radically whittle down WIPO's powers, leaving it with residual (and insignificant) aspects of intellectual property, not related to trade as subjectively determined by the TRIPs Agreement.[181] TRIPs also guaranteed the sanctity of extant multilateral and bilateral commitments of parties, arising from WIPO administered international conventions.[182] Thus, all the substantive provisions of two principal WIPO conventions[183] with inconsequential exceptions have been incorporated by reference into the TRIPs.[184]

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[180] Gervais supra note 26 at 11.
[181] See TRIPs Article 9 dealing with moral rights which was guaranteed by art. 6bis of the Berne Convention.
[182] See TRIPS arts 2 (2), 3(1) and 4(b). In this regard WIPO views the TRIPs Agreement along the following lines: "...Provisions in the TRIPs Agreement concerning copyright and related rights, trademarks, geographical indications, industrial designs, patents, and layout designs of integrated circuits, directly complement international treaties and conventions which the secretariat of WIPO, and its predecessor, have serviced, in some cases for more than 100 years". See WIPO information brochure online: <http://www.wipo.org/eng/infbroch/infbro99.htm#p21_2253>.
[183] The Paris and Berne Conventions; see supra note 162.
[184] Moral right exemption under article 6bis of Berne, and compulsory license under the Treaty on Intellectual Property in respect of Integrated Circuits (IPIC) 28 I.L.M. 1484 (1989); see also Gervais, supra note 26 at 26.

The WIPO regime was not abolished by the TRIPs Agreement.[185] It is still in force between parties who have ratified the various component treaties. Most of them are the developing countries of the South who are free to invoke it. However, it has little or no effect on the domestic laws of those developing countries who are required to bring their laws into conformity with TRIPs. Even more, the dispute settlement mechanism of the TRIPs is part of the WTO dispute settlement scheme. With the threats of trade sanction, withdrawal of concessions, and potential liability for compensation, it is most unlikely that any developing country may find those prices worth paying for sticking to the WIPO for which most of its industrialised Northern partners have nothing but contempt.

The reference to international law in article 16 of the CBD may well be, in theory, to the two regimes under review. The reality however is that the emergence of TRIPs has foisted a global regime of Eurocentric intellectual property rights, purporting to set a so called minimum standard of protection, and in very major respects insensitive to rival ideological conceptions of those rights. What is yet to be seen is how the CBD's reliance on intellectual property rights for attaining its objectives could be realised under this rubric.

[185] In January 1996, the WIPO and WTO entered into an agreement which provides for cooperation between them regarding the implementation of the TRIPs Agreement. The agreement made provisions for exchange of information regarding the notification of laws and regulations, legal assistance and technical cooperation in favour of developing countries. WIPO acknowledges the TRIPs Agreement as a partner in progress and WIPO's relationship with WTO/TRIPs is captured by the following official position: " The TRIPs Agreement has brought with it a new era in the protection and enforcement of intellectual property rights, as well as enhancing the value of WIPO program of work" See online: <http://www.wipo.org/eng/infbroch/infbro99.htm#P21_2253>.

CHAPTER THREE

PATENT AND TRADE SECRET: THE STATUS OF TRADITIONAL KNOWLEDGE

I INTRODUCTION:

(i) THE RELEVANCE OF TRADITIONAL KNOWLEDGE

Subsection 5 of Article 16 reiterates the supremacy of the objectives of the CBD in the event of any conflicting national or international intellectual property regimes. Those objectives have been identified, in a nutshell, to include conservation of biological diversity, sustainable use of its components as well as fair and equitable sharing of its benefits.[186] The subject of fair and equitable sharing of benefits of biological resources addresses the disparity between bioresource ownership and exploitation as they relate to the South and the North, respectively.[187] Critical to that subject is the contribution of indigenous peoples, mainly of the South, and their traditional knowledge in the bioresource enterprise.[188] Therefore, although not directly mentioned in its cardinal objectives under Article 1 of the CBD, recognition of traditional knowledge remains a focal point of the Convention in its quest for a fair and equitable scheme of appropriation of the benefits of biological resources.[189]

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[186] CBD art. 1.

[187] This is in view of the preponderance of biological resources in the South and the requisite biotechnology for their exploitation in the North.

[188] The historical association of indigenous knowledge with scientific research generally, and particularly, with modern research in the fields of botany, pharmacology, biology, genetics, agriculture etc has been variously expressed in terms of ethnopharmacology, ethnobotany, ethnobiology, ethnoagronomy etc. Often these descriptions are used interchangeably in legal literature without strict adherence to their scientific distinctions. It would appear that emphasis is put more on the idea of indigenous knowledge above other distinctions. That is the pattern adopted in this work. See However Horton, supra note 9 at 6.

[189] The nature and scope of the benefits of biological resources represent subject matters of inquiry and complex analysis outside the immediate scope of this project.

The convention contains comparatively elaborate provisions on traditional knowledge.[190] It links biological diversity and sustainable development with the conventional concept of intellectual property rights.[191] CBD reflects a shift in the application of intellectual property law from its traditional, industrial and cultural terrain[192] to the pursuit of broader goals of biodiversity conservation, promotion of sustainable development and equitable appropriation of the benefits thereof.[193] Traditional people are generally the custodians of wild habitat including its genetic resources, a role that is central to their socio-cultural and economic survival. Any system that bestows proprietary rights, with attendant economic benefits, to them, creates an incentive to conserve rather than to destroy the habitat.[194] Such a system is envisaged by the CBD for the attainment of its cardinal objectives.[195] Thus, a proper appraisal of the objectives of the CBD is inextricably linked to the pivotal and critical role of indigenous peoples.[196]

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[190] For example paragraph 12 of the preamble to the Convention 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 Articles 8(j), 10(c) and 18(4) of the CBD.

[191] See Eugenio Da Costa e Silva, supra note 18

[192] Intellectual Property has historically been directed to industrial and artistic concerns rather than environmental values, such as conservation of biological resources. Gollin argues that that there are advantages for keeping the separate focus. See M A. Gollin "Using Intellectual Property to Improve Environmental Protection" (1991) 4 Harvard J. Law and Technology at 193. Whatever those advantages may be, for as long as industrial and artistic progress are essential to development and the latter cannot be separated from the environment, the role of intellectual property on the environment has become inevitable.

[193] See Gollin, supra note 32 at 159.

[194] Ibid at 160, citing Khalil et al, "Property Rights Biotechnology and Genetic Resources", *Biopolicy International* (1992), J.H. Barton & E. Christensen, "Diversity Compensation Systems; Ways to Compensate Developing Nations for Providing Genetic Materials" in J.R. Kloppenburg, Jr. ed., Seeds and Sovereignty (Durham, N.C: Duke University Press, 1998) etc.

[195] Ordinarily, intellectual property rights do not directly relate to conservation of biological diversity, but they form part of the economic and social context in which conservation takes place. Under the CBD, the intellectual property and biodiversity intersection is represented in the provisions on equitable sharing, technology transfer and to some extent, recognition of traditional knowledge. See however Tarasofsky, supra note 40 at 149 for a slightly different isolation of the areas of intersection.

[196] Decision II/18 of the Second COP Meeting of the CBD set up as an agenda item for consideration at the Third COP, "Knowledge, Innovations and practices of Indigenous and Local Communities: Implementation of Article 8(J)" A note by the same title was prepared by the CBD secretariat to facilitate the consideration of that item on the agenda. This note is part of the foundation study on Article 8(j). It also incorporated

(ii) DELIMITATION OF ANALYSIS TO PATENT AND TRADE SECRET

A perceivable trend in the language of the CBD is its preferential reference to the patent regime of intellectual rights. While referring to intellectual property generally, the Convention implicitly recognises the centrality of patents as a dominant regime of intellectual property right relevant to the subject of biological diversity and technology transfer.[197] However, in the analysis that will follow, in addition to patents, special attention is also taken of trade secrets, which has been elevated for the first time to the international intellectual property system through the WTO/GATT-TRIPs Agreement.[198] This derives from the perceived implications of a universal regime of trade secrets to the subjects of biological diversity and traditional knowledge.

(iii) NATIONAL VS. INTERNATIONAL APPROACH

From the language of article 16(5), it would seem to make no difference which dispensation of intellectual property right, national or international, prevails, so long as it operates in tandem with the objectives of the Convention. A critical question that arises is then how the objectives of the CBD can be realised under the identified international intellectual property regimes.

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discussions on possible mechanism for its implementation. That item has continued to feature on the COP agendas since the Third COP up to the last COP in May 2000. For the text of this note, see UNEP/CBD/COP/3/19 also available online at: http:/www.biodiv.org/cop3/html/COP-3-19-e.htm. At the Fourth COP, it appeared as "Implementation of Article 8(j) and Related Provisions" See UNEP/CBD/COP/4/10/Add. 1. The Fifth COP received "The Report of Ad Hoc working Group on Article 8(j) and Related Provisions", see UNEP/CBD/COP/5/5.

[197] See supra note 36 and accompanying text.

The WIPO regime[199], which has been described as part of an 'elderly'[200] convention governing intellectual property rights, existed for about twenty-six years before the emergence of TRIPs. Among the WIPO administered conventions,[201] the 1883 Paris Convention for the Protection of Industrial Property and the 1886 Berne Convention for the Protection of Literary and Artistic Works are the most prominent.[202] The Paris Convention[203] covers a broad range of intellectual property regimes, and in particular, the administration of an international patent regime.[204] Similarly, the TRIPs Agreement covers a broad range of intellectual property rights including patents.[205] A major point of departure between the two regimes is their conflicting emphasis on the empowerment of national and international regimes of intellectual property respectively. The implication of this sharp geopolitical divide for the CBD, which relies strongly on intellectual property rights, is a matter of considerable concern for the success of that regime. The coexistence of two international regimes dealing with the same subject matter,

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[198] TRIPs arts. 29(20) (a)-(c) and 3.

[199] See supra note 160 and accompanying text

[200] See Carlos M. Correa & Abdulqawi A. Yusuf, eds., *Intellectual Property and International Trade* (The Hague; London; Boston: Kluwer Law International, 1998) at xvii.[hereinafter *IP and International Trade*]. The Convention establishing the WIPO was signed at Stockholm on July 14, 1967 whilst 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.

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

[202] See Gervais, supra note 26 at 9. See generally *GATT or WTO* supra note 166; see also Marshall A. Leaffer, ed., *International Treaties on Intellectual Property* (Washington, D.C.: BNA, 1990) at 17 & 339 [hereinafter IP Treaties].

[203] Because of this project's focus on the patent regime in the context of the biological diversity under the auspices of the CBD, except where otherwise distinguished, reference to the WIPO interchangeably applies to the Paris Convention and vice versa.

[204] The Paris Convention must be distinguished from the Patent Cooperation Treaty, 1970 also administered by the WIPO. This treaty merely creates a Union for cooperation amongst its members in patent filings, administration and incidental matters. It did not create an international patent regime. See *IP Treaties,* supra note 201 at 76-124.

[205] For the scope of intellectual property rights covered under the TRIPs Agreement, see arts. 9-40 thereof. Describing the general scope of the TRIPs Agreement, the editors of *IP & International Trade,* supra note 200 ibid observes "...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". Gervais, supra note 26 at 11 describes the

notwithstanding an ostensibly varying emphasis,[206] may not avoid completely the question of supremacy and conflict. How this scenario impacts on the objectives of the CBD, which seeks to be facilitated by the instrumentality of intellectual property rights, needs to be considered.

II PATENTS

(i) NATURE OF PATENTS

The patent regime of intellectual property rights is at the centre of the CBD as well as the WIPO[207] and the TRIPs Agreement. Generally, a patent is an exclusive right conditionally[208] granted by the state for an inventor to manufacture, use, sell or generally to exploit an invention within the national jurisdiction for a limited number of years.[209] A patent right is construed as a motivation for inventive endeavour and innovation.[210]

Agreement as "...the broadest and most extensive multilateral agreement in the field of intellectual property...".

[206] Ibid. Although TRIPs purports to regulate (in accordance with its name and history) 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.

[207] Patent under the WIPO framework derives from the 1883 Paris Convention for the Protection of Industrial Property Rights.

[208] The grant of patent is usually conditional to the disclosure of the invention and its process in a documented form, by way of patent applications and claims. This disclosure is the consideration for the grant by the state, so that at the end of the exclusive period of the patent term, it will revert to the public domain.

[209] Most national Patent Laws do not strictly define patents, and if done, it is usually in abstract and circular terms. See for instance s. 2 of Canadian Patent Act RSC 1985 c. P-4, which defines patent as "Letters patent for an invention." What is defined more elaborately is invention, which definition is often the prescription of conditions for patentability within the national jurisdiction. Again 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".

[210] *Contra* Oddi, supra note 1 at 837-842 expressing a strong doubt about the proposition. Resulting from his cost benefit analysis of the Patent system Prof. Oddi observes "Despite 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".

Like all regimes of intellectual property law, patent rights are fundamentally subjects of national law. Attempts at international harmonisation of patent regimes have always been contentious, and have not enjoyed much success.[211] This is mainly because of the conflicting national interests of developing and developed countries as receivers and exporters of patented innovative technologies respectively. As Rafik Bawa observes, the extent of a country's comparative advantage in innovation is what determines its strategy towards intellectual property rights.[212] Intellectual property laws across the globe are far from being uniform,[213] and understandably so. The idea of international harmonisation of intellectual property law, particularly with regard to patents, has to strike a middle ground between the differing geopolitical perspectives on the subject in order to succeed or at the very least reduce the tensions to a manageable minimum.

To understand the impact of the WIPO and TRIPs approach on the patent regime toward the realisation of the objectives of the CBD, an evaluation of the legal framework for defining and determining patent rights within the two dispensations is imperative.

(ii) SCOPE OF PATENTABLE SUBJECT MATTER.

Under the WIPO, domestic law is the principal determinant of the subject matter of patent protection.[214] The WIPO regime is generally consistent with the law of developing countries. Patent is not defined under the Paris Convention. Article 1 of the Convention

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[211] See Gutterman, supra note 20 at 93. See e.g. the failed 1985 WIPO initiative for a Patent Harmonisation Proposal (WIPO Treaty); see also Horton, supra note 9 at 27.
[212] See Bawa supra note 20 at 81. See generally M. J. Trebilcock & R. Howse, *The Regulation of International Trade* (New York: Routledge, 1995).
[213] See Gutterman, supra note 20 at 92 & 104.
[214] See Gana, supra note 29 at 748.

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.[215] This provides a crucial vent for the exercise of governmental policy initiative on matters related to the grant and determination of patent rights. Consequently, members of the Union are at liberty to determine for themselves the appropriate subject matters for the grant of letters patent.

Because of the urgent need of many developing countries for vital supplies in areas such as health, food, and drugs, it is commonplace for them to exercise the latitude allowed by WIPO and exclude a number of products and processes from patentability. Such excluded items are mainly in the area of plant and animal varieties, biological processes for producing them, and medical treatments for humans and animals. Others include food and chemical products, computer programmes, fertilisers, agricultural machines, cosmetics and other inventions. All of these items were permissible subjects of exclusion under the Paris Convention.[216]

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 initiative, accord intellectual property rights to

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[215] Art. 1 of the Paris Convention is couched in very general and liberal terms. Art. 1(4) specifically dealing with patents 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, etc." (emphasis added).

[216] Excluded items could be reproduced or worked without liability to royalty payments to right holders. See Gana, supra note 29 at 746.749; see also Alan J. Jacobs ed., *Patents Throughout the World* 4th ed. (New York: Trade Activities Inc., 1989).

traditional knowledge, without depending on the developed countries' perspective of that right. This is more likely since the latter's body of jurisprudence is hardly reconcilable to the concept of intellectual property right over traditional knowledge. Even if according an intellectual property right status to traditional knowledge may not fit within the strict rubric of conventional intellectual property right, such a right could arise on the merits without the limitations of conventional and formal criteria which is biased in favour of the West. Another view is that the latitude under the Paris Convention does not prohibit the creation of a midway or hybrid right referred to as a *sui generis*.[217] A *sui generis* biodiversity right, although not entirely satisfactory, would accord some measure of recognition to traditional knowledge with the result of fostering biodiversity conservation in accordance with the CBD objectives.

Most developed countries,[218] with the exception of the threshold or peripheral[219] ones, have not exploited the opportunity offered by the WIPO latitude.[220] The chance is that

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[217] For a review of some relevant literature on proposed models for special intellectual property rights in biodiversity, see Gollin, supra note 32 at 178-182. The writer believes that none of the proposed models is satisfactory by itself. This will depend on whether satisfaction is from a developed or developing county perspective. However, the exercise of this latitude does not necessarily mean the creation of *sui genris* intellectual property rights. To describe it so would still suggest that what amounts to intellectual property right may not be determined by a country within its jurisdiction.

[218] Ibid at 178, the writer however makes reference to a Kenyan initiative, an amendment to that country's industrial property law of 1989 which uses the instrumentality of petty patent to accord intellectual property protection to traditional medicinal knowledge. For more discussion on this and related matters, see *infra* notes 442 and accompanying text.

[219] Threshold or peripheral developing countries refer to those countries that have reached or approaching the thresh 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 LDC. A number of these countries include Mexico, Singapore, Korea, Taiwan, Hong Kong, often cited as well are Brazil, Argentina, India, and China, the last two mainly for their domestic scientific and technical capacity for industrial growth and capital formulation. Although not pursuant to the strict exercise of their discretion under the WIPO regime, most of the countries under this category are inclined to adopt intellectual property approaches that suit their economic and social needs. See in the foregoing regard and more the following: D. Brenner-Beck, "Do as I Say, Not as I Did", (1992) 11 UCLA Pac. Basin LJ 84, Bawa, supra note 20 at 114-115; Ritchie et al, supra note 36 at 434; Gana, supra note 29 at 746; Biggs, supra note 9 at 130.

had the WIPO regime enjoyed the co-operation of developed countries, intellectual property or *sui generis* biodiversity rights over indigenous knowledge would have been entrenched to the ultimate advantage of the preservation of biological diversity. The emergence of the TRIPs Agreement appears to have stunted the prospects of empowering the traditional knowledge through national laws for the preservation of biological diversity under the WIPO initiative.

The idea of excluding certain items essential to societies' needs, particularly food, drugs and medicine, from the list of patentable subject matters is not limited to developing countries. For similar reasons, developed countries excluded patent rights on food, chemicals, plants or animals until as recently as the late 1960s.[221] Prior to the Paris Convention, similar restrictive practices obtained in Germany, France, Austria as well as Spain.[222] Thus, generally, before the Paris Convention, boundaries or confines of patenatble subject matter admitted such shifts both in developed and developing countries influenced by ethical, political and economic concerns at national levels.[223]

Unlike the WIPO, the TRIPs Agreement imposes on all members of the WTO who are by virtue of that membership parties to its universal, albeit minimum, standard of intellectual

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[220] Gana ibid observes that contrary to most developed country literature (including Gutterman supra note 20 at 89) it is not true that developing countries exploited the weakness of the international patent system by taking advantage of foreign patentees. I doubt if the WIPO deliberate latitude for national laws could be appropriately be described as a weakness, even if developed countries are inclined to have that impression.

[221] See Biggs, supra note 9 at 133.

[222] Germany did not grant patents for chemical products, France for non-medical pharmaceutical compositions, Austria for food products, Spain for inventions generally unless such inventions in addition to being new also established a new industry in the country. See Gana, supra note 29 at 746 citing P. Ladas, *Patents Trademarks and Related Rights, National and International Protection* (Cambridge, Mass.: Harvard Univ. Press, 1975) at 22. Spain and Canada did not fully recognise patenting systems for drugs until 1992 and 1993 respectively.

property protection. TRIPs imposes patent rights on all inventions, products, or processes and in all fields of technology.[224]

Most strikingly, TRIPs prescribes a uniform standard or condition precedent for the grant of a patent right, which is no longer within the competence of national governments to determine. For TRIPs, patent rights can only apply to inventions that are new, involving an inventive step and capable of industrial application. This is a wholesale legal transplantation of the long established and developed Euorocentric test for patentability namely, novelty, utility and non-obviousness.[225]

Making all products and processes the subject of patent rights forecloses the latitude which developing countries had to determine the subject matters of patent in accordance with their needs. Moreover, even where they need to enhance economic value of

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[223] See Gana, supra note 29 at 746; see also Biggs, supra note 9 at 133.

[224] Article 27 of TRIPS provides in part as follows: "Subject to the provisions of paragraph 2 and 3 (relating to exceptions on the basis of *ordre public* or morality, environment, public safety, biosafety, plants and animals species with some qualifications), patents shall be available to **all fields of technology, provided they are new, involve an inventive step and are capable of industrial application**..." (emphasis added). See Articles 30 and 31 of TRIPs for exceptions to this blanket regime of patent application. The exceptions would accommodate cases of medical emergencies or those based on hindrances to competition (or inventor's refusal to sell or excessively high prices) for which government could have recourse to compulsory license or parallel importation of a cheaper brand of the same product. This exception is credited to the insistence of Spain and Canada. See Martine Bulard, "Defining World Public Property: The Apartheid of Pharmacology" *Le Monde Diplomatique* (The Guardian Weekly) Jan. 2000 at 11-12. Regarding the provisions of those articles, Gana, supra note 29 at 755 observes that "it is not yet clear how these two provisions will fit together".

[225] The guidance footnote 5 to the text of the TRIPs Agreement reconciles the relevant wording of Article 27 with novelty, usefulness and non-obviousness. Gana supra note 29 at 748 describes the requirements of patentability under Article 27 of the TRIPs Agreement as an outright replica of the Eurocentric condition for the grant of a patent. See also Julio Nogues, "Patents and Pharmaceutical Drugs: Understanding the Pressures of Developing Countries" (1990) 24 JWTL 81. On the influence of the developed countries spearheaded by the USA to ensure the entrenchment of the Eurocentric criteria of patentability at the international level through the GATT/WTO-TRIPs channel, see Gutterman, supra note 20; see also particularly, Gervais, supra note 26 at 15-14.

traditional knowledge by means of intellectual property (patent) right, for instance, such knowledge has to be subject to the TRIPs' Eurocentric tests of patentability.[226]

The implication of universalising the Eurocentric triple standard test for patentability on developing countries with specific application to traditional knowledge presents arguably one of the greatest challenges to the attainment of the objectives of the CBD. An appraisal of this highly sensitive aspect of the biodiversity intellectual property intersection follows.

(iii) PHARMACEUTICAL PATENTS IN PERSPECTIVE

Pharmaceutical patents are central to the concept of biological diversity. It is one of the highest sectoral beneficiaries of biological diversity and as such, constitutes a driving need for its conservation. Mossinghoff points out in this regard that:

> Conserving biodiversity is of particular interest to the research-based pharmaceutical industry. Despite the advent of what is called rational drug discovery...and despite modern-day genetic engineering, pharmaceutical industry scientists continue to rely on what is referred to as Natural Products Drug Discovery or NPDD. NPDD involves the search for bioactive compounds contained in natural sources such as plants, fungi, insects microbes, and marine organisms—most of which are found in the tropical areas of the world. It is estimated that for example, that about one quarter of all modern medicines sold in the United States are derived from NPDD.[227]

Thus, access to biodiversity is critically important for sustaining the pharmaceutical industry in its prospecting for new products, which are substantially derived from plants

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[226] Article 27(3)(b) provides a partial exception to the application of the test of patentability in relation to plant variety for which a *sui generis* status strictly or a combination of same with the patent system is permissible.

[227] See Mossinghoff, supra note 54 at 28; see also Bosselman, "Plants and Politics: The International Legal Regime Concerning Biotechnology and Biodiversity" (1996) 7 Colo. J. Int'l Envt. L. & Pol'y 111. (this work was also referred to by Mossinghoff).

and other components of biological diversity.[228] The use of ethnobotanical science as drug discovery technique is now a commonly accepted and substantially documented ethical practice among trans-national pharmaceutical corporations and affiliated research organisations.[229]

The application of standards of novelty, non-obviousness (inventive step) and usefulness (capacity for industrial application) to developing countries' domain of traditional knowledge is incompatible with the ideological foundation, practices and social institutions under which that knowledge thrives. For another reason, among so many others, those are new and rather unfamiliar standards and there is no judicial and administrative history or local body of precedents to provide context for those terms. In contrast, there is highly established body of precedents and jurisprudence developed over a long period and applied across most developed countries, which now impose them on others.[230] The difficulties in reconciling each of those tests for patentability to the domain of indigenous knowledge will be obvious from the analysis that follows.

(iv) TESTS OF PATENTIBILITY

(a) NEWNESS/NOVELTY[231]:

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[228] Citing *Multinational Monitor* of June, 1994 Biggs, supra note 9 at 118 writes "In 1990 the annual world market value for pharmaceuticals derived from medicinal plants and herbal drugs is estimated at US$43 billion. It is expected to reach US$47 billion by the year 2000..." Horton, supra note 9 at 6-7 citing Stephen R. King, "The Source of Our Cures"(1991) *Cultural Survival Quarterly* at 19 points out that "Approximately three-fourths of the plant-derived drugs now in use were discovered through research involving information from indigenous groups". Sales of prescriptions for plant-derived drugs in the U.S. alone reached an estimated $15.5 billion in 1990. See Walter V. Reid, "The Economic Realities of Biodiversity, *Issues in Science and Tech.*, Dec. 22 1993 at 48-9.

[229] Horton ibid.

[230] See Gana, supra note 29 at 748-749.

[231] The two terms invoke a distinction without difference. Sections 101 and 102 of the U.S. Patent Act (35 U.S.C.1-376 (1998)), provides for the newness and novelty requirement respectively. However, judicial

The requirement that the invention be novel is appraised in the context of the applicant or the patentee's priority of application or invention and the state of prior art in that field. The question is resolved generally in favour of the applicant if there is no corresponding or conflicting prior art embodying the same, identical or generally reconcilable discovery or knowledge. There is strict restriction against disclosure as the basis for the determination of the novelty of an invention.[232]

The question then is, at what point would an ethnobotanical knowledge of the indigenous people be described as new in order to satisfy the novelty requirement? By its nature, cultural knowledge is a trans-generational inheritance,[233] usually traced to ancestral inspirations from time immemorial. 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 public'".[234] Also, more often than not, traditional knowledge is published, usually by Western researchers,[235] without the knowledge of the custodians, a situation that further impedes its ability to satisfy the requirement of novelty. Because it thrives mainly among usually illiterate members of the traditional community, available documentation is primarily predatory and takes advantage of their illiteracy. A converse question is: can a

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attitude is inclined to treating the two terms as the same. What matters is practically a question of determining who the first inventor is (for the USA) or who is the first to file in the majority of other jurisdictions. See Yano, supra note 31 at 455-456.

[232] The restriction against disclosure is integral to 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 (R.S.C. 1985 c. P-4) 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 also the Canadian cases of *Ernest Scragg & Sons Ltd. v. Leesona Corp.* (1964), 45 C.P.R. 1 and *Gibney et al v. Ford Motor Co. of Canada Ltd.* (1967), 52 C.P.R. 140.

[233] See Tarasofsky, supra note 40 at 151.

[234] See Horton, supra note 9 at 15 where the writer maintains that traditional knowledge is usually known and used by at least a small local public for such a long period that transcends that typical one year grace period allowed before a patent is filed.

[235] Ibid.

modern trans-national pharmaceutical research corporation, for example, be denied a patent on the basis of the invention's inability to satisfy the test of novelty for the reason of a prior art in the same field albeit rudimentary, which may be credited to indigenous knowledge? The likelihood of that scenario appears far-fetched, perhaps because of the next requirement.

(b) NON-OBVIOUSNESS

Simply stated, this is a requirement that the invention be not trivial,[236] and that it must contain at least a minimal element of ingenuity. The test of obviousness is traditionally derived from common law and is referred to as the "Cripps 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.[237]

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.[238] Non-obviousness is a primary requirement of an inventive step. It could also differentiate the state of a product as a product of nature or one that is subject of human ingenuity. The former is not patentable under the Eurocentric test of patentibility adopted by TRIPs, for having not undergone sufficient human intervention.[239] Thus, they are still within the public domain, they are not new on their own and are obvious in their

[236] See section 103 of the U.S. Patent Act (35 U.S.C. (1998)) See also section 28.3 of the Canadian Patent Act (R.S.C. 1985 c. P-4) which, provides in part that "The 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 patens..."
[237] See the Canadian case of *Beliot Canada Ltd. v. Valmet Oy.* (1986), 8 C.P.R. (3d) 289 (F.C.A.) at 294.
[238] Yano supra note 31 at 546.
[239] See *Pioneer Hi-Bred Limited v. Commissioner of Patents,* supra note 16.

natural state; they lack sufficient human ingenuity to sift them from public domain. As such, they cannot be exclusively appropriated.[240]

Under the TRIPs regime, the developed countries are wont to treat products and processes of traditional knowledge as those of nature, without sufficient human ingenuity or the requisite inventive step. In their "raw "or informal state of application by the indigenous peoples, they do not satisfy the requirement of novelty; nor do they meet the high standards for inventiveness and advanced technical and scientific requirements under the non-obviousness prescription.[241] Such standards are not only ill suited to the field of traditional knowledge, but also incompatible with it.[242]

(c) UTILITY/USEFULNESS

Under the TRIPs Agreement, the requirement of usefulness is synonymous with the prescription that the invention be capable of industrial application.[243] This requirement does not necessarily demand an overwhelming measure of utility. A minimum level of

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[240] There is specifically no statutory prohibition against the patenting of products of nature. The prohibition arose from the inability of such products to satisfy newness or novelty requirement. See Yano, supra note 31 at 453.

[241] Gana, supra note 29 at 750-2 observes that a construction of Article 27 of the TRIPs Agreement would indicate that the Agreement accommodates inventions with a low level of inventiveness, which may not satisfy the advanced level that usually obtains in the developed countries. She believes that there is no universal standard of novelty hence there is still prospects for developing countries to amend their laws under the TRIPs to provide for non-absolute novelty inventions. The necessity for tampering the Western standard for novelty and non-obviousness requirements will accommodate indigenous efforts and boost such creative activities that do not satisfy the high inventive watermark. In this regard petty patents becomes useful toward the attainment of that objective. The entrenchment of a regime of petty patents by tampering the high standard of inventiveness and a flexible construction of the novelty requirement will "provide the required framework for the allocation of rights between indigenous knowledge and the use of this indigenous knowledge to develop drugs which are patented under modern patent laws" the lack of which is a serious flaw of the TRIPs Agreement, Gana points out. See supra notes 218 and *infra* notes 442 and accompanying texts.

[242] See Horton, supra note 9 at 15.

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.[244] Though this might easily be met by traditional knowledge, that should not be taken as given, because the use of the phrase "industrial application" has yet to be interpreted in the context of the WTO/GATT dispute settlement mechanism. Also, since the additional requirements of novelty and utility have to be satisfied, the assurance of utility as a test of patentibility is inconsequential to traditional efforts that cannot satisfy the first two requirements of novelty and non-obviousness.

(v) THE NEEM-A RALLYING SYMBOL OF TRADITIONAL KNOWLEDGE

The discriminatory approach to patentability and attendant inequity has been the subject of international concern. This is particularly so because of the global regime of uniform standard of intellectual property protection under the WTO/TRIPs. The platform for expressing the concern is often through a coalition of non-governmental organisations and interest groups, mainly from the South, who collaborate in mobilising other global interest groups sympathetic to this concern.[245] Earlier efforts centred on isolated cases with no recognisable legal results except the occasional media blitz with characteristic

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[243] The actual reference in Article 27(1) of TRIPs is the qualification that the invention be "capable of industrial application" whereas the guidance to footnote 5 to the text of the Agreement explains the usage to be a synonym of usefulness.

[244] See the U.S. Patent and Trademark Office Board of Appeal decision in *Exparte* Mackay, 200 U.S.P.Q. (BNA) 324 (1978) a case cited by Yano, supra note 31 at 456. See also Canadian Supreme Court decision in *Mettaliflex Ltd. v. Rodi & Wienenberger Aktiengeesellschaft* (1960), 35 C.PR. 49 (S.C.C.).

[245] Notable among these interest groups are: The Research Foundation for Science, Technology and Natural Resource Policy in India, Genetic Resources Action International (GRAIN), The Third World Network (TWN), and The Foundation on Economic Trends in the United States.

inflammatory rhetoric that readily faded away as soon as they began. However, one pivotal initiative in this direction has attracted a great deal of attention, but also concrete results and indeed, has the potential to sustain the struggle against biopiracy. That is the now famous neem tree oil case in which the Opposition Division of the European Patent Office (EPO) recently revoked a European patent granted jointly to a United States multinational corporation, WR Grace, and the US Department of Agriculture three years earlier.[246] The patent titled: "*Method for controlling fungi on plants by aid of hydrophobic extracted neem oil*" which was purportedly an invention by three US scientists, has the following abstract:

> A novel insecticide and foliar derived from a neem seed extract comprising neem oil which is substantially free of azadirachtin and salannin, said neem tree being prepared from extracting dried, coarsely ground neem seeds with a non-polar, hydrophobic solvent to obtain a neem oil extract, and then removing the solvent to obtain the neem oil. These neem oil pesticides exhibit the ability to repel insects from plant surfaces, prevent fungal growth and kill insects and fungal pests at various life stages.[247]

In essence, this patent protected a method of using neem tree extract for fungicidal purposes.

The neem tree patent case is very significant in so many respects. It is the first case to challenge European and US[248] patents on grounds of biopiracy[249] and raises all the

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[246] This particular decision which was rendered on May 10, 2000 is presently available online at the EPO website: <http://www.european-patent-office.org/news/pressrel/2000-05-11-e.htm>.
[247] European Patent Number: EPO436257 of 1991-07-10.
[248] A similar neem-based patent by WR Grace (Patent No.5,124,349) was challenged earlier in 1995 before the US PTO on same grounds as the European patent.
[249] See Vandana Shiva, "Neem Patent: Favourable Interim Judgement Delivered"-press release available online: <http:csf.colorado.edu/forums/ecofem/nov97/0037.html> [hereinafter Favourable Interim Judgement]. The term biopiracy is credited to FAO Assistant Director General, Obaidullah Khan in 1994 as a general allusion to unconscionable pattern of bioprospecting which appropriates traditional knowledge without recognition of custodians of that knowledge. See Ritchie et al, supra note 36 at 445-6.

fundamental tests of patentability discussed in the last section. The "neem campaign" is arguably the most global of its kind comprising a coalition of more than 200 organisations spanning across 35[250] nations in an initiative that has been on-going since 1993.[251] Only very few natural resources represent in a very comprehensive manner the values of the socio-cultural, economic, historical and religious harmony of the indigenous peoples and their traditional knowledge in the way the neem tree does.[252] Similarly, not many natural resources are distinguished by their astonishing therapeutic versatility. Thus on all these counts, the neem tree and the campaign against its biopiracy is "symbolic of resistance to the creeping power of global capitalism";[253] even as the neem tree itself is a representative symbol of collective nature of indigenous knowledge.[254] Therefore, it is simply irresistible as an appropriate subject of a case study in the context of the present discussion.

The neem tree, which originates from the Indian subcontinent and southeast and southern Asia presently grows in dry regions of more than 50 tropical countries[255]. Interestingly, the neem tree and extracts have served various therapeutic uses for the indigenous and

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[250] Some accounts indicate 40 countries. See "Neem Debate" *infra* note 255.
[251] The Campaign was initiated in India.
[252] Neem is associated with great religious significance among the indigenous peoples of India. Its versatility conferred it with a reference in the *sanskrit* which translates to "the curer of all ailments", in the moslem tradition it is called "the blessed tree"(shajar-e-mubarak). In Indian traditional medicine neem is "at the pinnacle of their pharmacopeia" and pivotal to tremendous economic activities. See "Case History" *infra* note 254; see also C. Hellpap & W. Leupolz, "The Influence of Socio-Economic Factors on the Use of Neem Insecticides by Farmers-Paper presented at the Fifth International Neem Conference, University of Queensland Brisbane, Australia, 1996.
[253] See Third World Network, "More than 200 Organisations from 35 Nations Challenge US Patent on Neem" available online at: <http://www.twnside.org.sg/title/neem-ch.htm>.
[254] See Vandana Shiva, "The Neem Tree—A Case History of Biopiracy" available online: <http://www.twnside.sg/title/pir-ch.htm; http://www.physics.uc.edu/`manash/neem.html.> [hereinafter Case History].

local communities in India, which included uses as insecticides, medicinal and dental applications, and as contraceptives; for centuries. Also; neem's versatility includes uses for agricultural, energy and other economic purposes such as timber.[256] At the instance of two non-governmental organisations and a few members of the European Parliament,[257] backed by demonstrable evidence of prior knowledge and use of neem tree for similar purposes as claimed by the applicants for the neem patent at the EPO, the patent was revoked for want of novelty in view of public prior use in India. Although the patent was primarily revoked for lack of novelty, the decision and precipitating petition relate to all aspects of the three tests of patentability. The principal argument was that the patent did not disclose any thing not already within the domain of prior art or knowledge (newness), and that given the available knowledge on neem, the patent claim was obvious (i.e. it could not satisfy the non-obviousness test), and should not have been granted. There would seem to have been no issue with regard to utility, which is a fairly straightforward aspect of the test.

This decision which has been hailed by Green Party politicians as well as various pressure groups across the globe did not come as a surprise.[258] It promises to step up the

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[255] See J Kocken & G.V. Roozendaal, "The Neem Tree Debate", Biotechnology and Development Monitor 30 March 1997 at 8-11; also available online: <http//:www.pscw.uva.nl/monitor/3004.htm>. [hereinafter Neem Debate]-cited to the web version.

[256] For a comprehensive analysis of various uses of neem tree, see "Case History", supra note 254 at 1-2; see also "Neem Debate", supra note 255.

[257] Dr. Vandana Shiva (Director of Research Foundation For Science, Technology and Natual Rsource Policy in India), The Foundation on Economic Trends in the United States, other NGOs, Ms Magda Alvoet (Leader of the Green MPs of the European Paliarment) and Linda Bullard, MEP.

[258] Earlier, on September 30, 1997 the EPO has given an interim decision wherein it held the patent cannot be maintained in view of certain affidavits filed in its opposition. It then required the applicant to provide more detailed information on the extraction process, see "Favourable Interim Judgement", supra note 249. Moreover, the European Council had in September 26, 1997 passed a resolution titled "Biotechnology and Intellectual Property" which condemned the phenomenon of "biocolonialism"(the council's own words), a reference to "the strategy of internationally operating companies which tried to obtain patents of genetic

rising consciousness over the injustice of biopiracy. However, the decision may seem to reflect the judicial thinking in Europe and does not necessarily reflect the American position. The importance of this observation stems from the fact that in US, the country of origin of the neem patent, the decision has no impact on the validity of the patent. This is so notwithstanding the success of an earlier action for the revocation of a similar patent for turmeric, in the US.[259] The success of the turmeric patent opposition is explained on the basis that the patent itself was like an outright stealing of existing knowledge by the applicant,[260] whereas in a failed neem patent opposition the applicant's dealing with the neem was found to be an intellectual property effort, which transcended traditional knowledge.[261].

The US adopts a different approach from the EPO's most recent decision on the neem. The US granted a similar neem-based patent to WR Grace in 1992 for "*a process for extracting and stabilising azadirachtin*[262] *(aza A*[263]*)*". The patent claim was hinged on the formal technical extracting process and storage stabilisation mechanism for azadirachtin

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parts of plants, and acquired a monopoly over their medicinal and agricultural use and thus increased the economic dependence of the third world". See Manik Mehta, "India Gets Backing From European Council on Neem Patent", *India Abroad News*, online:<http://144.16.65.194/hpg/envis/doc99html/biodneem99102.html>.

[259] Turmeric (*haldi*), is a tropical Asian plant of the ginger family used for thousands of years for healing wound and rashes among Indians. A US patent under similar claims was granted in March 1995 to two non-resident Indians associated with University of Mississipi Medical Centre in US. At the instance of a New Delhi-based Council for Agricultural Research, the US Patent and Trademark Office on August 23rd 1997 cancelled the Patent for lack of novelty. Vandana Shiva describes the decision "as the first step in reversing biopiracy". See Vandana Shiva, "The Turmeric Patent is Just the First Step in Stopping Biopiracy", TWR No. 86 Oct 1997; online at: <http://www.twnside.org.sg/title/tur-cn.htm>. –cited to the web [hereinafter Turmeric Patent]; See also "Turmeric an Indian Discovery..."online: <htt:p//www.rediff.com/aug/23tur.htm>.

[260] If a patent or an application for it could be proven to represent a mere importation of an overseas invention it cannot be sustained in the US. See Sayana Kadidal *infra* note 276 at 393-4 & n.118.

[261] See Graham Dutfield, "Biopiracy: The Slavery of the New Millennium? Surely Not" online: <http://users.ox.ac.uk~wgtrr/slavery.htm> [hereinafter New Millennium Slavery].

[262] A chemical compound found in neem seeds.

[263] A neem compound used to protect plants against insects.

formulations. This involved isolating certain chemicals and adding aprotic solvents to the pesticide's active ingredient that extends shelf life and assures stability. This is the gist of the patented process, which has been observed to constitute "at least one or more steps away from the biological resource".[264] For which reason, in the hands of WR Grace, it is no longer a subject matter within the realm of nature. Ironically, the same cannot be true of the experiences of indigenous people with the neem, merely because they are not able to formalise and "latinise" their process in language acceptable to the West. Under the existing intellectual property regime, it difficult to fault the claim that what WR Grace did is an "intellectual effort" which is patentable[265]. What may not be satisfactory is whether that effort was not obvious at that point in time and as such, could not qualify as intellectual property capable of protection.

Among the indigenous Indians the extracting process of the neem's pesticidal emulsions involved several informal and less expensive ways. These included breaking down the neem seeds and soaking them in solvents (water, alcohol etc) so that the emulsions will float on the surface. They are then applied to crops as pesticides and insect repellents. Here, there is virtually no need for storage stability since they are applied immediately to the crops. Other traditional uses of neem follow the same informal pattern of processing. Storage stabilisation of neem arose from the need to export them for commercial purposes. It is not in issue that WR Grace's patent was inspired by Indian traditional knowledge. However, apart from the informal traditional extracting method, there is a great deal of scientific literature on Indian based scientific initiatives on the neem that

[264] "Neem Debate", supra note 255 at 2.
[265] See "Millennium Slavery", supra note 261 at 2.

predate the WR Grace effort.[266] Unfortunately, there is no local neem-based patent in India.[267] This is so because virtually all the uses of the neem, which encompass agriculture, medicine and pharmaceuticals, are excluded from patentability under the Indian patent law regime then in force. Also India's socio-cultural orientation does not support monopoly of the nature of patent over traditional knowledge and nature which it regards as communal.[268]

In 1995, "the neem campaign coalition" petitioned the US PTO requesting a re-examination[269] of the WR Grace neem-based patent on several legal and extra legal grounds with a view to securing its revocation.[270] Central to the argument is that the patent lacked novelty and that there existed prior art on the extracting method, including documented ones.[271] In the light of combined knowledge from the available prior art, the WR Grace patent does not satisfy the non-obviousness requirement, because of its triviality.[272] In the US, the evidentiary standard for proof of prior art discriminates against

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[266] Shiva comments that "Over the 2,000 years that neem-based biopesticides and medicines have been used in India, many complex processes were developed to make them available for specific use, though the active ingredients were not given latinised names" See "Case History", supra note 254 at 4. Stabilization research on azadirachtin in India is traced to the 1960s and 1970s.

[267] An Indian company, Godrej Soaps Ltd. (Bombay) however holds a US patent on neem fatty oil distillation residue-based pesticide. Besides of the well over 150 neem-related patents globally some of them are held by Indian concerns.

[268] Moreover, the accumulated knowledge over the neem is credited to anonymous individual efforts that transcend hundreds of years.

[269] See Re-examination No. 90/004 (Off. Gaz. Pat. Office Jan. 16, 1996). The official filing date of this application is Dec. 8, 1995. This request was made pursuant to sections 301 and 302 of the US Patent Act which grants the right to any individual to "request for re-re-examination" of an existing patent if there is a belief that prior art pre-empts any claim of the patent therefore bearing on its patentability.

[270] For an analysis of the grounds see "Neem Tree Debate", supra note 255.

[271] The argument is that the treatment of neem seeds with aprotic solvents has been the practice since the 1950s, and that scientists had obtained neem extracts with same solvents and similar ones as WR Grace identified well before the latter's initiative.

[272] Since no new/novel chemistry was associated with the WR Grace initiative the patent amounted to only trivial changes to known products and processes.

foreign prior art over domestic one.[273] Any domestic use or available knowledge of prior art will pre-empt a subject matter of patent whereas prior foreign knowledge or use of the same invention is discounted.[274] A foreign prior art is recognised only where there is formal tangible documentation or publication of the knowledge or claim embodied in the disputed patent application.[275] Only when this is satisfied could prior foreign art be held to anticipate the disputed US patent. Thus, the US would expect traditional knowledge to satisfy strict formal standards before it could accord it recognition as a prior art for the purpose of revoking a domestic patent that does not satisfy the test of novelty[276]. It is known that by its nature, traditional knowledge is informal. Even where the formal standard is met, that does not guarantee the admissibility of a foreign prior art[277] because of a self-serving and deliberate mistrust. This is the crux of the matter, namely the reluctance or outright inability of the West to accommodate traditional knowledge as subject of intellectual property protection.[278]

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[273] See section 102 US Patent Act.
[274] See "Turmeric Patent", supra note 259 at 2.
[275] Such a proof is often by way of patent publication.
[276] For analysis of the US discriminatory rules of evidence in the proof of foreign prior art, see Shayana Kadidal, "Subject Matter Imperialism? Biodiversity, Foreign Prior Art, and the Neem Patent Controversy" (1997) 37:2 IDEA 371; see also "Neem Debate" supra note 255.
[277] Ibid at 390 & n. 95, Kadidal argues that even the decision to admit a formal proof of foreign prior art could be arbitrary. She cites as an example *Carter Products Inc. v. Colgate-Palmolive Co.*, 108 U.S.P.Q. (BNA) 383 (4th Cir. 1956) where a typewritten Argentine patent was not considered proof of prior art.
[278] The United States is not alone in the discriminatory approach against foreign prior art. Japan has perhaps the worst such patent regimes. Under Article 29 of Japanese Patent Law, prior art is only recognised to inventions that are published. Even Britain at early stage of its industrialisation, evidence of prior art or use within the British realm as opposed to publication or use outside realm was the substantive requirement to impeach a local patent. A deliberate attempt was made to introduce invention into Britain even if that happened to be at the expense of prior art. See generally, Oyewunmi *infra* note 445 at 83; see also W. R. *Cornish, Intellectual Property: Patents, Copyrights, Trademarks & Allied Rights* (London: Sweet & Maxswell, 1989) at 117.

Thus neem-based patents are still protected in the United States.[279] Placed along side the US approach in this regard, the recent EPO decision on the neem patent does not call for much cheer. The US occupies a significant position in global chemical, pharmaceutical and agricultural research and production[280]. The growing division between European and American disposition to patent matters is a reflection of a lack of consensus not only on the issue of biopiracy and traditional knowledge but also on other ethical considerations related to patents[281], which lie outside the scope of this thesis. The optimism generated by the neem tree oil decision needs be tempered with caution, as the decision seems to reflect at best a symbolic shift in attitude against an unconscionable and predatory global patent system. That shift, in order to be worthwhile, needs to be sustained.[282] As long as the US remains indifferent to this evolving shift in attitude, there is not much to celebrate.

This state of affairs raises broader questions on the implications of universal intellectual property standards under the WTO/TRIPs framework for developing countries. India's exclusion of patents on pharmaceuticals and agricultural chemical subject matters[283] is not sustainable under that regime. This position is consistent with the WIPO, but

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[279] The number of US neem-based patents is put at over 50, covering a broad range of products from toothpaste to contraceptives.

[280] See Bulard supra note 224; see also *infra* note 305.

[281] Reference is made here to the controversy surrounding the patentability of life forms which is championed in the US since 1980, a development that has not been completely accepted in Europe. See supra note 16 and accompanying text. Also it is noteworthy that this lack of consensus has led to the compromise position that became Article 27.3(b) of the TRIPs Agreement. It has also manifested in the near stalemate that has been experienced with the on-going review of that Article by the TRIPs Council. See *infra* notes 409 & 411 and accompanying texts.

[282] This is necessary in view of other countless neem-based and related patents all over the developed countries.

[283] Under section 5 of the 1970 Patent Act of India, patents were not allowed on products for uses as food, medicine or drug and agricultural chemicals save for process patents which are however restricted where they relate to "medicines for human beings, products used to keep plants and animals free of diseases..." This section has been amended by section 2 of the Indian Patents (Amendment) Act 1999 to accommodate the excluded items among other provisions see *infra* note 285.

inconsistent with the TRIPs. It is already a subject matter of adjudication before the WTO Dispute Settlement Understanding at the instance of member states of the EU.[284] Under the WTO/TRIPs, India may be compelled to recognise WR Grace US neem-based patents and indeed all such neem-based and other patents by multinational corporations! It makes no difference that India does not recognise any intellectual property claims to neem locally. In response to a series of WTO-induced pressures, India has as recently as 1999 amended its patent regime to provide for patent rights "for a substance itself intended for use, or capable of being used as medicine or drug...".[285]

Also India's failure "to implement a mechanism for preserving novelty and prior art", as held by the WTO Dispute Settlement Understanding at the instance of the US[286] is inconsistent with the EPO ruling on the neem patent as well as the earlier US PTO

[284] See EU-India TRIPs Dispute, "India-Patent Protection for Pharmaceutical Agricultural Chemical Products—Complaint by European Communities and their Member States". The WTO Panel Report found that India was in violation of her obligations under 70.8 and 70.9 of the TRIPs Agreement by excluding patents and exclusive marketing rights in those areas under her Patent law and requested her to comply with those obligations by bringing her law into conformity with her WTO/TRIPs obligations. See the Panel Report online: <http://www/wto/org/wto/dispute/distab.htm>.

[285] See section 2 of Patents (Amendment) Act 1999. This Act which has a retroactive effect from January 1, 1995 received presidential assent on March 26, 1999. A text of this Act is available online at: <http://www.indianembassy.org/policy/commerce/patent_amendment_1999.htm>.

[286] In a related action to the EU initiative, the US under the WTO Dispute Settlement Understanding brought a complaint against India inter *alia* that she does not have an established mechanism that adequately preserves novelty and prior art in respect of applications for product patents in respect of pharmaceutical and agricultural chemical innovations. The panel found for the complainant (USA) and made the recommendation accordingly. India's Appeal to the Appellate Body was partially successful. She was however held liable to fulfil her obligations under Articles 70.8(a) and 70.9 of the TRIPs Agreement. A combined pressure of the USA and EU under the "mask" of WTO/TRIPs has forced a review of Indian Patent Act of 1970 in a thorny process that has characterised by domestic opposition. From the Patent (Amendment) Ordinance of 1994 to the Patent (Amendment) Bill of 1995, there is no hiding place for India against the strangle hold of WTO/TRIPs. It is the effect of these pressures that has eventually crystallised in the New Patent Act of 1999, which has amended sections 5 of the 1970 Patent Act. The Act of 1999 also makes provisions for exclusive marketing rights and repeals The Patent Amendment Ordinance of 1994. Since India still has latitude within the transitional timetable over product patent protection for pharmaceutical and agricultural chemical, how to explore the EPO decision on the neem patent and the earlier US PTO decision on turmeric patent to India's advantage is worthy of serious consideration within the transitional period which lapses by Dec 31, 2004. It has potential implication for developing countries as well, most of whom have been active participants in both the Turmeric and Neem oppositions.

decision on the turmeric patent. It is quite clear that it is the United States that lacks the mechanism to recognise prior art in view of its discrimination against foreign prior art. This constitutes a legal basis for the thriving biopiracy by US multinational corporations. The Indian approach to neem-based resources is a reflection of the ideological position towards intellectual property in many developing countries. Her reluctance to grant patents on most of the neem-based inventive efforts also reflects the disposition of the developing countries on the ethically sensitive subject of patentability of life forms or nature. Requiring India to recognise neem-based patents under the WTO/TRIPs rules is a classic demonstration of biocolonialism and ideological conflict, the stage for which is set by the WTO/TRIPs. Apart from the neem, there are many other significant biological resources that depict collective indigenous knowledge either expropriated[287] by the creeping power of global capitalism or waiting to be expropriated. The EPO decision is timely in view of the ongoing review of the TRIPs Agreement that has raised crucial questions as to the status of traditional knowledge, the ethics of patenting life forms and the relationship between the WTO/TRIPs and the CBD. The conflicting signals from the European Union, the USA and the developing countries confirm that the WTO/TRIPs status quo on those key areas needs to be revisited.

(vi) UNIVERSAL TEST OF PATENTABILITY: IMPLICATIONS ON BIODIVERSITY

Arising from its emphasis on formal process, a universal test of patentability under the TRIPs does not accommodate informal traditional knowledge. Also the free market approach of the TRIPs' industrial model treats products of scientific research as private

[287] Apart from the neem the following are patented in the US on the basis of Indian indigenous knowledge : Amla, Jar Amlar, Anar, Salai, Dudhi, Gulmendhi, Bagbherenda, Karela, Rangoon-ki-bel, Erand,

properties of their corporate sponsors[288] as contrasted from the communal nature of traditional knowledge. 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[289] and pharmaceutical purposes".[290] The impact of this observation is readily felt on the contributions of traditional knowledge to biodiversity conservation.

While Articles 8(j)[291], 10(c)[292] and 18(4)[293] of the CBD encourage the use of indigenous and traditional knowledge and technologies in the pursuit of its objectives,[294] TRIPs would appear to foreclose the relevance of such "technologies". This is so because it made no provision with regard to traditional knowledge, not to mention their

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Vilayeyishisham, and Chamkura. See "Turmeric Patent", supra note 259 at 1.

[288] See Ritchie et al, supra note 36 at 432 (the authors generally articulating the Preamble to the TRIPs Agreement). Specific reference is made here to paragraph 4 of the preamble, which provides that intellectual property rights are private rights. Citing the renowned Indian Scholar, Vandana Shiva in *Biodiversity and Intellectual Property Rights: The Case Against Free Trade* 108, 115 (1993) they endorsed the scholar's terse impressions of the TRIPs Agreement to the effect that the said paragraph 4 of the preamble "excludes all kind of knowledge, ideas, and innovations that take place in the intellectual commons-such as in villages among farmers, in forests amongst tribes, and even in universities among scientists" Finally they captured Shiva's "summary judgement" thus: "TRIPs is, therefore, a mechanism for the privatization of intellectual commons, and a de-intellectualization of civil society, so that the mind becomes a corporate monopoly" Those words arguably reflect the dominant Southern impressions of the TRIPs Agreement.

[289] Ibid. The authors also point out that the industrial model adopted by TRIPs is equally in conflict with the traditional practices prevalent in many agricultural and indigenous communities wherein the knowledge nutritional and medicinal uses of plants and results of plant breeding is shared as a common resource. This project for purposes of scope limitations exclude any detailed discourse on the agricultural dimension of the biodiversity intellectual property intersection.

[290] Ibid at 432.

[291] Article. 8(j) of the CBD provides: "Each Contracting Party shall, as far as possible and as appropriate: subject to national legislation, respect, preserve and maintain knowledge, innovations and practices of indigenous and local communities embodying traditional lifestyles relevant for the conservation of 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"

[292] Art 10(c) 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"

[293] Article 18(4) ibid Provides: "The Contracting parties shall in accordance with national legislation, and policies encourage and develop methods of cooperation for the development and use of technologies, including indigenous and traditional technologies, in pursuance of the objectives of this Convention..."

[294] See Horton, supra note 9 at 23.

consideration for economic incentives. Thus, this deprives the keepers of traditional knowledge of any recognition, which would entitle them to the equitable distribution of benefits mechanism under the CBD. A legal regime that undermines the imperative for recognition and incentivising of the custodians of wild habitat is at cross-purpose with the conservation of biological diversity.

The pharmaceutical patent process provides a good illustration of how the universal industrial model of patentability marginalises traditional knowledge, a development that ultimately undermines biodiversity conservation. Most multinational pharmaceutical researchers depend on the discoveries of indigenous peoples as the starting point of their research.[295] Available data indicate that using indigenous knowledge, the possibility of developing at least one marketable pharmaceutical from 1000 plant samples grows from 22% to 78% or three and a half times.[296] The first time knowledge, for example, that a specific plant contains substances having therapeutic value usually derives from ethnopharmacological effort of indigenous peoples. This in itself saves a great deal of effort and resources in time, labour and finance that would otherwise have been applied in "a scatter-gun approach" of indiscriminate isolation of substances for testing as well as extensive scientific experimentation.[297]

[295] The use of cultural knowledge to facilitate the innovative process is an acknowledged feature of contemporary scientific research. This is substantially documented in specialist literature and studies in the field. Hot pepper, for example is the most effective treatment for post therapeutic neuralgia, a discovery deriving from the use of hot pepper by South American indigenous tribes. Also, *Pilocarpine*, used in the treatment of glaucoma was first used in Brazil. The examples are endless; see Gana, supra note 29 at 751-2.
[296] See Horton, supra note 9 at 5
[297] See Yano, supra note 31 at 448-9.

The next stage of the prospecting process is a relatively easy one. It involves the formal process of isolating, extracting and purifying the active substances.[298] A purified chemical is not a product occurring in nature.[299] This is unlike plant species in the hands of indigenous peoples, which still have a number of impurities. It is on the basis of this last stage of prospecting that the trans-national researcher applies for patent protection. This is because a patent claim to a purified drug is generally drawn in terms of the absence of impurities and enhanced effectiveness of the drug in the purified state.[300] Thus, the plant within the realm and limits of indigenous knowledge is just the raw extract in 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 patent test, because it is a product of nature, it is not novel, it is obvious and could not be the object of human ingenuity![301] Invention is determined on the basis of labour of purification and not on the original act of discovery of the therapeutic value of the plant species.[302]

In this state of affairs, the source of the substance may change to an artificial one, and the substance may be renamed a convenient Western brand name, but it is almost invariably applied to the first use made of it by indigenous knowledge.[303] But the authentic discoverer is not recognised by the "usurper", who has defined and described the process

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[298] Ibid at 458.
[299] See "Ill-Begotten Harvest", supra note 65 at 56.
[300] Ibid.
[301] See Gana, supra note 29 at 748; see also Yano supra note 31 at 457-460 for a contextual analysis of the application of the tests of patentability to the ethnobiological knowledge of indigenous peoples.
[302] See generally "Ill-Begotten Harvest" supra note 65; see also Gana supra note 29 at 750. For decisions enunciating this principle, see *Diamond v. Chakrabarty* supra note 16, *Hodesh v. Block Drug. Co.* 786 F 2d 113. Regarding the analysis of the exclusion of traditional knowledge by developed countries generally Yano, supra note 31, Gana, supra note 29 .

in a language and law that accommodates the latter's interest to the exclusion of indigenous peoples.[304] Apart from resulting in outright marginalisation of indigenous people, this state of affairs has several other consequences which do not augur well for biodiversity conservation.

One consequence of this is that a disproportionate number of biotechnology-related patents in the developing countries are granted to trans-national corporations[305] who readily comply with universal formal criteria of patentability. Since a patent could be acquired with complete disregard to appropriate recognition of indigenous effort, those corporations are not obliged to share the rents arising from the patents with those whose knowledge is not only the basis of the patents, but who also bear the social costs of preserving the ecosystem that make the technology economically viable. Because the TRIPs approach secures and shifts legal protection exclusively in favour of Western multinational corporations, the importance of local innovations in agriculture and pharmaceuticals by home based traditional expertise is discounted.

Another consequence is the TRIPs-aided Western multinational global patent monopolies[306] have the potential to drive to extinction vibrant traditional knowledge—an

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[303] Yano ibid at 458.
[304] Other competing stakeholders in the bioresource enterprise include, landowners, identifiers of samples, the extractor, the researcher, the manufacturer, and the marketer. See "Ill-Begotten Harvest", supra note 65 at 47.
[305] Two-thirds of world pharmaceutical market is in the hands of large 20 Western based groups, a development that has been observed to be proceeding apace with 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 if not the very highest in the world, with effective impact in determining the world drug prices. See Bulard, supra note 224 at 12.
[306] Over 80% of Third World patents in Third World countries are owned by foreigners, mainly transnational corporations. See Ritchie et al, supra note 36 at 439.

monumentally adverse development to the objective of biodiversity conservation. This is so because such a monopoly encourages a creeping monoculture syndrome, which in the words of Horton amounts to "one species and one economic system, together with one view of humanities' relationship with nature increasingly dominate over others."[307] Creeping monoculture has lately escalated into a bioprospecting "gold rush" or what has been described as "biohunting" mainly by trans-national corporations. Under that syndrome, economic and market traits determine what varieties are to be isolated. Therefore plants ordinarily occurring in nature but lacking in commercial biotech exploration value, are allowed to fizzle into extinction.[308] Making predatory incursions into indigenous communities with tempting offers in various forms, the trans-national corporations and their agents often end up disrupting the indigenous communities and the irreplaceable traditional balance which they have with the ecosystem.[309] More emphasis is placed on exploitation rather than on conservation of biological diversity and sustainable development.

A third point is that the ease with which the universal patent test can be satisfied by the formal process makes the informal traditional method unprofitable. This is so because the process of developing new products does not go far beyond 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

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[307] See Horton, supra note 9 at 6.
[308] A survey of seed banks in the US revealed that some variety of non-commercial crops, among which are *chufas, martynia* and *rampion* have been completely lost. See Ritchie et al, supra note 36 at 446.
[309] Ibid at 445.

of a patentable invention.[310] Any such variation that generates a desirable trait becomes an object of unconscionable monopoly and subject of unbridled price manipulation[311] to the detriment of custodians of biodiversity habitat who preserve the ecosystem from which it is derived.[312]

This contrasts with the laborious commitment of traditional practices. The latter, prior to genetic engineering, has for different reasons sustained amazing varieties of crops without distorting their biological diversity. Such reasons, which are often ecosystem induced, included soil differences, climatic condition and evolutionary trait, and deliberate cultural preferences or peculiarities.[313] The tendency to sustain this natural approach is simply unattractive because the resultant product is not commercially competitive. Left with an increasingly unviable practice, the ethnobotanical and ethonoagronomical practitioners' frustration is compounded by their increasing inability to have access to seed stock of traditional variety that has not been patented.

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[310]Ibid at 435; see also Shayana Kadidal, note "Plants, Poverty and Pharmaceutical Patents"(1993) 103 Yale L. J.223.

[311] The price manipulation is entrenched because by virtue of the national treatment principle under Article 3 of the TRIPs Agreement, there is no discrimination between imported and locally manufactured products, irrespective of the generally asymmetrical feature of the socio-economic factors in the North-South relationship. The situation is created where biologically engineered substitutes of most of the hitherto cash crops of the developing countries now dominate the global market. Such products as cocoa, sugarcane, cashew nuts, plant oils, etc. mainly the cash crops of African and Latin American countries no longer have much economic relevance for the economies because of the genetically engineered substitutes. See Ritchie et al supra note 36 at 441; see also Olawale Ajai, "Access to Genetic Resources and Bitechnology in Nigeria" (1997) 6:1 RECIEL 42. The writer argues that "Replacing 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". See generally Achim Seiler, "Biotechnology and the Third World: A Rough Overview of Potential Socio-economic Impacts" available online at: <http://www.rz.uni-frankfurt.de/~ecstein/gen/biolib/425>.

[312] Lamenting this trend Bulard supra note 223 at 12 observes "We 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 counties 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."

Lastly, the alternative presented by genetic engineering may not be dependable after all. Much as genetic science would seem to provide the answer to everybody's food needs, that would seem to be at the expense of displacing the custodians of traditional knowledge and cultural diversity.[314] That alternative is also of doubtful sustainability. Often genetic monocultural practices result in crops that have uniform susceptibility to disease, which can exterminate them in one fell swoop.[315] Furthermore, engineered organisms, being for all practical purposes aliens to the ecosystem, can have unpredictably harmful impacts on naturally occurring species.[316]

It could therefore be said that the universal test of patentability does not give consideration to informal nature of traditional method. It paves the way for effortless acquisition of patent monopolies by Western trans-national corporations, which has resulted in monocultural practices. This results in the marginalisation of the custodians of traditional knowledge and also in the abundance of alternatives to naturally occurring species which have doubtful sustainability. This explains the present situation where the prioritisation of bioprospecting at the expense of conservation is enthroned.

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[313] Ritchie et al, supra note 36 at 446.
[314] See Vandana Shiva, "Biotechnology Will Worsen Agricultural Problems" (Third World Network Features) available online at:<http://www.rz.uni-frankfurt.de/~ecstein/gen/biolib/378> Feb. 20, 1996.
[315] See Horton ,supra note 9 at 5.
[316] For example Ritchie et al, supra note 9 at 446 report that an engineered variety of bacteria by Oregon State University for decomposing plant material which procures soil in converting agricultural wastes to ethanol fuel was found to be destructive of beneficial fungus essential for recycling of nitrogen through plant roots. This has potential for desertification throughout that product range. For insight into the impact of genetic monoculturism on naturally occurring plant and crop species in India and Indonesia, see Ritchie et al ibid and Horton ibid respectively; see also Ajai, supra note 311 at 42 On the negative consequences of centralised crop breeding, see generally W. Reid, *Genetic Resources and Sustainable Agriculture: Creating Incentives for Local Innovation and Adaptation* (Act Press, 1992)

(vii) COMPULSORY LICENSING OF PATENT

The concentration of critical patent monopolies in the areas of pharmaceuticals, food and agriculture in the hands of multinational corporations does not guarantee working of those patents locally in order to alleviate the needs and imbalances the system has created. The vulnerability of this state of affairs to abuse is obvious through price manipulation. Although the multinational corporations could ordinarily license their production process to manufacturers in developing countries, this is usually with stringent conditions, such as export restrictions.[317] Restrictions of this kind freeze the potential for innovation and expansion by the local companies and local initiatives. The pricing triangle between multinational licensor and local licensee is usually 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.[318]

Under the WIPO dispensation, national governments have the option to exercise the discretion of compulsory licensing for the working of a patent locally, where the patentee has failed to do so in the jurisdiction, often within a specified period of time.[319] The option of compulsory licensing ensures that developing countries are not held to ransom by patent monopoly-wielding trans-national corporations. Developing countries could issue compulsory licenses to third parties for the working of such patents in their jurisdiction, even without the consent of the patent holder where that will serve the public

[317] Under the GATT rule this does not amount to trade restriction. See Ritchie et al, supra note 36 at 446.
[318] For an overview of the politics of transfer pricing, see Ritchie ibid at 440.

interest.[320] Countries were also at liberty to grant foreign patent subject to a working requirement.[321]

Most developed countries under the leadership of the United States[322] persistently objected to compulsory licensing of patents. They accomplished their goal with the TRIPs, which abolished compulsory licensing of patents in principle.[323] The TRIPs does create exceptions in situations where compulsory license is justifiable as a last resort measure. However, the nature of conditions for the exercise of compulsory patent license under the TRIPs Agreement is so stringent that it has no attraction for any developing country seeking to use it to check the abuse of patent monopoly by foreign right holders.[324] This is a loss to local innovation, indigenous knowledge and by extension, biodiversity conservation.

(viii) PATENT TERM

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[319] Article 5(A)(2) of the Paris Convention provides: "Each country of the Union shall have the right to take legislative measures providing for the grant of compulsory licenses to prevent the abuses which might result from the exercise of exclusive rights conferred by the patent, for example, failure to work."

[320] A number of developing countries usually issue compulsory licenses on the basis of their definition of public interest. Such countries include Brazil, Korea Mexico, and Nigeria to name just a few. Even Japan has been known to issue compulsory license on this note, a situation that partly jet-propelled her technological advancement.

[321] For a discussion on the working requirements under the Paris Convention and the TRIPs Agreement, see Gana, supra note 29 at 755-6. The writer observes that the Philippines and Argentina have a stringent working requirements.

[322] See Gutterman, supra note 20 at 94.

[323] See Article 31 of TRIPs for compulsory licensing of patent. Article 21 prohibits compulsory licensing of trademarks.

[324] Compulsory license under TRIPs is subject to adequate remuneration of the patent holder, and judicial review. It is restricted to the domestic market, and to the purpose for which it is granted; it must be non-exclusive and not be assignable. See generally TRIPs Article. 31; see also Horton, supra note 9 at 26; Gutterman, supra note 20 at 93-4.

Under the Paris Convention the patent term is determined by the national law of the patent granting country.[325] The term is dictated by policy considerations. The nature of the subject matter of a patent and its need locally are among the factors that influence the term to be granted. For understandable reasons, developing countries tend to grant shorter patent terms than their developed counterparts.[326] Through the grant of a shorter patent term, a developing country could check the abuse of patent monopolies, empower indigenous knowledge and foster the cause of biological diversity conservation and technology transfer.

Therefore, even where indigenous ethnobiological activities are diverted or distracted at the expense of biological diversity, in view of the commercial allure of modern genetic engineering, the subsistence of traditional practices will not be unreasonably or permanently endangered in view of a shorter patent monopoly. The traditional peoples could still have access, within a shorter time frame, to biologically engineered synthetic substitutes in the form of seedlings etc. Most importantly, the significant remnant of indigenous people, perpetually committed to traditional methods, could still retain a measure of commercial hold to their commitment for not only subsistence's sake, but also in the interest of biological diversity. A shorter patent term holds a great deal of promise 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 in contrast to unreasonably long patent monopoly. This situation will be only be

[325] The Paris Convention is silent about the term of a patent.
[326] Developing countries' patent term is usually in the sphere of five years. See Gutterman, supra note 20 at 93.

reaslisable where there is a dependable local industrial and manpower base with the ability to seize the opportunity of secondary manufacturing.

Similar to the subject of compulsory licensing, developed industrialised nations again led by the United States, favour a longer patent term. The United States specifically advocated a minimum term of patent protection for at least twenty years.[327] This view was pushed through the GATT negotiations on the TRIPs Agreement with success. Under it, the term of patent protection is now twenty years commencing from the date of filing.[328] Where the patent granted covers or includes a process, new entrants cannot work the patent using the same process even in anticipation of the expiration of the twenty-year term. An interested manufacturer has to devise its own unique process different from that of the original patentee. This option is certainly unattractive to a developing country secondary manufacturer. Worse still, the burden of proof lies on the secondary manufacturer to establish the uniqueness of its process.[329] This is a legal bias that aggravates the asymmetrical relationship between the patent holder and the secondary manufacturer. The latter ordinarily does not have an established clout and financial muscle to engage the former in a legal dispute.[330]

A long patent term holds a diminished commercial prospect for a secondary manufacturer and is not conducive for technology transfer. The dynamism of technological innovation has increased over the years such that it is not very likely that a product or process patent

[327] Gutterman ibid; see also Nogues supra, note 225 at 83.
[328] See TRIPs art. 33.
[329] TRIPs art. 34.

could be commercially profitable through the same technological process that has sustained it from inception beyond twenty years. There is hardly any viable technology transfer in this kind of scenario. Therefore, an entrenched system of long patent term such as under the TRIPs is a disservice to the secondary manufacturer, indigenous knowledge and in the long run, to the conservation of biological diversity.

III TRADE SECRET[331]

In comparison to patent, trade secret is a weaker and less entrenched regime of intellectual property. Trade secret protects confidential information in the nature of formula, pattern, compilation, program, device, method, technique or process etc.[332] The possessor of these embodiments assumes a competitive advantage over others who are ignorant of the underlying secret.[333] For any information to retain its value as a trade secret, it must be capable of independent economic value and subject to a deliberate, positive and reasonable effort directed at the maintenance of its secrecy.[334] As a peripheral regime of intellectual property,[335] trade secret does not require governmental filing or notification of its existence. Its preservation is dependent upon the prudence of the holder in sustaining its secrecy by among other things, avoidance of public disclosure

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[330] The point is moot that the original patent holder is usually the Western transnational corporation, whilst the secondary manufacturer is most often a Southern based local small-scale manufacturer.
[331] Generally referred to as a black box invention incapable of reverse engineering. A classical example of trade secret readily given is the coca-cola formula.
[332] See Gutterman, supra note 20 at 94.
[333] See "Ill-Begotten Harvest", supra note 65 at 55.
[334] See Gutterman, supra note 20 at 94-5.
[335] Trade Secret is described here as a peripheral regime not because it does not require filing (copyright does not either) but because it is not universally recognised as an intellectual property right.

as well as by the ability of the extant legal system to regulate its misappropriation by unauthorised persons.[336]

Trade secret was not universally recognised as an intellectual property right across countries until the coming into force of the TRIPs Agreement.[337] The Paris Convention has no provision on trade secret. Consequently, it is within the domain of national laws of the members of the Paris Union to determine the nature and scope of recognition, if any, they may be inclined to accord a trade secret. The recognition of indigenous and traditional technologies, innovations and practices of indigenous and local communities embodying traditional life styles relevant for the conservation and sustainable use of biological diversity under the CBD[338] prompts an inquiry as to the appropriateness of trade secret in enhancing that recognition.

In the first instance, there is a difficulty with fitting traditional knowledge into the rubric of TRIPs universal prescription of trade secret, which is based on the Western concept of the regime whose features have been highlighted. By its nature, traditional knowledge, (for example derived from naturally occurring species), is shared as a community

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[336] Unauthorised persons are generally persons obtaining the information embodying the secret by unauthorised manner whether through others who procured the same illegally who breach their obligation not to disclose the information. This is generally described as misappropriation of trade secret. See Gutterman, supra note 20 at 95.

[337] Article 39(2) (a)-(c) of TRIPs provides: Natural and legal persons shall have the *possibility* (responsibility?) of preventing information lawfully within their control from being disclosed, acquired by, or used by others 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 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

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

resource,[339] and may be difficult to be classified as intellectual property right and subject of exclusive corporate monopoly in the very form and manner of a trade secret in the Western tradition. It is doubtful if it could satisfy the requirement of a reasonable and deliberate effort at the protection and sustaining of its secrecy. At best, as a shared resource, traditional knowledge is within a restrictive or partial public domain with regard to the select social unit in which it obtains. To that extent, it may not satisfy the strict requirement of secrecy and restriction against public disclosure. Again, partial restriction of traditional knowledge is not necessarily a function of economic consideration, and so the requirement of independent economic value does not fit into the nature of traditional knowledge.[340]

Trade secret is more developed as an intellectual property regime among the countries of the North with an equally developed legal regime for its enforcement. It is however different with countries of the South whose ideological approach to intellectual property right is not readily amenable to an intellectual property right over a trade secret in the manner of Western definition of the subject which is adopted by the TRIPs Agreement.

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[338] See CBD arts 8(j), 10(c) and 18(4).

[339] See Ritchie et al, supra note 36 at 432; see also Dinah Shelton, *Fair Play : Laws to Preserve Traditional Knowledge and Biological Resources* (Gland: WWF, 1995) at 35 where the author points to a distinction between a collectively held knowledge of a small group and the public domain. The former is wrongfully confused with the latter hence failure to allow intellectual property right to traditional knowledge. See Tarasofsky, supra note 40 at 151.

[340] *Contra* Gollin, supra note 32 at 163. The writer is of the opinion that "A 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 he argues that "...where 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 "Ill-Begotten Harvest", supra note 65 at 55-6. This may not be entirely persuasive because traditional knowledge within a large social unit albeit tribal, clan etc. negates the requirement of secrecy. There is no guarantee of a deliberate effort to eschew disclosure outside the social unit. More importantly, sustaining traditional knowledge is not necessarily a dictate of independent economic consideration because of the priority it attaches to social interest over such considerations.

As an intellectual property right, trade secret could be a viable alternative to patents, in some instances, for example, where a patent application is delayed by a bureaucratic bottleneck. Most importantly, resort can be made to the use of trade secret where the publication of the patent may be detrimental to the competitive value of the information on the protected invention.[341] Again, because trade secret has no statutory life span, unlike patent, an organisation with a reliable mechanism for sustaining the secrecy for an indefinite period[342] may find trade secret more attractive than patent.

The restriction of trade secret within the confines of established Eurocentric concept is not in the best interest of traditional knowledge and the preservation of biological diversity. That approach deprives traditional knowledge of the benefit of such a critical aspect of intellectual property right, which if applied to it, would hold strong prospect for consolidating its integration into the objectives of the CBD.

The exercise of latitude in defining and determining the nature of trade secret and the scope of subject matter of its application by national governments would be most appropriate for fashioning a flexible concept of trade secret capable of accommodating indigenous knowledge. This is possible under the Paris Convention. National governments are better disposed to understand the peculiarity of indigenous knowledge and to evolve a flexible and accommodating legal regime. Under such an arrangement,

[341] See Gutterman, supra note 20 at 95.
[342] For example, the Coca-Cola Company.

for instance, the requirement of secrecy and disclosure restriction could be defined from an inclusive perspective with regard to the context and nature of traditional practices.

CONCLUDING REMARKS

The CBD seeks to use the instrumentality of intellectual property to achieve its principal objectives, such that those rights, in the words of the Convention, "are supportive of and do not run counter to its objectives". The role of indigenous people is central not only in the attainment of the said objectives but also in translation of intellectual property rights to actualise the objectives of the CBD.

The two international intellectual property regimes have different approaches to intellectual property rights namely, national and international. The one 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 traditional knowledge as credible agent for biodiversity preservation. The other, the TRIPs regime, is activated in the context of the recent expansion of international trade agreements. It establishes a global regime of intellectual property rights. It adopts a Eurocentric model of intellectual property rights, and maintains some lack of regard to the socio-cultural peculiarities of traditional knowledge; with no provision whatsoever for it or its custodians, the local and indigenous communities.[343]

Because the TRIPs Agreement is a component of the GATT/WTO scheme, its provisions are meant to be applicable internationally among member States of the WTO. In undermining cultural knowledge, TRIPs creates a protective legal incentive for thriving monoculturism for Western based trans-national corporate patent monopolies in the critical areas of pharmaceuticals, agriculture and genetic engineering. This has the potential for destruction of biological and cultural diversity in the same measure as it aggravates the social and economic imbalance between the North and the South. TRIPs stifles indigenous effort and facilitates a regime of trans-national colonialism through a triggered "gold rush" or "biohunting", which puts misplaced emphasis on bioprospecting instead of conservation of biological diversity, the main objective of the CBD. Thus, an empowered national approach to intellectual property rights as under the WIPO auspices is better placed to define an appropriate intellectual property on the basis of indigenous knowledge, which in effect will be supportive of and not run counter to the objectives of the CBD.

[343] There is no express provision under the TRIPs Agreement relating to indigenous knowledge and to local communities except in the attempt for an interpretative over extension of part of art 27(2) provision for an exception for patentability on the basis of *ordre public* or morality. See Tarasofsky, supra note 40 at151.

CHAPTER FOUR

CBD AND TRIPS: OVERCOMING THE CHALLENGES

I. RECOGNISING IDEOLOGICAL DIFFERENCES

The CBD was greeted with enthusiasm by the international community as a functional international regime to address the issues of conservation, sustainable use and equitable sharing of the benefits of biological diversity.[344] Despite prevalent ambiguities and contradictions that characterise much of the text of the CBD,[345] it cannot be doubted that its objectives are lofty and given the right scheme of operation, they are realisable. However, the CBD was not fashioned to give effect to those objectives in isolation. To do so would be impossible as a practical matter; hence its reliance on ancillary intersecting regimes, particularly those relating to intellectual property rights; even though it seemed that the negotiators of the Convention failed to find a lasting compromise on that issue themselves.[346] This perhaps explained the deference to the

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[344] See Juma, supra note 5 at iii.

[345] The prevalence of ambiguities in the text of the CBD has been a recurring criticism in most the literature on the Convention. Article 16 has been used often to illustrate the nature of inherent contradictions in the text. Hurlbut, supra note 37 at 379 for example, observes that "The treaty attempts to promote diversity of species by encouraging developing countries to preserve their diminishing rainforests, wilderness areas, and wetlands. Yet it also calls for the "equitable sharing" of economic benefits from patented processes using rare plant and animal species found in developing countries" For a textual analysis of the provisions of the CBD, see Gollin, supra note 33 at 289-302. See specifically the writer's analysis of Article 16. With particular regard to the wording of Article 16(2), concern has been expressed as to how a provision for transfer of technology to the developing countries is expressed to be in "most favourable" concessional, or preferential terms whilst at the same time qualifying such terms by the reference to "mutually agreed" basis.

[346] The inability of the CBD negotiators to find a compromise on intellectual property has been described as "a missed opportunity" to take advantage of the economic forces that make intellectual property rights a controversial trade subject and convert it into a potent tool to promote biological diversity. The CBD treatment of intellectual property is described as opening "a proverbial Pandora's box" Hurlbut points out that the CBD treats intellectual property in a superficial manner and in his very words again, "By not addressing the issue of intellectual property in a manner that does justice to its complexity, the treaty actually hinders more than it furthers the goal of biological diversity" See Hurlbut, supra note 37 at 379-382 & 402.

existing intellectual property regimes, with hope that a compromise could be explored at a more opportune moment in the future.

As explored in Chapter One, intellectual property rights have been a traditionally touchy subject of North-South disagreement.[347] Because of the ideological undercurrent that underlies the disagreement, the CBD's reliance on intellectual property rights is an inevitable victim of ideological stranglehold. It is therefore hardly surprising that no consensus was reached on intellectual property during the negotiations.[348] The North-South stalemate over intellectual property rights reflects in part the undercurrents that inform the two international approaches to the subject matter namely, the WIPO and TRIPs regimes. These approaches have eventually climaxed in the triumph of the Western ideological bent through the recent harmonisation of intellectual property rights with international trade under the WTO/GATT scheme. TRIPs' imposed Western ideological intellectual property model, in the words of Vandana Shiva, "excludes all kinds of knowledge, ideas and innovations that take place in the intellectual commons-such as in villages among farmers, in forests among tribes..."[349]

[347] For the nature of the tensions and mutual suspicions that bedevil the North and South with regard to intellectual property rights, see generally the following literature: Oddi, supra note 1 , Sell, supra note 26 ; Baer, supra note 66; Gana, supra note 29; Ritchie et al, supra note 36 ; Horton, supra note 9 ; Bawa, supra note 20 ; Hurlbut ,supra note 37 ; Gutterman, supra note 20 ; Biggs, supra note 9 .

[348] The United States refusal to sign the Convention for about one year after the Rio Earth Summit was essentially based on its articles 15 and 16 of with respect to the subjects of intellectual property and technology transfer.

[349] See Vandana Shiva, supra note 288; see also Ritchie et al, supra note 9 at 432 & n.6.

Ideological battles are never won;[350] at best what is secured is a pyrrhic victory, the implications of which for biological diversity were discussed in the last chapter. Suffice it to point out that it has left the objectives of the CBD in serious jeopardy. Under this brand of victory, the goal of technology transfer, equitable sharing of the benefits, conservation of biological diversity in pursuit of the broader objective of sustainable development would become more intractable contrary to the objectives of the CBD. This is so because the existing legal regime clearly undermines the traditional custodians of the wild habitat. The suitability of available legal protection to only one ideological approach to intellectual property rights undermines the key elements of the Convention's objectives. The result is that biodiversity prospecting and exploitation have displaced the need for its conservation. How then can this state of affair be re-appraised in order to keep a focus on the prospects of realising the objectives of the Convention?

Despite the reservations expressed in the last chapter over its impact on the conservation of biological diversity, TRIPs Eurocentric intellectual property ideological model may not be justifiably condemned on the basis of its ideological orientation. The temptation to condemn ideological orientations on a partisan basis must be resisted for its diversionary implications. Indeed, since ideological orientations are driven by cultural, historical, socio-political and a litany of other indeterminate experiences of nations, preferring one ideological approach to intellectual property rights over another risks undermining the

[350] Commenting on the imposition of Western ideological model of intellectual property right, Gana observes that "Developed countries wrongly presume that the intellectual property system, as conceived in Western tradition, has an intuitive logic that the developing countries will somehow grasp. Developed countries underestimate the degree to which local institutions, traditional ideas and social values will resist a wholesale acceptance and application of a philosophy of intellectual property rights, and consequently, the TRIPs Agreement" See Gana supra, note 29 at 774.

sensitivities that underlie the rival ideologies.[351] Only few endeavours could be less controversial than attempting to rationalise the philosophical superiority of ideologies. In the words of Hurlbut,

> Because many of the world's political cultures differ so widely from European norms, and because concepts of intellectual property are shaped by the political cultures out of which they arise, one cannot assume that intellectual property laws will or should be the same from one country to another...Different political cultures make different choices and sometimes there is no unanimity even amongst industrialised advanced countries[352]

The last statement is also true of the developing countries. The different ideological perspectives between the North and the South on the subject of intellectual property rights reflect their respective civilisations and socio-economic values. To some extent, it contributes to their geopolitical uniqueness and identities in a plural world.

Notwithstanding these self-evident truths, developed countries continue to exhibit a lack of faith in an intellectual property regime that permits expression to plural geopolitical intellectual property ideologies, namely the WIPO regime,[353] whose latitude in this regard has been explored in the last chapter. The Western disdain for the WIPO approach was a significant factor in the emergence of TRIPs, which for all practical purposes has undermined the WIPO and by implication marks a departure from the ideological

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[351] For example, the way Europeans dealt with intellectual property is a derivative of the way they conceived of property in general for which reason, the evolution of intellectual property rights followed closely behind that of tangible property rights in the European legal tradition. Feudalism, conquest experience and colonialism are critical factors that shaped the Indian philosophy of property rights. See supra chapter one at 23-35; see also Hurlbut supra, note 37 at 383-85.

[352] Ibid at 387. See also Bawa, supra note 20 at 81 & n.8

[353] The United States has not ratified a number of WIPO instruments, nor has some member of the European Union. See Hurlbut, supra note 37 at 395 & n.46; see also Gervais Supra note 26 at 3-25.

pluralism favoured by the WIPO. TRIPs represents the superimposition of a Western ideology of intellectual property rights over the rest of the globe.

Trade has been cited as part of the rationale for the imposition of Eurocentric model of intellectual property rights on the rest of the world.[354] Furthermore, the choice of that model is premised on the understanding that most of the Western economies are innovation driven, hence the need for a legal regime in which the West has some confidence, but also one which sustains its commanding heights on the global economy.[355]

The appeal to trade as the basis for a universal approach to intellectual property, at the expense of undermining one ideological consideration by another is not persuasive. The United States has before and after the TRIPs explored and still explores on a consistent basis the use of negotiations on bilateral and case by case engagements with most developing countries in order to extract its own preference of intellectual property behaviour in the context of its national interests.[356] The success of that approach has

[354] See for example the observation by Hurlbut, supra note 37 at 387: "Were it not for trade international law would be concerned with so many different national regimes for intellectual property rights because each should be a matter of domestic policy. But the fact is that nations do trade, and the differences matter"
[355] Literature on this subject is replete with frantic and often desperate efforts by the United States and sometimes the European Union and Japan to bring about a regime of intellectual property designed to sustain their strangle hold on the world economy with little or no considerations to the needs of developing countries and their fragile economies. "Studies suggest that the prospects of industrialised countries to retain a major share of global market in the 21st century depend not only on their ability to stimulate technological innovation, but also on efforts to ensure an orderly diffusion of that technology through appropriate international legal machinery". See Reichman supra note 53 at 754; see also Bawa supra note 20 at87-95. With regard to the US initiatives, see Gervais supra note 26 at3-25. See generally, R.M. Gadbaw & T.J. *Richard, Intellectual Property Rights: Global Consensus, Global Conflict* (Boulder: Westview Press Inc., 1998); Gutterman supra note 20.
[356] Singapore, Malaysia, Taiwan, India, China, Argentina, Taiwan, Hungary, Hong Kong, South Korea etc are among the countries the United States engages on bilateral basis on matters concerning intellectual property policy. See Bawa supra note 20 at 111-117. (For a case study of the success of this approach on

been broadly acknowledged.[357] The inability of Western industrialised countries to pursue this option which clearly accommodates and tolerates ideological pluralism is not unconnected with the desire to exercise high-handed trade sanctions and other disciplinary measures under the WTO Dispute Settlement Understanding.[358] Delimiting ideologically sensitive subject matters like intellectual property rights within the parameters of free trade does not augur well for the preservation of biological diversity. That approach subsumes ecological and social interest considerations, and superimposes in their stead, privativistic and monopolistic schemes that promote exploitation with little regard for conservation. No matter how persuasive the allure of free trade has become, it cannot continually ignore the consideration of the environment and social interest under which biological diversity conservation is better addressed.

This would not necessarily mean that preference is given to the rival Southern ideological orientation. Outside the overbearing WTO/GATT framework, national intellectual property laws, which will be suited to the cultural and economic peculiarities of countries, especially the developing countries should be allowed to evolve. For example, as much as the WIPO is described as Southern friendly in its orientation, it did not discountenance the Western ideological approach neither did it impose one ideology over

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Singapore, see particularly page 111-114); see also Gutterman supra note 20 at 125-136, Hurlbut supra note 37 at 397 & n.55.

[357] Bawa ibid at 112.

[358] Writing on the failure of the U. S multilateral approach to intellectual property protection under the WIPO and the UNCTAD between the 60s and 70s, Susan Sell observes that the 80s marked a change in the US approach to a bilateral initiative based on consultations which produced results in Hungary, South Korea, Singapore and Taiwan. The effect of this success led the US government to adopt the policy of linking trade with intellectual property protection. This resulted in the amendment of the US Trade and Tariff Act in 1984 and 1988. See Sell, supra note 26 at 182-83.These tariff regimes were targeted to specific States with whom the US had critical trade relations. The subsequent resort to the WTO/GATT that

another. This approach which upholds ideological pluralism, represents the best guarantee of intellectual property rights as an effective device for the conservation of biological diversity.

The advantage of the approach which accommodates ideological pluralism lies in its inherent ability to balance the interests of exploitation and conservation as they correlate to the North and the South respectively. This is in view of the undisputed fact that the earth's biological diversity is largely concentrated in the tropical rain forests of the South. The point is that an uneven legal empowerment in favour of an intense exploiter of biological diversity has little or no regard for conservation and other principal objectives of the CBD. Whereas a flexible legal regime that gives latitude to the custodians of wild habitat in determining or otherwise influencing relevant bioresource policy considerations is sure to strike the necessary balance between exploitation and conservation of biological diversity for sustainable purposes.

Under the latter scenario, a biodiversity intellectual property right becomes possible. An external prescriptive or normative criterion of a certain ideological bias will not be needed in order to determine such a right. The use of WTO/GATT as an instrument at the disposal of one geopolitical intellectual property ideology undermines the expectations of the other. It accentuates the North-South divide, and translates global concern for the conservation of biological diversity to mere propaganda while facilitating

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led to the TRIPs agreement marked a restatement of faith in a multilateral approach which had 'failed' under the WIPO.

continued selfish and mindless plundering of the third world.[359] Each ideological approach must be permitted unfettered expression within the socio-cultural, political and economic context it which it thrives. In the absence of any supracultural or moral high ground, what may be required is recognition by each other as moral equals reflecting the two geopolitical interests.[360] This will pave the way for a realistic approach to the conservation of biological diversity.

II. DIVERGENT GOALS AND LEGAL RELATIONSHIP BETWEEN THE CBD AND THE TRIPs AGREEMENT

(i). DIVERGENT GOALS

Apart from the question of ideological disparities, the CBD and the TRIPs Agreement's textual approach to intellectual property rights, and their inter-relationship as treaty instruments under international law should be explored in the evaluation of the prospects of attainment of the CBD's objectives.

[359] Appraising this tendency, Bulard, supra note 224 at 12 writes: "The (western) pharmaceutical companies are hoping to use the WTO to get all exceptions to patents rights abolished. At the same time they want greater access to the plant life of developing countries since knowledge of their genome is one of the keys to future medicine. In order words they want complete control over the raw materials and ever stronger protection for the discoveries made from using those plants, putting them out of rich of countries they come from". This point is better appreciated from the fact that under the TRIPs Agreement patent rights are extended to "all fields of technology" with little regard to traditional exemptions for pharmaceuticals, food, agriculture etc. See TRIPs art. 27(1).

[360] See Hurlbut, supra note 37 at 406.

Articles 7[361] and 8(2)[362] of the TRIPs Agreement outline the fundamental basis of its approach to intellectual property rights namely, an uncompromisingly strong private proprietary right within the framework of a free market economy.[363] On the other hand, article 16(5) of the CBD reflects an ambivalent but flexible approach to intellectual property rights.[364] Notwithstanding its shortcomings, Article 16 (5) is clear on one count: the ecological objectives of the CBD take precedence over intellectual property rights.[365] The CBD is inclined therefore to adjust the orthodox or traditional approach to intellectual property if and where it becomes necessary to achieve its objectives. The flexible, albeit somewhat ambiguous, disposition of the CBD toward intellectual property rights is in harmony with its willingness to accommodate indigenous knowledge into benefit sharing schemes. In the circumstance therefore where indigenous knowledge may not satisfy the normative or prescriptive intellectual property criteria under the TRIPs, that would not completely erode its relevance in the pursuit of the objectives of the CBD.

The TRIPs Agreement on the other hand, construes intellectual property rights as critical to its unwavering free market ideal. There is no express provision in the agreement relating to traditional knowledge.[366] Unequivocally, the TRIPs Agreement did not contemplate traditional knowledge as a subject of intellectual property rights. Therefore

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[361] TRIPs art. 7 provides: "The protection and enforcement of intellectual property rights should contribute to the promotion of technological innovation and of transfer and dissemination of technology, to the mutual advantage of producers and users of technological knowledge and in a manner conducive to social and economic welfare, and to a balance of rights and obligations"

[362] TRIPs art 8(2) provides: "Appropriate measures, provided that they are consistent with provisions of this Agreement, may be needed to prevent the abuse of intellectual property rights by rights holders or resort to practices which unreasonably restrain trade or adversely affect the international transfer of technology"

[363] See generally the preamble to the TRIPs Agreement.

[364] See Tarasofsky, supra note 40 at 148.

intellectual property rights to traditional knowledge (however construed) under the CBD is likely to compromise the TRIPs Agreement. Under Article 8(2) of the latter such a right could be construed as a practice which unreasonably restrains trade. This potential interpretation certainly will run counter to the provisions of Article 16(5) of the CBD which expects that national and international law on intellectual property rights should be supportive of and not run counter to its (CBD) objectives.[367]

(ii) LEGAL RELATIONSHIP

The WTO/GATT Uruguay Round negotiations of the Trade Related Aspects of Intellectual Property Rights (TRIPs) were yet to be finalised at the time of the adoption and coming into force of the CBD on May 22 1992 and December 29, 1993 respectively. Notwithstanding this fact, there may be no practical significance to the argument that article 16(5)'s reference to international law should exclusively be to international intellectual property regime(s) in force at the time of the entry into force of the CBD. In a similar vein, article 22(1)[368] of CBD permits parties' unfettered exercise of rights and obligations under existing international agreement. This is subject however to those rights and obligations not causing "serious damage or threat to biological diversity". The references to "international law" under article 16(5) and more specifically to "existing

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[365] Hurlbut supra note 37 at 398 sees a conflict with this provision. He argues that the CBD mixes ecological objectives with economic goals both of which "are different in nature and provide different contexts for weighing the social need to protect intellectual property rights."

[366] This factual observation is also reiterated by Tarasofsky supra note 40 at 151.

[367] Although there is to date no recorded dispute between on the two international agreements, CBD and TRIPs, such a potential is real. The current tension between trade and environment under the WTO Dispute Settlement Understanding represent a more general policy clash that may well find expression in particular terms between the CBD and the TRIPs Agreement.

international agreement" under article 22(1) would exclude the TRIPs Agreement in theory. Those references would clearly favour the operation of the CBD with WIPO administered conventions since WIPO predates the CBD. Even if that argument were to be sustained for a moment, at the time of coming into effect of the TRIPs Agreement, subsequent to the CBD,[369] the former has incorporated by reference most of the key provisions of major WIPO administered conventions.[370] Consequently, the two agreements (i.e. WIPO and TRIPs) may not be mutually exclusive. Further, TRIPs incorporation of aspects of WIPO administered conventions brought the WIPO regime, to the extent of its incorporation into the TRIPs Agreement, under the powerful WTO dispute settlement mechanism of which the TRIPs Agreement is an integral part. Even if preference was to be given to the WIPO, the resultant trade sanction and other disciplinary measures under the WTO cannot be excluded from taking their course even under such a narrow interpretation.[371]

Therefore it suits both logic and reason that the CBD's references to international law and existing international agreement in articles 16(5) and 22(1) respectively refer both to the

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[368] CBD art 22(1) provides: "The provisions of this Convention shall not affect the rights and obligations of any contracting party deriving from any existing international agreement except where the exercise of those rights and obligations would cause a serious damage or threat to biological diversity"

[369] The TRIPs Agreement came into force on January 1, 1995.

[370] See TRIPs arts 1, 2, 3, 4. 9, 10, 39, 63. The TRIPs agreement outlines minimum intellectual property protection required of each member state of WTO. It also requires compliance with main Conventions of WIPO-the Paris and Berne Conventions in their most recent versions. With the exception of moral rights under the Berne Convention, all the substantive provisions of the two conventions are incorporated by reference and constitute obligations for all member countries to the TRIPs Agreement. This is in summary the extent of the relationship between the TRIPs Agreement and the WIPO See <http:/www.wto.org/intellec/intell2.htm>. In fact as a result of incorporation of most of the provisions of major WIPO administered coventions by the TRIPs, the later is often referred to in familiar parlance as "Berne and Paris-Plus Agreement"

[371] For discussion on the binding nature of the adopted decision of the Appellate Body under the WTO Dispute Settlement Understanding, see D.M. McRae, "Trade and the Environment: The Development of the WTO Law" (1998) 9 Otago LR 221 at 223.

TRIPs Agreement and the WIPO. WIPO's permissive latitude in favour of national governmental policy approach to intellectual property right is reconcilable with CBD's relaxed reference to intellectual property rights.[372] Without the emergence of the TRIPs Agreement and its marriage of intellectual property with international trade, it would be safe to contend that the WIPO approach comparatively represents a greater prospect for a harmonious international intellectual property regime for the attainment of the CBD objectives. The reality however is that the TRIPs Agreement and its sponsoring parents, the WTO/GATT, are here to stay.[373]

Thus, the tension between the CBD and the TRIPs cannot be wished away.[374] The reference to international intellectual property law under the CBD is for all practical and realistic purposes more relevant to the TRIPs Agreement than it is to the WIPO. And the search for a synergy between the two agreements, which is necessary if the objectives of

[372] Referring to article 16(5) of the TRIPs Tarasofsky supra note 40 at 148 describes the language of its provision as reflecting "extremely modest hint at the possibility of adjustment of IPR rules" which in itself is an indication "to some extent, the different nature of the CBD objectives, as compared to traditional economic considerations upon which orthodox views of IPRs are based."

[373] A reinvigorated GATT and the emergence of the WTO are part of the aftermath of the cold war. Both outfits have become powerful agents of globalisation. As much as industrialised countries would have the rest of the world to believe that globalisation has the status ,(in the words of Keith Dixon),"of a force of nature which we are compelled to come to terms with", its implication for underdevelpoed countries has not been fully appraised, see Kith Dixon, " Blair's March to Market Modernity" *Le Monde Diplomatique* (*The Guardian Weekly*) Jan. 2000 at 13 See particularly Ray Kiely, "Globalisation, (Post-) Modernity and the Third World" in *Globalisation and the Third World,* supra note 9 at 1-22.

[374] *Contra* Mossinghoff, supra note 54 at 29 who argues that appropriately implemented, both agreements are in harmony. This arguments is readily appreciated as a celebration of the US spearheaded victory of developed countries over the rest of the world by bringing intellectual property law, into the epicentre of international trade. Mosssinghoff was a former US Commissioner of Patents and Trademarks, former Chairman of the General Assembly of the WIPO and retired President of the influential United States Pharmaceutical Manufacturing Association (now Pharmaceutical Research Manufacturers of America)-PhRMA. In all of those positions, he played major roles in the US bid to undermine the WIPO in order to bring about the TRIPs, which actually achieved the US long nursed desire for a global intellectual property regime. It is hardly surprising that most Western establishment's view of the two conventions do not appreciate the obvious conflict between them.

the CBD are to be realised, seems quite difficult given their differing and uncompromising approach to intellectual property rights.

Following from the above discussions, it is clear that the TRIPs Agreement requires a universal standard of intellectual property rights protection among all the signatories to it[375] for the purpose of sustaining the strict market economy principles upon which the agreement is based. And the CBD permits the jettisoning of any (standard of) intellectual property rights protection if that will ensure that its objectives are upheld.

However, the Vienna Convention on the Law of Treaties[376] requires that international treaties be interpreted and implemented in a consistent manner so as to avoid conflict between two treaty regimes.[377] Both customary international law and the Vienna Convention's approach to the question of conflict of international instruments on the same subject matter address the nature of obligations of parties to the treaties *inter se*. Save for the subject of access to genetic resources and technology transfer which themselves are geared toward exploitation of biological diversity as opposed to conservation, the CBD contains mainly non reciprocal obligations because of its social interest objectives, namely the conservation of biological diversity for the common good.[378] Even then, the underlying philosophy and ethics for access to genetic materials and technology transfer under the CBD are premised on the ideals of sustainable development and common concern of humankind. Therefore, the focus on inter party

[375] See TRIPs art. 41.
[376] 8 ILM 679 (1969)
[377] See arts. 30-2 of the Vienna Convention.
[378] See Tarasofsky, supra note 40 at 151-2.

obligations under the Vienna Convention does not seem most appropriate in analysing the CBD's relationship with the TRIPs for the present purpose. Generally, both regimes represent conflicting policy approaches on the subject of intellectual property rights and do not necessarily raise questions about conflicts arising from inter- party treaty obligations.

(a). THE PRIORITY RULE

Where a conflict exists between two treaties on the same subject matter, priority is given to the provisions of the treaty that is later in time.[379] This approach would favour the TRIPs Agreement. However, it does not address a situation where a subsequent decision of an authority, for example, the Conference of Parties (COP) to the CBD, deriving from powers under an older treaty, takes effect later in time than a conflicting substantive treaty which would be favoured by the priority rule under the Vienna Convention.[380] Although the issue has not arisen, it could be argued that the decision of the COP or any similar administrative authority under a treaty may be likened to a subsidiary legislation in which case it may not have priority over the provisions of a substantive law or treaty. It is however doubted whether a wholesale importation of municipal law principles into the arena of international law could be a basis of a dependable analogy. There is no doubt that international treaties do not have the same structure, style, language and general content or force as domestic laws.

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[379] See Vienna Convention on the Law of Treaties art 30 generally dealing with application of treaties relating to the same subject matter. Article 30(3) particularly provides, "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 latter"

[380] Tarasofsky, supra note 40 at 152.

(b). THE *LEX SPECIALIS* PRINCIPLE

Another consideration is the application of *lex specialis* rule of customary international law. (the is distinguished from *lex specialis* principle in extradition proceedings) This rule gives preference to a treaty that is specific on a subject matter over one that is comparatively general in its provisions on the same subject matter. Under this principle, it is not clear how the issue of conflict may be resolved. Prima facie, the CBD is more specific on the subject of biological diversity. However, both treaties have specific application to aspects of intellectual property rights, the CBD, in the context of biological diversity conservation and the TRIPs, in the context of trade. Nevertheless, because the TRIPs Agreement overreached its original mandate and turned out to be the most comprehensive treaty on intellectual property rights to date,[381] the *lex specialis* rule is inclined to favour the CBD whose treatment of intellectual property rights is within the limited confines of biodiversity conservation.[382] Although the TRIPs Agreement may lay claim to being a specialist regime, arguably, such a claim may be weaker than that of the CBD. The CBD's position is strengthened by the fact that it made elaborate provisions on traditional knowledge with reference to intellectual property rights, while TRIPs has no provisions relating to traditional knowledge. What may however need to be clarified in a given analysis, is whether it is intellectual property or biological diversity that is the pivotal consideration.

The argument in favour of the CBD may have theoretical bearing only. In addition, the interaction of the *lex specialis* principle (which appears to favour the CBD), with the

[381] See Gervais, supra note 26 at 11.

priority rule (which favours the TRIPs Agreement) raises yet another unresolved question.

(c). THE PRACTICAL IMPERATIVE

On a more practical level, the majority of states are parties to both treaties. In fact, more than 125 of the original 167 nations that signed the CBD are members of the WTO and automatically signatories to the TRIPs Agreement, and are thus committed to the full enforcement of specific intellectual property standards under the TRIPs.[383] The overbearing nature of the WTO enforcement mechanism, which includes sanctions and withdrawal of concessions, dictates that the TRIPs oriented approach to intellectual property is unavoidable irrespective of its detrimental effect on the objectives of the CBD. In Tarasofsky's observation, "The WTO is clearly a powerful international institution in terms of influence, rule making capacity and the sophistication of its machinery. It has captured the trade and environment agenda for the time being."[384]

Thus, a legalistic analytical approach to the relationship between the CBD and the TRIPs Agreement in general, and their respective perspectives on intellectual property in particular, may be an exercise in futility, without practical relevance. As international instruments, the political undertones that characterised their negotiations and eventual adoption are not, as a matter of practice, amenable to strict legalism. The collective will

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[382] Tarasofsky ibid. This conclusion need be taken with caution because on its strict evaluation, the CBD did not include a substantive provision on intellectual property per *se*.
[383] Mossinghoff, supra note 54 at 28-9.
[384] Ibid at 154. For a discussion on the extent, nature, influence and general effect of the WTO Dispute Settlement Understanding, see generally McRae supra note 371. For a summary and graphic illustration of the new dispute settlement system under the WTO Agreement, see Gervais, supra note 26 at 251; see also art. 64(3) of the TRIPs Agreement.

of the international community is often expressed in international legal instruments. These instruments often result from complex negotiation processes. Because of the flexibility of such processes, a legalistic application of resulting instruments is not necessarily useful. What may be established is that the analysis of the relationship between the two regimes has created a strong imperative for a policy choice by the international community between ecological considerations and free market. It is the collective will of the international community to make that choice that is on trial rather than the legal instruments themselves. Once the choice is made either way, there is no dearth of expertise to bring about the adequate legal instrument. As it stands, it would seem that the considerations of free market continue to hold sway.

(d). SYNERGISTIC APPROACH

Recent concerns that have been raised regarding the tension between the CBD and the TRIPs Agreement are an indication that such tension is real and cannot be ignored any further. It is not surprising, however, that a number of developed countries including the United States do not, arguably as a matter of deliberate policy, acknowledge the existence of tension between the two regimes.[385] This tendency to downplay the issue of conflict between the two regimes points to a strategic design to sustain the gains of the Uruguay Rounds which resulted in the TRIPs Agreement, an acknowledged major victory for developed countries. Feigning that the tension does not exist can no longer be sustained

[385] At the October 1999 TRIPs Council Meeting, part of the series of meetings on the ongoing review of Article 27.3(b) of the TRIPs Agreement, while making a case for patenting life forms, the United States maintained that there is no conflict between the TRIPs and the CBD. See "Article 27.3(b): Views of United States of America"-Paper presented at TRIPs Council, WTO, Geneva Oct, 1999 at 7. See also Genetic Resources Action International (GRAIN), "For a Full Review of TRIPS 27.3(b): An Update on Where Developing Countries Stand With the Push to Patent Life at WTO"-March 2000, available online: <http://www.grain.org/publications/reports/tripsfeb00.htm> [hereinafter GRAIN]

in the face of glaring realities. Such position can be compared to denying the existence of tension between trade and environment on a broader basis. An urgent and honest approach to address the tension would no doubt be in the best interest of both regimes.[386] It is hardly surprising however that because of the deliberate attempt to deny the conflict, little or no progress has been made so far in addressing it.

The TRIPs Agreement represents a "the third pillar of the world trade regime along with goods and services"[387] under the WTO scheme. It is a significant instrument of trade and trade policy, both of which affect biological diversity directly and indirectly.[388] For instance, the demand for timber, agriculture, wildlife and other pharmaceutical raw materials, not mention genetic engineering exploits, translate easily into pressure for over-exploitation of the biodiversity habitat. Therefore trade restrictions might be said to impact positively on sustainable development. Also, the reliance of the CBD on

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[386] It is not to say however that conflict is all there is to the two instruments. Admittedly, there are some areas of compatibility. For instance, both instruments permit some form of flexibility in national implementation. See "Relationships and Synergies", *infra* note 388 at 7-8. The TRIPs Agreement is consistent with requiring a minimum protection of intellectual property right among member states of the WTO. It is also flexible under article 27.3(b) in requiring a patent or *sui generis* protection of plant varieties within members' national laws, to mention but the two. The CBD amply allows members some flexibility not only on the subject of traditional knowledge, innovations, practices of indigenous and local communities, but also in the area of access to, and benefit sharing arrangement in relation to components of biological diversity. Also, the implementation of article 16 of CBD which creates IPR obligation on parties could be reconcilable with the notification requirements of Article 63 of the TRIPs Agreement-a development that could point readily to the information exchange collaboration between the WTO and WIPO, the agreement for which was formalised in 1995, even if not pursuant to article 63 of TRIPs. Generally, further areas of harmony between the TRIPs and CBD may not be too difficult to find, but those areas are substantially accidental and hardly deliberate, hence they may not have any enduring synergistic consequence.

[387] Ibid at 2.

[388] See "The Convention on Biological Diversity and Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS): Relationships and Synergies" UNEP/CBD/COP/3/23-Paper submitted by the CBD Secretariat to CBD/ COP 3 in response to decision of II/12 of COP 2 requesting the Executive Secretary to *inter alia, "liaise with the secretariat of the World Trade Organisation to inform it on the goals and ongoing work of the Convention on Biological Diversity and to invite the Secretariat of the World Trade Organisation to assist in the preparation of a paper for the Conference of Parties that identifies the synergies and relationship between the objectives of the Convention on Biological Diversity*

intellectual property rights for the achievement of its objectives with particular reference to article 16(5)[389] underscores the imperative for synergy between the two regimes. The CBD's emphasis on the traditional knowledge of indigenous and local communities, it is argued, can be supported by the intellectual property system, of which the most authoritative regulatory framework is the TRIPs. Although the appropriateness of the TRIPs regime in this regard may not be a matter for consensus, the role of intellectual property right in enhancing the value of traditional knowledge and integrating it into the benefit sharing arrangement under the CBD is not easily disputed. Just as TRIPs is to intellectual property matters, CBD is the most authoritative legal regime in relation to biological diversity. Intellectual property is central both to the CBD and TRIPs Agreement. Again, the concurrence of membership of the two instruments, perhaps more than any other factor compels a synergistic relationship between them.[390]

Concerns over the management of the relationship between the two instruments are gradually but surely finding expression under relevant institutional agendas. The second Conference of Parties Meeting of the CBD held in Jakarta, Indonesia in 1995 commissioned the Executive Secretary (of CBD) to, *inter alia*, liaise with the WTO in preparing a paper for the third COP that "identifies the synergies and relationships between the objectives of the Convention on Biological Diversity and the TRIPs

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and the TRIPs Agreement", available online: <http://www.biodiv.org/cop3/html/cop-3-23-e.htm> [hereinafter Relationships and Synergies].

[389] See UNEP/CBD/COP/3/22-a study by the CBD Secretariat for Third COP titled "Impact of IPR Systems on Conservation and Sustainable Use of Biological Diversity, and Equitable Sharing of Benefits From its Use". It focuses inter *alia* on intellectual property rights and Article 16(5) of the CBD [hereinafter Study on IPR].

[390] Ibid at 7. Almost all the members of the WTO are also members of the CBD.

Agreement".[391] The report of that study, which enjoyed the support of the WTO,[392] was presented by the CBD Secretariat to the third COP in Buenos Aires, Argentina in 1996 as a part of the foundation study on this significant but intricate aspect of the environment and trade interface. The report states that "the most crucial issue for the relationship between the Convention on Biological Diversity and the TRIPs Agreement appears to be whether and how to establish procedures for consultation and co-operation between the bodies associated with the two agreements."[393] The WTO's primary organ for trade and environment matters is the Committee on Trade and Environment (CTE),[394] part of whose mandate include the evaluation of the TRIPs Agreement,[395] concerns about which centre mainly on its relationship with the CBD. Issues concerning the inadequacy of intellectual property rights under the TRIPs Agreement with respect to indigenous knowledge as well as reservations over technology transfer continue to take the centre stage at the CTE deliberations. For instance, traditional and indigenous knowledge featured for discussion during some of the CTE Meetings. A number of countries have

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[391] "Relationships and Synergies, supra note 388.

[392] The CBD Secretariat collaborated with the WTO in the preparation of the report. The WTO had the benefit of commenting on an earlier draft of the report. As part of this collaboration the WTO made available to the CBD Secretariat, two background documents prepared for the WTO's CTE hitherto restricted. These two documents are (i) "Environment and TRIPs", accessible from COP as UNEP/CBD/COP/3/Inf.9 and (ii) Factors Affecting Transfer of Environmentally-Sound Technology: Note by the Secretariat, accessible from COP as UNEP/CBD/COP/3/Inf.10. Also exchanged was a crucial report of one of the CTE meetings wherein intellectual property rights were deliberated. This opened the vista of collaboration between the two organs even ahead of the recommendation and endorsement of such collaboration by the third COP.

[393] See Relationships and Synergies, supra note 388 at 7.

[394] In April 1994, at the approval of the Uruguay Round Negotiations, the Trade Ministers of the WTO in Marrakesh under the auspices of the WTO preparatory committee agreed to establish the CTE. The CTE was formally established after the commencement of the WTO in Jan. 1, 1995. The committee was vested with a broad based mandate covering all areas of multilateral trading system. It had the mandate "to identify relationship between trade and environment measures in order to promote sustainable development, and to make recommendations on whether any modification to the provisions of international trade system was required". For the first CTE report to the Ministerial Conference see, WT/CTE/1 Dated Nov. 12, 1996. Further readings on the activities and structure of the CTE are available online at: <http://www.wto.org/wto/environ/>.

proposed some reforms of the patent system as well as trade secrets including a *sui generis* right in order to promote indigenous knowledge and effectively implement article 8(j) of the CBD.[396] Unfortunately, the conclusions and recommendations of the CTE in its report to the Ministerial Committee in 1996 downplayed the issue of inherent conflict between the conservation of biological diversity under the CBD and the pursuit of so called "effective and adequate" protection of intellectual property rights under the TRIPs Agreement market economy approach. While acknowledging that more effort is required to review and determine the nature of the relationship between TRIPs Agreement and preservation of biological diversity, the committee appears to put a premium on compliance of members with the WTO rules over the preservation of biological diversity- - an indication that the will is lacking to genuinely address "the common concern of mankind".[397]

Similar to the developments at the CTE, the Conference of Parties (COP)[398] Meetings of the CBD, as the most authoritative decision making organ of the Convention has turned attention to the issue of synergy between the CBD and the TRIPs Agreement, particularly the issue of intellectual property rights and the objectives of the CBD.[399] Presently, the CBD secretariat has an observer status at the CTE.

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[395] The CTE work program was originally set out in 10 work areas. Item 8 of the work program is on the TRIPs Agreement.
[396] See WT/CTE/W/8;WT/CTE/M3.
[397] For more insight into the WTO deliberations on TRIPs and Biodiversity Preservation including analysis of the CTE report of Nov 1996, see Graham Dutfield, "The WTO, TRIPS and Biodiversity Conservation" available online at: <http://users.ox.ac.uk/'wgtrr/cte4.htm>.
[398] See article 23 of the CBD establishing the Conference of Parties.

The much-desired institutional communication has gradually been entrenched between the COP and the WTO's CTE, even though the details of that communication remain unclear. Both bodies are in agreement that the investigation and study of the relationship between the two agreements is at an early stage and must be sustained on an ongoing basis.[400] The WTO does not seem to match the concern with the initial enthusiasm shown by the COP. This may not be unconnected with the original and sustained attempt to deny the existence of conflict between the two regimes, mainly by developed countries. One possible problem arising from the vacuum created by lack of detailed "procedure for co-operation and consultation between the bodies associated with the two agreements" is a possible fading of the momentum to keep the issue on the agenda. For the COP, this momentum appears to have lost steam. At the recent COP 5 in Nairobi, Kenya[401], this issue was not on the agenda.

Curiously however, the CTE appears to have stolen the agenda from the COP,[402] a development that does not augur well for the CBD. Perhaps this turn of events is

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[399] See generally "Relationships and Synergies", supra note 388; see also Jeffrey P. Kushan, "Biotechnology and TRIPS Agreement; Key Issues for Implementation" available online at: <http://www.kipo.go.kr/english/apec/session5.htm>.

[400] The report commissioned under decision II/12of Second COP of the CBD required the Secretariat to "undertake a preliminary study which analyses the impact of intellectual property rights systems on the conservation of on biological diversity...to gain a better understanding of Article 16(5)..." describes the initial study as an attempt to "help move the debate beyond general discussions of IPR". For a text of the report see "The Impact of Intellectual Property Rights Systems on Conservation and Sustainable Use of Biological Diversity and on the Equitable Sharing of Benefits From its Use"-a Preliminary study., UNEP/CBD/COP/3/22. Also available online: <http://www.biodiv.org/cop3/html/COP-3-22-e.htm>. A major milestone in moving the study beyond the preliminary stage centres arguably around the ongoing review of Article 27.3(b) of the TRIPs Agreement which ironically is not at the instance of a direct initiative of the COP/CTE collaboration.

[401] The Fifth COP of CBD which held in Nairobi Kenya between May 15-26, 2000 did not feature the issue of the relationship between the CBD and TRIPs. This meeting was in the main concerned with the adoption the Biosafety Protocol. The Report of the Fifth COP and other related matters are available online: <http://www.biodiv.org/cop5/index.html>.

[402] Item 8 of the CTE mandate which deals with the relationship between the relevant provisions of the CBD and the TRIPs Agreement has consistently remained on the CTE agenda. Arising from its meeting of

inevitable in the light of the ongoing review by the TRIPs Council of Article 27.3(b) of the TRIPs Agreement, which primarily relates to patenting of life forms.[403] The review started in December 1999, four years after TRIPs' coming into force. The provisions of that article represent a compromise position (as a result of the initial controversy which the subject of patenting life forms generated during the Uruguay Round Negotiations on the TRIPs Agreement)[404]. It provides a sort of exemption in the interim such that at the end of four years of TRIPs coming into force the issue of patenting life forms will be revisited. The review and re-examination of the text of article 27.3(b) is to pave the way for its implementation (as reviewed), the deadline for which was slated for 1 January 2000. At the July 1999 session of the TRIPs Council Meeting, the issue of the relationship between the TRIPs Agreement and the CBD[405] was raised alongside the substantive subjects of patenting of life forms and the nature of an effective *sui generis* right system for protection of plant species contemplated under the text of Article 27.3(b)

June 29-30, 1999 the CTE accepted a proposal by ASEAN that its secretariat (i.e. CTE) present a factual paper on the relationship between the CBD and the TRIPs Agreement, in particular article 27.3(b) for the CTE in Oct. 1999. This was followed through in the meeting of Oct., 1999 and has consistently featured on the CTE agenda up to the ongoing review of article 27.3(b) of TRIPs Agreement. For further details see online: <http://www.wto.org/wto/environ/te029.htm>; see also <http://www.wto.org/wto/environ/te030.htm> for the report of adoption of CTE 1999 meetings and its (CTE) schedule for 2000 which still reflect the TRIPs/CBD relationship on the agenda. (The last two websites are the online versions of Trade and Environment Bulletin Nos. 28 & 29 respectively).

403 Article 27.3C(b) of TRIPs provides:

> Members may also exclude from patentability: (b) plants and animals and other micro-organisms, and essentially biological processes for the production of plants or animals and other than non-biological and microbiological processes. However, Members shall provide for the protection of plant varieties either by patents or by an effective *sui generis* system or any other combination thereof. The provisions of this subparagraph shall be reviewed four years after the date of entry into force of the WTO Agreement

404 That version is consistent with the European Patent Convention Model and it was sponsored by the EU as a compromise position between the US preference for outright patenting of life forms and its rejection by developing countries.

405 This issue was raised by India with overwhelming support from developing countries. India called for a re-examination of acceptability of patenting life on ethical grounds, recognition of informal system of innovation with regard to biodiversity as well as a reconciliation of TRIPs with the CBD. See GRAIN, supra note 385 at 4.

of TRIPs. Thus, from then, through a series of TRIPs Council Meetings[406] including the "Seattle and post-Seattle"[407] (third Ministerial Conference of the WTO) in December 1999 up to the last meeting of the TRIPs Council 21-22 March, 2000 and the next one scheduled for 26-30 June 2000[408] on the ongoing review of Article 27.3(b) of the TRIPs, the question of relationship between TRIPs and CBD has remained an on-going subject matter of discussion.

Indeed, the crucial subjects of patenting of life forms, the informal traditional knowledge of indigenous and local communities, as well as the nature of a *sui generis* system for the protection of plant varieties, cannot be meaningfully discussed without broaching the relationship between TRIPs and CBD. These issues constitute, in substance, the crux of the disagreement between the developing and developed countries. The inability of the ongoing review to reach a timely decision has resulted in the inevitable postponing of the implementation deadline[409] of 1 January, 2000. This is perhaps an indication of the inequitable auspices under which the TRIPs Agreement was negotiated originally.[410]

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[406] There have been a series of meetings of the TRIPs Council on the review of Article 27.3(b) which started in December 1998, continued through February, April, July, October and climaxed in the disrupted December 1999 Seattle Summit. Since December 1999 the Council has continued to meet on the same agenda. Its last meeting was on 21-22 March 2000, at which it scheduled to reconvene on 26-30 June 2000.

[407] The Third Ministerial Conference of the WTO in Seattle in the United States slated for Nov. 29-Dec. 3, 1999 was marred by protests organised by a coalition of non governmental human rights and environmental activist organisations who mobilised an overwhelming popular support for what was dubbed "The Last Demonstration of the Millennium". This was aimed at protesting the perceived insensitivity of the WTO to the dangers of globalisation, trade and environment interface as well as increasing deterioration of living standards in the developing countries. It is instructive to note that the part of the agenda of that aborted conference was the review of Article 27.3 (b) of the TRIPs Agreement. The protest reflects the concerns of developing countries in relation to those issues which has been followed in Post Seattle fora. For a reporter's account of the Seattle episodes and build up to the aborted summit, see *Vancouver Sun* 12 October, 1999 & 2 December, 1999.

[408] Not yet held at the time of this writing.

[409] The deadline for implementation of Article 273(b) is 1 Jan 2000. As a result of the difficulties in reaching an agreement on its review, that deadline is not feasible midway through the year. At the post Seattle meeting of the WTO General Council, on 17 December 1999, the Council adopted the strategy of continued consultation on the issues on the agenda while its members agreed to "'exercise restraint' with

It would then appear that the quest for synergy between the CBD and the TRIPs Agreement has dramatically arisen at the level of the TRIPs Council, which is a WTO forum. What remains of interest is whether the COP and CTE will seize the moment presented by the TRIPs Council's review of the text of Article 27.3(b) of the TRIPs Agreement and further the so-called continuing study of the relationship between the two regimes. As it stands, it would appear that the issue of the relationship between CBD and TRIPs is presently sustained within the context of the WTO, namely the TRIPs Council and the CTE. Despite the manifest activism of the developing countries[411], in revisiting the issue, the WTO forum may not be trusted to address it without the active participation of the COP.

The Fifth COP missed the timely opportunity to boost the efforts of developing countries directed at realistically addressing the relationship between CBD and TRIPs at the TRIPs

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respect to expiring deadlines". See GRAI,N supra note 385 at 5. See also WTO Secretariat, "General Council Defers Post Seattle Discussion Until Early 2000", WTO, Geneva 17 December 1999, *Bridges Weekly Trade Digest* Vol. 4 No.1 Jan., 2000 (available online at: <http://www.ictsd.org/html/weekly/story1.10-01-00.htm>).

[410] See Gervais, supra note 26 at 10-12; see also GRAIN, supra note 26 at 2.

[411] GRAIN reports that:

> Between the July and October (1999) sessions of the TRIPS Council, almost 100 developing countries signed onto a near dozen proposals to reform TRIPs as far as biodiversity and indigenous knowledge were concerned. ...These proposals were tabled in the WTO's General Council for Negotiation at the Ministerial. The African Group's position was the first and most substantial from the South. It proposed an extension of the deadline to implement the TRIPS 27.3(b) in the developing countries so that the review may proceed and conclude properly It also enumerated what Africa would like to see clarified through the review: that patents on life forms should be prohibited. See GRAIN, supra note 385 at 4.

This African position at the WTO Third Ministerial Conference at Seattle (30 Nov.-3 Dec., 1999) was formally submitted for deliberation at the TRIPS Council and forms the pivotal position of developing countries in the on-going review. For the Seattle position and the TRIPS Council position, see "Preparation for the 1999 Ministerial Conference; The TRIPS Agreement"-Communication from Kenya on behalf of the African Group. WTO, Geneva, WT/GC/W/302. 6 August 1999; see also "Statement by Kenya on Behalf of the African Group: Article 27.3(b) of the TRIPS Agreement"-Paper presented at the TRIPS Council, Geneva, 20 October 1999.

Council's ongoing review of Article 27.3(b) of the TRIPs Agreement. Presently, the WTO provides the momentum on the issue hence the need for the COP to reassert its contributions through necessary "consultations and co-operation" with the CTE and indeed TRIPs Council although the procedural details for this appears not yet in place save the COP's observer status at the CTE. It is doubtful if the COP's ability to "explore the complex relationship between intellectual property rights and biological diversity"[412] could effectively be achieved on basis of limiting COP's collaboration to the CTE only.[413] Since the COP's study recommends "...co-operation between the bodies associated with the two Agreements"[414], limiting the COP collaboration to the CTE is not a correct approach to the implementation of that recommendation. After all, it is trite that the TRIPs Council takes precedence over the CTE as "bodies associated with the two Agreements" (TRIPS and CBD). COP should be able to actively participate in the deliberations of the TRIPs council, more particularly where they concern matters material to the CBD.

The distrust over the sincerity of the WTO to genuinely address the tension between conservation of biological diversity and intellectual property rights stems from the WTO's free market ideology which on a simplistic analysis excludes the CBD's

[412] See "Relationships and Synergies", supra not 390 at 7.
[413] ibid at 9. There, the report describes "the CTE as the most appropriate organ for considering the relationships between the TRIPs Agreement and the Convention". This does not support the suggestion that "the most crucial issue for the relationship between the Convention on Biological Diversity and the TRIPs Agreement appears to be whether and how to establish procedures for consultation and co-operation between the bodies associated with the two Agreements". It is difficult to think about "the bodies associated with" the TRIPs Agreement without first and foremost considering the TRIPs Council ahead of the CTE which is not directly concerned with the TRIPs.
[414] Ibid.

environmental and social interest objectives.[415] The concern over the attainment of the objectives of the CBD *vis a vis* the TRIPs Agreement provisions on intellectual property rights constitute a rather sensitive aspect of the larger global apprehension over the trade and environment interface. This interface is, arguably, the single most important challenge to the success of the global trade regime under the WTO initiative at the present time. A realistic and concerted effort is needed to address the issue. Ideological distrust cannot do so, nor will a legalistic analysis. Such a realistic approach represents the best guarantee for both the preservation of the global world trade order and the conservation of biological diversity.

There seems to be no better auspices for addressing the whole issues than that presented by the ongoing review of the Article 27.3(b) of the TRIPs Agreement. Unfortunately, the dramatic manner in which the issue has been raised by the developing countries at both the WTO's Third Ministerial Conference at Seattle and the TRIPs Council meetings appears to have caught the COP and the CTE unawares. The lack lustre approach of the two bodies to this matter perhaps explains why they did not seem to foresee the present turn of events occasioned by the on-going review. Also unfortunate is the original idea of limiting the much desired collaboration between bodies associated with the agreements to just the COP and CTE (which has proven to be short sighted) given that the crucial question of the relationship between CBD and TRIPs has shifted to the TRIPs Council level. Under the existing approach, to forge a synergy between CBD and the TRIPs

[415] The linkage between environment and development compels the considerations of social interest even in the context of free market capitalism. The initial attempt to ignore this truth has been parochial and short-sighted.

Agreement, direct collaboration between the COP and the TRIPs Council has not been broached, even as crucial as the TRIPs Council is.

III. A BIODIVERSITY PROTOCOL: HOW VIABLE?

The controversy that dogged the negotiations of the CBD and the hurried compromise that paved the way for its dramatic adoption left certain significant issues unresolved satisfactorily and by so doing deferred their resolution to an auspicious time in the future. The end document, it has been observed, is riddled with contradictions. Given the dramatic circumstances of the build up to the Convention, it may be that nothing better could have been possible or reasonably expected.[416] Again, the complexity of the subject matter is such that could not really be dealt with in a single instrument. Therefore, it was obvious when the participants themselves made no pretensions to a perfect treaty.[417] Indeed any instrument resulting from intricate international negotiation process could hardly lay such a claim, let alone one that is saddled with a combination of sensitive and controversial subject matters as the CBD.

At the time of adoption of the CBD, the necessity for a protocol seemed not a matter of "if" but "when". What is perhaps surprising is that the controversy over intellectual property rights, the single most debated aspect of the CBD,[418] did not result in its

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[416] For a detailed account of the negotiations on the CBD and its eventual adoption in Nairobi and signature at the Earth Summit in Rio, in 1992, see supra notes 116-131 and accompanying text.
[417] See supra note 129 and accompanying text; see also annex C of *The Biodiversity Convention: A Negotiating History,* supra note 5 containing a list of the key actors to the negotiations of the Convention.
[418] Compare Mossinghoff, supra note 54 at 28 whose analysis insists that technology transfer was most debated. The view that intellectual property is the single most debated issue in the CBD negotiations is

assuming priority in the subsequent COP Meetings. It was only at the third COP that consideration was given to intellectual property rights in post convention deliberations.[419] Meanwhile, the second COP had by its decision of November 1995[420] resolved to develop a Protocol on Biosafety with specific focus on Trans Boundary Movement of Living Modified Organisms (LMOs).[421]

The expectation that an intellectual property protocol to the CBD would be the first protocol to the Convention may not have been misplaced especially since there was no consensus, strictly so called, on intellectual property rights in the Convention. It may however be a case of inadvertent wisdom that priority was not immediately given to the pursuit of such a protocol. In the light of the controversy that the subject generated during the negotiation, embarking on a protocol on same subject matter so soon after would possibly have had a counter effect on the gains that had been made already.

However, several years of studies and research including observations of the interactions between the Convention and other regimes on intellectual property rights have established a good basis for formulating a protocol.[422] The basis and desirability for a

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shared by McConnell. See generally McConnell, supra note 5. Either way, it will be difficult to talk about technology transfer outside the context of intellectual property rights.

[419] See COP decision III/17 of 1996.

[420] See COP decision II/5 of 1995.

[421] The Protocol, called the Cartegena Protocol on Biosafety to the Convention On Biological Diversity is now has been opened to signature by states and regional economic integration organisations from May 15 2000 to June 4 2001 pursuat to article 36 thereto.
For a text of the Protocol, see http://www.org/biosafe/BIODIVERSITY-PROTOCOL.htm

[422] The Montreal Protocol (1987) to the Vienna Convention (1985) on the Ozone Layer is cited as a model protocol whose evolution was premised inter *alia* on the proper recognition of the role of research and specialist studies in policy formulation. See Hurlbut, supra note 37 at 402.

protocol nevertheless do not mean that a protocol is what is needed. In fact, it is strongly doubted if a protocol is really appropriate as the following analysis will show.

It could be argued that seven years after the Convention's coming into force, such a protocol is not likely to be a threat to the other gains of the Convention. An intellectual property protocol to the CBD could therefore have been negotiated simultaneously with the Biosafety Protocol.[423] The completion of exclusive negotiations on a Biosafety Protocol is an indication that the CBD may be inundated with a patchwork or fragmented supplementary instruments. The Biosafety Protocol negotiations would have simultaneously provided the opportunity for a quicker confrontation of all the lingering concerns about intellectual property rights within the CBD framework. With that opportunity missed, it is doubtful whether the prospects of such a protocol could be realised in the foreseeable future. This is so given that the Biosafety Protocol which idea was mooted by the COP 1995 was only concluded in 2000, five years later. Even more, the concern is real when it is appreciated that the subject of biosafety is comparatively less controversial[424] than intellectual property rights. The inability to address the unsettled controversy surrounding intellectual property rights by a protocol or any other instrument may be one of lack of will or lack of the proper momentum or both. With regard to proper momentum, it would be difficult to address the lingering concern about

[423] Article 19(3) of the CBD makes a direct provision for a protocol on biosafety. This is outside its general provisions on amendment and protocol under article 29.

[424] Despite disagreements on certain matters of details, the hazardous nature of living modified organisms (LMOs) and their implication on biosafety as well as the need for caution in their transboundary movement and general handling were the basis of the Biosafety Protocol. These were not controversial issues as they raise question of obvious and common concern. See Gurdial Nijar, "Need For Bosafety Protocol Agreed Upon"; Third World Network Features available online at: <http://www.rz.uni-frankfurt.de/~ecstein/gen/biolib/373> of Feb., 12, 1996; see also Rebecca Goldburg, "Worldwide

intellectual property without the United States[425], which has expressed strong concern about intellectual property rights from the initial stage. However, not much is lost, as the necessity for such a protocol is dispensable and not persuasive.

An intellectual property protocol on biodiversity or a biodiversity technology protocol[426] would necessarily be drawn to further the objectives of the objectives of the CBD. There is a great deal of literature about the form or nature of such a protocol.[427] However, proponents of a biodiversity intellectual property model protocol make one fundamentally problematic assumption. And that is the assumption that the objectives of the CBD would be realised by just a protocol deriving from and within the confines of the framework convention. This does not follow. In fact, it is not feasible.

The factors that have made those objectives elusive are not completely a matter to be blamed on the text of the CBD *per se.* The deficiencies of the CBD need no restating. While its reliance on intellectual property rights may not be in issue, what is of strong concern is that it falls short of providing the requisite mechanism for the practical translation of intellectual property rights into achieving its objectives.[428]

Consensus For a Biosafety Protocol" available at Intellectual Property and Biodiversity Library online at: <http://www.rz.uni-frankfurt.de/~ecstein/gen/biolib/386> of Feb., 15, 1996.

[425] On the US status in relation to the CBD, see supra note 155 and accompanying text.

[426] The protocol proposed by Hurlbut is in the form of Biodiversity Technology Protocol See Hurlbut, supra note 37 at 402.

[427] Ibid at 402-407. In a nutshell Hurlbut's proposal is for "a special new category of intellectual property principles for products made with biodata from pristine ecosystems. Such patents should be treated differently from normal patents on commercial products and processes, and should take account of the special situations and needs of developing countries." The is compared to the approach taken by the 1989 Treaty on Intellectual Property in Respect of Integrated Circuits (IPIC) which recognises the topography of integrated circuits as a new category of intellectual property rights. For the IPIC see supra note 184.

[428] See CBD arts. 15, 16 and 19 which have been referred to as the heart of the convention. However, the language of their respective provisions has been described as "impressively opaque" and as falling short of

Notwithstanding this deficiency of the instrument, it should be appreciated that it is not an intellectual property convention. Furthermore, intellectual property rights do not relate directly to the conservation of biological diversity; rather they form part of the economic and social context in which conservation is fostered.[429] The economic and social context relied upon by the CBD in the pursuit of its objectives, namely the socio-cultural and economic context of indigenous peoples and their knowledge, is not easily acceptable to the Western ideological concept of intellectual property rights. Because of this ideological disparity, the resultant stalemate is not necessarily and exclusively because of a flaw in the text of the CBD to be remedied by a protocol. There is a very significant limit to which a protocol can "fix" the CBD with respect to intellectual property rights. What may be needed is a purposeful resolution of the ideological conflict. And the groundwork for that resolution is well founded at the level of customary international law principles, which is amply endorsed under the CBD itself.

IV. SOVEREIGN RIGHT TO NATURAL BIORESOURCES

Although the need to conserve biological diversity is construed by the international community as a "common concern of humankind"[430] under the CBD, biological diversity *per se* does not have the status of common heritage of mankind.[431] This is why the CBD

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proposing a regime that will assign the resulting intellectual property rights. See Horton, supra note 9 at 21-2; see also Shayana Kadidal, supra note 310 at 226 & ns.18 and 227.

[429] See Tarasofsky, supra note 40 at 149.

[430] Paragaph 3 of the preamble to the CBD affirms "that Conservation of biological diversity is a common concern of humankind."

[431] Biological diversity is not regarded as a global commons under the CBD. The CBD recognises that because biodiversity exist within the exclusive territories of nations it (biodiversity) is subject to exclusive ownership and appropriation by the resource owning countries, and not common heritage of mankind which otherwise would be subject of global stewardship for collective appropriation by all. For insight into

is premised on the principle of permanent sovereignty of nations over their natural resources.[432] The right of permanent sovereignty over natural resources is a derivative of a more fundamental principle of state sovereignty.[433] By a proper exercise of their right under this principle, national governments are entitled to determine the proprietary status of biological resources, including traditional knowledge and associated interests thereto. Because national governments are closer to the indigenous and local communities, they are in better position to evolve an intellectual property rights policy that recognises the socio-cultural and economic context of traditional knowledge. The principle of permanent sovereignty over natural resources will have no bearing if it cannot be exercised by states in the most appropriate context in order to pursue objectives such as the conservation of biological diversity and equitable sharing of the benefits of genetic materials.[434] In any case, the obligation of parties under the CBD, which requires access

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the principle of Common Heritage of Mankind (CHM), see B. Larshan & B.C. Brennan, "The Common Heritage of Mankind in International Law" (1983) 21 Colum. J. Transnat'l L. 305.

[432] See the CBD arts 3 and 15(1) for the restatement of the principle of permanent sovereignty of nations over their natural resources. For a general reading on this principle see, I. D. De Lupis, *International Law and Independent State* 2nd ed.(Aldershot: Gower, 1987) at 3-24; A Larson, C.W. Jenks et al, *Sovereignity Within the Law* (Oceana Pub. Inc., 1965) at 20; G. Elian, *The Principle of Permanent Sovereignty Over Natural Resources* (Alphen aas den Rijn: Sijthof & Noodhoff, 1979) at 14; P. Malanczuk, ed., *Akehurst's Modern Introduction to International Law* 7th ed. (London: Rougtledge., 1998) at 17. In December 1960, the United Nations General Assembly adopted the famous Declaration for the Granting of Independence on Colonial Peoples-"The Charter of Decolonisation" Through several amendments, the charter now entrenches the principle of permanent sovereignty of colonial peoples over their natural resources. This principle is associated with the quest for a New International Economic Order (NIEO). The NIEO which enjoyed the sympathy of the UN through the United Nations Conference on Trade and Development (UNCTAD) had been championed by most developing countries under the aegis of G77 as an economic bridge-gap measure to North –South economic imbalance. This imbalance was aggravated by the exploitation of resources of colonised peoples by the Western colonial powers. For a perspective on the NIEO, UNCTAD and the developing countries see generally Akinsanya & Davis, "Third World Quest for a New International Economic Order: An Overview" (1984) 33 Int'l. &. Comp. L.Q. 208. See generally Sell, supra note 26.

[433] On the nexus between state Sovereignty and right of permanent sovereignty over natural resources, see particularly Elian ibid at 35; see also C. Schreuer, "The Waning of Nation State: Towards a New Paradigm for International Law" (1993) 4 EJIL 171 at 472.

[434] It needs to be acknowledged that sovereignty itself is not absolute. However, the exercise of right of permanent sovereignty over biodiversity natural resources in the context of the CBD acknowledges that important fact, hence nations are not to unreasonably withhold access to genetic material under that convention. See CBD art. 15(2); see also P. de Cuellar, "Sovereignty and National Responsibility" (1991)

to genetic materials and technology transfer on a negotiated basis, ensures that the exercise of the rights is not abused or unfettered.[435] An external prescriptive or normative yardstick of intellectual property rights negates the legitimate right of states to permanent sovereignty over the management, allocation and appropriation of their natural biodiversity resources. A logical exercise of the right of permanent sovereignty over natural resources will give expression to an appropriate ideological perception of intellectual property rights among resource owning developing countries without undermining any other ideological views.

One example of the way in which national legislation can be used to accommodate aspects of traditional knowledge is through petty patents. Petty patents, sometimes known as utility models[436] generally protect low level innovations or less "sophisticated developments"[437] which otherwise fail to meet a higher standard of "inventive progress"[438] or inventive step required for full utility patent. It should be noted that just like a utility patent, a petty patent applicant would need to satisfy all the three tests of

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The Review (International Commission of Jurists) no.47 at 24-27. *Contra* diverse academic opinion on the debate over the decline or resilience of modern state. Some of the arguments seem to suggest that post cold war globalism and international trade under the GATT/WTO framework erodes the sovereign right of states in so many respects. Sovereign right by extension includes the right of permanent sovereignty over natural resources. For views and counter views in what has been dubbed the "Great Sovereignty Debate", See the following: Quellette & Livermore supra note 374 , O. Schachter, "The Decline of Modern State and its Implication for International Law" (1997) 36 Colum. J Transnat'l L. at 7; J. O. McGinnis, "The Decline of Western Nation State and the Rise of Regime of International Federalism" (1996) 8 Cardozo L. Rev. 903; J. H. Jackson, "The Great Sovereignty Debate: United States Acceptance and implementation of Uruguay Rounds" (1987) 36 Colum. J. Transnat'l L. 157; Shreuer ibid; M. Koskenniemi, "The Future of Statehood" (1991) 32 Harv. Int'l L.J at 397.

[435] See CBD arts 15 and 16.

[436] Gollin. supra note 32 at 172.

[437] Ibid at 173.

[438] Sayana Kadidal, supra note 276 at 398 & n. 94.

patentability. This difference is that the inventive step required is less than the higher standard of non-obviousness.[439]

Inherent in this approach is an acknowledgement that traditional knowledge does not qualify for a utility patent right on the merits, and that the standard of patentability is exclusively within the formal criteria. However, what this approach has in its favour is that petty patent is undisputed regime of intellectual property rights.[440] Nevertheless, a minor draw back is that such patents are limited to the issuing countries and not subject to international agreement with regard to a reciprocal recognition[441].

Section 2 of the Industrial Property Act of Kenya, 1989[442] makes provision for an intellectual property right in the form of a utility model for "herbal formulations". This progressive approach is a clear instance of a national initiative designed to accord recognition to traditional knowledge, given that "herbal formulations" constitute the mainstay of traditional medicinal knowledge and practices, albeit shying away from making a direct reference to traditional knowledge. In Nigeria, a draft industrial property law[443] has incorporated the concept of utility model[444] as a progressive and creative response to "onerous requirements of patentability", because that approach "affords some

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[439] Ibid.

[440] It is often traced to Germany (called *Gebrauchsmustern* in German) and associated with patent systems originally modeled on that of German Second Empire and identified with underdeveloped colonial nations inheriting the German-model patent providing for the petty patents on incremental improvements for innovations that otherwise fall short of German patent standards. Ibid at 389. Petty patent has however gradually been recognised as an intellectual property regime beyond the limited sphere of its origin.

[441] Gollin, supra note 32 at 173 however describes this drawback as "a fundamental weakness of petty patents".

[442] An excerpt of this Act including a text of section 2 provisions is available online at: <http://user.ox.ac.uk/~wgtrr/kenya.htm>.

measures (sic) of protection to inventions which cannot satisfy the stringent tests of patentability".[445] Under the Nigerian initiative, a "utility certificate" can issue even if inventive step is lacking.[446] This is aimed at protecting local innovations the bulk of which are within the sphere of traditional knowledge.

The advantages of a national approach would appear to diminish by some concerns and reservations about its practicability particularly in the face of globalisation. Part of the concern is that the approach is likely to lead to chaotic regimes of intellectual property rights, which would not be good for trade. Also, given the level of poverty in most developing countries, it does not seem feasible that national governments would shun the enticements offered by those seeking access to their biodiversity wealth on the basis of a deliberate policy to protect traditional knowledge, and other notions of intellectual property rights. Thus, national governments may be susceptible to compromise those ideals in the light of an unavoidable competition to short change rival genetic resource exporting counterparts. This is a development those who seek access to those resources may be too willing to take advantage of. Therefore the commitment of individual national governments in this regard may not be guaranteed.

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[443] The Draft Law is an appendix to the Working Paper on the Reform of Industrial Property Law by the Law Reform Commission in Nigeria, 1990 at 214-342 [hereinafter the Draft Law].
[444] Ibid section 99.
[445] See A.Oyewunmi, "The Patent System and Transfer of Technology in Nigeria" in Fagbohun & Adewopo, eds., *Developments and Reforms:Nigeria's Commercial Laws* (Lagos: Lagos State University, 1998) 78 at 84.
[446] Ibid; see also section 99 of the Draft Law, supra note 445.

Perhaps in appreciation of these and other facts, attention is increasingly being turned to regional initiatives[447] by bioresource provider countries through which they collectively seek some form of regime to compensate for native species and give recognition to traditional knowledge. As early as June 1992, soon after the CBD's adoption, but before its coming into force, Central American leaders passed a non binding resolution supporting passage of legislation limiting access to genetic resources in the Isthmus. This was the first regional initiative after the CBD aimed at a restrictive legislation to accommodate local and national interests in dealings with genetic materials.[448] The increasing awareness of biodiversity and its potentials in that region is not unconnected with this regional initiative.

In November 1999, the Organisation of African Unity (OAU) adopted a model legislation for the recognition and protection of local communities, farmers and breeders, and for regulation of access to genetic materials. The final version of this legislation, which was prepared by the Scientific, Technical and Research Commission of the body, has just been ratified. In one commentary, the law is said to "break new ground in establishing a connection between resources and innovation, defining rules on access and farmers' rights, and devising a system to protect the intellectual property rights of breeders in the plant varieties they create."[449] This law provides a framework for harmonising the

[447] There is no intention to delve into the details of the emerging regional initiatives here. That in itself constitutes a subject of independent study.
[448] For a brief overview of the Central American initiative, see Powers, supra note 45 at 120 & n.91-95; see also supra note 452 and the accompanying text.
[449] For a review of the OAU model law, see Frank Seuret & Robert Ali Brace De La Pierriere, "Africa Defies Licences for Life" *Le Monde Diplomatique*, 20 July 2000.

position of African countries in most matters of concern to biodiversity and access to genetic materials including intellectual property rights.

However, as much as the national initiatives may have some drawbacks, they are significant in so many respects. They provide the foundation for the articulation the regional agendas which are fast evolving. More importantly, they provide models and insights for addressing other details incidental to the recognition of traditional knowledge, which may easily be overlooked when initiated from a larger regional approach. Moreover, informed national initiatives and consciousness within a regional block are indispensable to the success of a regional approach.

Furthermore, despite the fact that national initiatives are at instance of national governments, a reciprocal or bilateral relationship between initiating governments and their partners for instance with regard to recognition of petty patents is not foreclosed. In fact, it is encouraged under the negotiated access to genetic materials and technology transfer provisions of the CBD. It is not likely to be different in a regional setting. Since the TRIPs Agreement made no provisions regarding petty patents, it will be interesting how it will react to such bilateral and reciprocal or even regional scenarios. Arguably, the blanket reference to "unreasonable restraint of trade"[450] will be difficult to invoke here.

A national or regional law that properly accords adequate recognition to traditional knowledge is more in conformity with the provisions of article 16(5) of the CBD. This contrasts with an international intellectual property regime that runs counter to the

objectives of that Convention because of the regime's inability to accommodate a variant ideological concept of intellectual property rights. Such a national law approach does not detract from the obligation of states to negotiate access to genetic materials, neither does it negate the right of technology owning states to express their own terms of technology transfer based on their own perspective on intellectual property rights. A national law approach premised on the principle of permanent sovereignty over natural resources will even be ahead of the CBD in one particular respect. The CBD emphasises compensation without coming to terms with the reality of intellectual property rights due to indigenous knowledge.[451] However, a national government approach in the exercise of right of permanent sovereignty to natural resources is not constrained from according intellectual property status to traditional knowledge even on the basis of discovery alone, for example. This will secure control of biological resources for indigenous people as opposed to mere compensation, which undermines the importance of indigenous knowledge and provides license for unsustainable exploitation.[452] Moreover, there is no

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[450] TRIPs art. 8(2).

[451] Yano, supra note 31 at 446-447 argues that the idea of compensation of indigenous people is geared toward the preservation of biological diversity of the native habitat rather than direct compensation of indigenous people for the use of their knowledge. Also the CBD would seem to premise the need for compensation exclusively on the basis of ownership of biodiversity with little regard to intellectual property that may attach to the indigenous peoples' exploration of biological resources.

[452] One globally acclaimed pioneer bioresource management revolution cited in an overwhelming number of literature in this field is the agreement between the United States Pharmaceutical giant, Merck & Company and the Government of Costa Rica (through a non-profit organisation called National Institute of Biodiversity or Instituto de Biodiversidad Nacional (INBio)). INBio represents a leading light in the Costa Rican exemplary biodiversity preservation effort in the whole of Central America. It undertakes to classify all of Costa Rica's estimated one half million of plants and animals which is said to represent 5% of the world total, out of which only 15% have been identified. INBio, contracted under the agreement to grant Merck exclusive access to its (IMBio's) collection of this wild varieties for purpose of prospecting. In consideration, Merck was committed to initial payment of the sum of US$1 million and a certain amount of royalty speculated to be in the range of 2-3% of any useful medicinal and/or agricultural product arising from the IMBio samples. Other incentives in this agreement ranged from re-investment into the bioresource preservation projects as well as personnel training and exchange including other Research and Development initiatives. This agreement has been hailed in several quarters. It has been described as "the first of its kind in the world to recognise a nation's proprietary right over its genetic resources". However, a fundamental flaw of this agreement is that all patent and intellectual property rights to all the products

satisfactory means of valuing indigenous knowledge or biological diversity itself. Both would seem to be invaluable and cannot be appropriate matters for any adequate compensation, although as objects capable of being stolen or misappropriated, they could be subjects of reparation.[453]

(i) INDIGENOUS/LOCAL PEOPLES VS NATIONAL GOVERNMENTS

The exercise of the right of permanent sovereignty of states over natural resources for the purpose of vesting intellectual property rights in indigenous knowledge raises fundamental issues with regard to the relationship between a state and its indigenous population. The CBD makes reference to indigenous and local communities/populations and does not define or make distinctions between the expressions.[454] The relationship

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developed under the agreement vest exclusively in Merck. The Agreement is consistent with compensation principles. Even then, its provision for sharing of royalty applies to a very insignificant margin. It falls short of acknowledging that intellectual property right that is inherent in the effort of IMBio and the indigenous knowledge that inevitably provides insight into therapeutic significance of the species. Although the IMBio model is a welcome attempt at equitable sharing of bioresource benefit, it undermines the intellectual property value to indigenous knowledge by its undue emphasis on compensation. For discussion on the Costa Rican Merck/IMBio Agreement see the following: Rodrigo Gamez et al, "Costa Rica Conservation Program and National Biodiversity Institute (IMBio)"and Ana Sittenfeld & Rodrigo Gamez, "Biodiversity Prospecting By IMBio" in *Biodiversity Prospecting,* supra note 14 at 53 & 69 respectively; see also Powers, supra note 45 at 120-3; Baer, supra note 66 at 280-1.One important point here is that the Costa Rican initiative predated the coming into effect of the CBD and it was at the behest of a regional Central American leaders resolution in Managua, Nicaragua on June 6, 1992. See supra at p.133. By this time however the CBD has been adopted but has not come into force. The agreement between Merck and IMBio was however entered into in 1991.

[453] Compare Yano, supra note 31 at 479-487 making a case for repatriation of stolen indigenous knowledge which he likens to stolen native artifacts. See generally Barry S. Mandelker, "Indigenous People and Cultural Appropriation: Intellectual Property Problems and Solutions" (2000) 16:2 CIPR 367.

[454] See para. 12 of the preamble to the CBD. See also arts. 8(j), 17(2). The UN Draft Declaration on the Right of Indigenous Peoples contains no definition of indigenous peoples. The sensitivity or politics of definition of indigenous peoples raises the question of self-determination and territorial independence by indigenous peoples against majority settler states within which they have been submerged. The 1982 International Labour Organisation (ILO) Convention on Living and Working Condition of Indigenous Population used both "people" and "population" with reference "indigenous" as a way of avoiding the argument for self determination and territorial independence. The Working Group consistently adopted the use of "Indigenous Population" as a term of reference to distinct groups in a modern nation state. For general insight into the indigenous peoples in the context of international law and miscellaneous conventions including the controversy of definition, see Stephen C. Perkins, "Researching Indigenous

between national governments and their local and indigenous peoples is complex. Such a relationship is usually a result of a nation's socio-economic, historical and political experiences. A national government's relationship with its indigenous peoples, or to a lesser extent, its local communities, is often fraught with mutual suspicion. Nigeria, for example, presents an extreme case where several decades of oil exploration by multinational companies, backed by military governments, have left most of the oil producing communities in the Southeastern and minority Niger Delta States in environmental ruin. Interestingly, under the Federal Constitution of that country, the Federal Government appropriates revenue from oil with little or no considerations to the oil producing communities and states, who are left to bear the environmental hazards from oil exploration. Frequent demand by the local oil producing communities to manage their natural oil resources has often led to protest, usually suppressed with military force by the government. One of such incidents contributed to the suspension of Nigeria from the Commonwealth at one time.[455] The increasing national and international consciousness toward the rights of indigenous peoples is an indication of some aspect of this tension.[456] However, given the communal nature of indigenous knowledge and the

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Peoples Rights Under International Law"-available at: <www.rci.rutgers.edu/~sperkins/ipr2.html>; see also S James Anaya, *Indigenous Peoples in International Law* (New York: Oxford Press, 1996).

[455] In 1995 an environmental and minority rights activist and writer, Ken Saro Wiwa, from the Ogoni minority ethnic group in the oil producing Rivers State of Southeastern Nigeria was hanged by a military tribunal under the government of Nigerian dictator General Sani Abacha for activities associated with the Late Saro Wiwa's protests against environmental degradation by multinational oil corporations particularly, Royal Dutch Shell. Wiwa had formed an association called Movement for the Survival of Ogoni People (MOSOP). He was from the Ogoni ethnic stock, which is host to Shell Oil Corporation, whose activities in Ogoniland were perceived as a serious threat to the survival of the Ogonis because of environmental degradations. Wiwa's death by hanging led to the suspension of Nigeria from the Commonwealth up until 1999 and an international boycott of Shell gas stations and products by persons sympathetic to the cause of the local oil producing communities in Nigeria.

[456] The last decade has recorded an increase in the activities of indigenous and local peoples in different geopolitical sections of the globe. The rallying point of these movements appears to be the perceived mistreatment of members of this class by their respective national governments. Complaints often centre around human rights abuse, denial of the right of self-determination, misappropriation of natural resources

complex nature of traditional land tenure systems with specific regard to bioresource habitats, the national government's role as policy formulators and executors assumes a critical and complex dimension.

Because of the sovereignty of the national government, it is in the position to shield its indigenous and local communities from external predatory influences adverse to their traditional knowledge in the bioresource enterprise. Also, it has to act as a just arbiter in determining the title and framework for allocation of benefits of biological resources arising from communal efforts. In addition, the CBD expects national governments as contracting parties to encourage those lifestyles and traditional practices of the local and indigenous communities that promote or enhance the objective of biodiversity preservation. Since not all traditional practices and lifestyles of indigenous and local communities actually promote the objectives of biodiversity conservation, the imperative for a pragmatic national government policy approach in this regard becomes compelling. The nature of the relationship of indigenous and local communities with the ecosystem is a reflection of the socio-cultural and economic context of their experiences. Therefore, national governments are not to act in a manner that will be insensitive to their peoples' experiences. In all of these considerations, every nation has its own peculiar circumstances. Securing national government policy latitude that accommodates an

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and denial of democratic representation. This has brought about global mobilisation of the affected peoples by various non-governmental organisations which have succeeded in keeping these issues in the consciousness of the international community. Noteworthy here is the activity of the UNPO-Unrepresented Nations and Peoples Organisation. For an insight into the covenant and principles of this organisation, see: J.A. Ryan, ed., *Unrepresented Nations and Peoples Organisation Year Boook Yearbook, 1997* (The Hague; London; Boston: Kluwer Law International, 1998). This association was founded in Estonia in September, 1990. To date there is a total of 49 unrepresented peoples officially registered with this body, all of which have issues with their national governments. The Ogonis are listed as 37th in the list. For an overview of the history of this 500,000 minority ethnic group of the Nigerian Niger Delta see ibid at 125-126.

ideological approach to intellectual property rights, which is harmonious to indigenous and traditional interests is one major step. It leads to other crucial considerations at the domestic level, namely, harmonising and evolving policy initiatives capable of attaining the CBD objectives and without sacrificing the expectations of the indigenous and local communities. Irrespective of the peculiarity of a national government's relationship with its indigenous or local communities, the CBD vests the responsibility for the management of biological resources in national governments whose sovereignty in that regard it acknowledges.[457] And since there can be no two sovereigns in one political unit, the manner of distribution, management and sharing of natural resources are to that extent, internal affairs of states. However, the usual tension associated with the management and sharing of natural resources has gradually attracted the attention of the international community, where considerations for equity with regard to indigenous peoples have become a matter of interest.[458] It behoves national governments to be pragmatic in dealing with questions of equity and benefit sharing of genetic resources among their local and indigenous populations.

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[457] Article 15 of CBD provides: "Recognising the sovereign rights of States over their natural resources, the authority to determine access to genetic resources rests with national governments and it is subject to national legislation".

[458] The initiative of The International Society of Ethnobiology produced the now famous "Belem Declaration" in Brazil in July 1988, which has been described as "the first international document specifically calling for just compensation of native peoples for their knowledge and legal defence of indigenous intellectual property rights." Also United Nations Project on Indigenous Populations adopted The Draft Declaration on the Rights of Indigenous Peoples. Article 29 vests indigenous peoples with right of full ownership and control of cultural and intellectual property associated with genetic resources including seed, medicines, knowledge, of properties in flora and fauna etc. The text of this Declaration is available online: <http://www.ecouncil.ac.cr/indig/convention/undeclar.htm>. The elevation of indigenous right over biological and natural resources to the international level and consciousness represents a potential conflict with the sovereign right of states to their natural resources (the discussion of which is outside the scope of this project). The Sovereignty of states is acknowledged under the UN Charter of Decolonisation and the CBD. For discussions on the Declaration of Belem and UN Draft Declaration on the Right of Indigenous People, see the following: Posey, supra note 19 at 45, Tarasofsky, supra note 40 at 151; D. Hyndman, "Conservation Through Self Determination: Promoting the Independence of Culture and Biological Diversity" (1994)53: *Human Organisation* 269 at 302.

(ii) WHAT MANNER OF *SUI GENERIS* RIGHT?

Generally, traditional knowledge does not qualify for intellectual property protection under the current formal parameters.[459] This is not unconnected to the inability of those parameters to accommodate informal practices, which form the *modus operandi* of traditional knowledge. Again, the point has been made earlier that ideological conflict is at the root of this disparity. Because there is a consensus that intellectual property rights provide a good incentive for conservation,[460] and are a platform for rewarding the efforts of indigenous and local communities, the search for an appropriate legal mechanism to "upgrade" traditional knowledge to an intellectual property status has been on-going among various interests. This search has become extremely important in view of the numerous references to traditional knowledge in the CBD and the inherent potential for translating those provisions to the advantage of the custodians of the knowledge. Indeed, the emergence of the CBD appears to signal an era of regarding traditional knowledge of indigenous communities as "global intellectual commons".

Three points need to be made. One is that the attention directed to this search amounts to an admission that traditional knowledge does not of itself constitute intellectual property. The second is that intellectual property rights are taken as defined by the western ideological and formal yardstick. And third, it is assumed that intellectual property is not a subject matter of national law. None of these, in my view, is correct.

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[459] See text accompanying notes 298-301; see also UNEP/CBD/COP/3/22, supra note 392 para. 43 at 9.
[460] Ibid para. 44.

In a bid to find a suitable legal mechanism to accommodate traditional knowledge, a number of proposals have been made regarding some forms of quasi or *sui generis* intellectual property rights. These include schemes that would confer property rights over biological information contained in genetic resources to countries and communities of origin.[461] A case has also been made for a "seed tax" on the sales of crop varieties to be channelled to countries/communities of origin of genetic resources.[462] Other forms include access and benefit sharing arrangements over genetic resources.[463] A more persuasive suggestion is that requiring disclosure in patent applications of the country and community of origin for genetic resources and the informal knowledge used in developing an invention.[464] There is also a proposal requiring a restriction in the ability of those who have access to genetic resources from gaining exclusive appropriation of the intellectual property protection over derived products.[465] These are not exhaustive. There are so many other proposals for *sui genris* intellectual property rights aimed at aimed at

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[461] See J. H. Vogel, *Genes for Sale: Privatization as a Conservation Policy* (New York: Oxford University Press, 1994); see also "Study on IPR", supra note 389 para. 50 at 10.

[462] Ibid.

[463] Ibid para. 51(a). This option is linked to the implementation of Article 15 of the CBD which makes provision for terms and condition for access to genetic resources. It is an approach favoured by many countries presently; see also UNEP/CBD/COP/3/20.

[464] See "Study on IPR", supra note 389 para. 51(b) at 11. See M. Gadgil & P. Devasia, "Intellectual Property Rights and Biological Resources: Specifying Geographical Origins and Prior Knowledge of Uses" (1996) 8 *Current Science* 69. The conditions for this disclosure differ among the various proponents of this approach to intellectual property rights for traditional knowledge. What is quite persuasive about this option is that it is capable of enhancing the value of traditional knowledge and is reconcilable with the provisions of Article 8(j) of the CBD. For a review of some modalities for the implementation of this system, see UNEP/CBD/SBSTTA/2/7--A CBD, Secretariat document titled "Knowledge, Innovations and Practices of Indigenous and Local Communities". It is however gradually becoming a practice by applicants for patents involving the use of biological material derived from plants and animals to mention the country of origin of those materials as well as to make reference to indigenous or traditional associations or uses as prior art. See A. Sukhwani, "Intellectual Property and Biological Diversity: Issues Related to Country of Origin"-Paper prepared for the Secretariat of the Convention on Biological Diversity (1996) and cited by "Study on IPR" ibid. It should be noted that in the famous neem patents, the Indian origin of the neem tree is directly or indirectly acknowledged in virtually all neem related patent applications.

[465] The possibility for this is purely contractual and consistent with the Article 15 of the CBD. It has room for accommodating various possibilities arising from contractual latitude.

accommodating traditional knowledge even with reference to other regimes of intellectual property rights[466]

One common feature of these proposals is that they put emphasis on compensation and give little or no consideration to the nature of traditional knowledge as possessing capacity for intellectual property protection on its own merits. All of these forms represent *sui generis* intellectual property rights in their various peculiar ways though they lack details regarding their implementation.[467] For some, it may be possible to relate them to the provisions of the CBD itself[468], whereas others may require the creation of a protocol under the CBD, which could provide for the fine details. Generally, these forms of *sui generis* rights do not acknowledge the ability of national governments to create or confer intellectual property status on traditional knowledge, a possibility that is not foreclosed under either the WIPO or most importantly, the CBD itself.

The conferment of intellectual property rights on traditional knowledge, by national governments in exercise of the right of permanent sovereignty over natural resources, does not create a *sui generis* right. It is consistent with the traditional notion of intellectual property rights as a subject of municipal law.[469] This should be distinguished from a *sui generis* right whether arising under the interpretation of relevant articles of the

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[466] One proposal that refers to trademark is the proposal for development of appellations of origin for products of traditional knowledge or practices. For discussions on this, see "Study on IPR, supra note 389; see also Gollin, supra note 32 at 178.
[467] Ibid.
[468] Arguably, the *more* appropriate provisions of the CBD for this purpose are Articles 15 and 8(j). Contrast the provisions of those Articles with Articles 3 and 15(1) which endorse the right of permanent sovereignty of nations over their biological resources.
[469] See supra note 75 and accompanying text.

CBD or independently created by protocol.[470] The national law approach is not a *sui generis* right because it is not evaluated from an external parameter of intellectual property rights. It reflects a legal expression through the medium of the municipal law of their sovereign state of how the people value their traditional practices and knowledge deriving therefrom. And it represents the basis of their negotiation with interested parties for the purpose of appropriating the benefits arising not only out their natural resources but also their own knowledge or discovery of therapeutic or other values to those resources. On the other hand, a *sui generis* right is so called because it does not stand independently except in comparison to external intellectual property criteria. Not able to fit into those criteria, it is described as *sui generis.* This approach operates outside national laws and only recognises intellectual property rights to traditional knowledge on a concessionary basis, often for purposes of compensation. This is not entirely acceptable.

Another flaw of the *sui generis* right for traditional knowledge proposed within the framework of a protocol is that since the CBD or any future protocol, for that matter, is not an intellectual property right convention/protocol, it is doubtful if a *sui generis* intellectual property right could practically apply outside the most authoritative legal regime on intellectual property right--the TRIPs Agreement. A *sui generis* intellectual property right may not satisfy the requirement of the TRIPs Agreement, particularly article 8(2) under which a lower intellectual property watermark may be interpreted as an

[470] See an outline for a proposed biodiversity technology protocol for products made with biodata from pristine ecosystems suggested by Hurlbut, supra note 37 at 402. Regarding various proposal for *sui generis* intellectual property rights, see Gollin, supra note 32 at 178; see also "Study on IPR", supra note 391 at 10-11.

unreasonable restraint of trade. A biodiversity intellectual property right, designed to facilitate the objectives of the CBD, must be integral to the broader global framework on intellectual property rights i.e. the TRIPs Agreement.

The analogy for a *sui generis* intellectual property right for biodiversity is made to the Treaty on Intellectual Property in Respect of Integrated Circuits (IPIC),[471] which created a new category of intellectual property rights covering the topography of integrated circuits. The treaty was entered into in 1989, but has now been incorporated into the TRIPs Agreement.[472] This is an indication that no effective intellectual property right treaty under the extant WTO/GATT scheme can stand on its own outside the TRIPs Agreement. Save for its incorporation into the TRIPs Agreement, it would be difficult for states to give effect to the IPIC without running afoul of the TRIPs.

Similarly, it is impossible to attain the cardinal objectives of the CBD without being frustrated by the TRIPs Agreement. It does not seem to make a difference whether a biodiversity protocol creating a *sui generis* intellectual property regime is contemplated or a national government determination of biodiversity intellectual property right in exercise of sovereign right over natural resources. The linkage with the TRIPs Agreement will be inevitable if the objectives of the CBD can be achieved through either of these approaches. It is therefore not surprising that at the ongoing review of Article 27.3(b) of the TRIPs Agreement which requires member states of the WTO to grant intellectual property rights over plant varieties "either by patents or by an effective *sui*

[471] Supra note 184.
[472] See TRIPs arts.35 and 36.

generis system" the developing countries have unanimously rejected the patent option for obvious reasons. However, they seek a clarification of the nature of the so-called "effective *sui generis* system"[473]. This has been linked with their concern over the nature of traditional knowledge, and their desire for a mechanism for effective implementation of provisions of Article 8(j) and other relevant provisions of the CBD on traditional knowledge. The imperative for that clarification hinges on the fact that the plant varieties over which an option for a *sui generis* right is created are vital components of biodiversity and central to the traditional knowledge of indigenous and local communities. In the circumstance, another opportunity has arisen for addressing the ambiguity associated with a *sui generis* system. However, a national law approach represents a more persuasive option.

A reaffirmation of the ability of national governments to exercise their inalienable sovereign right over their natural bioresources is what is needed. By so doing, national governments would be at liberty to confer intellectual property status on vital traditional knowledge. This approach addresses the confusion arising from the indeterminate scope of *sui generis* rights which compromise ideological equality over intellectual property rights.

To achieve the CBD's objectives, a biodiversity intellectual property right must be an integral part of the TRIPs Agreement. It does not need to be a *sui generis* right. It would perhaps be more realistic if it takes the form of an independent intellectual property convention on biodiversity as opposed to a biodoversity protocol. Such an independent

[473] This is the language of Article 27.3(b) of TRIPs.

convention will have the significance of reflecting an ideological balance in its approach to intellectual property right since it would of necessity address the shortcomings of the TRIPs Agreement regarding traditional knowledge among other things. As the most authoritative body on intellectual property rights at present, there is no better forum than the TRIPs to make a strong case for intellectual property rights over traditional knowledge. No other approach appears better suited to do this than a national law basis pursuant to the right of permanent sovereignty to natural resources. No other serves the best interests of biodiversity conservation. No other guarantees the control of resources to resource owners.

CHAPTER FIVE

CONCLUSIONS

I. RESTATING ISSUES FOR THE RESEARCH

This thesis has placed in perspective the global effort to stem the unacceptable tide of bioresource depletion in pursuance of the concept of sustainable development.[471] The notion of biological diversity[472] represents the critical focal point of one of the most recent global efforts directed at the life-threatening menace of bioresource depletion.[473] The need for conservation of biological diversity raises fundamental questions in relation to the North-South relationship. Reiterating the observations of John Lash, "since wealth and technology are 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."[474]

The quest for an equitable distribution of the benefits of bioresources as an aspect of creating incentives for their conservation must of necessity integrate the traditional custodians of wild species.[475] Thus a harmonious co-ordination between two domains of biodiversity exploitation, namely the informally oriented indigenous peoples of the South and their hi-tech driven counterparts in the North has become essential. Intellectual property constitutes an appropriate framework for protecting and rewarding efforts that translate into useful and sustainable exploitation of biological diversity. In general,

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[471] See supra notes 9 & 10 and accompanying text.
[472] See supra note 96 and accompanying text.
[473] The most recent global effort in the direction of bioresource protection is the on-going effort toward the adoption of a framework convention on forestry, which is arguably an integral part of the efforts to protect biological diversity. For more details on this see supra note 10 and accompanying text.
[474] Supra note 14.
[475] See supra note 32 and accompanying text.

intellectual property remains a subject matter of North-South controversy,[476] which appears more pronounced in the biodiversity context.

This thesis has therefore represented a critical evaluation of the feasibility of attaining the goal of biodiversity conservation through the use of intellectual property rights, specifically patents and trade secrets regimes. It has investigated the extent to which that approach has enhanced or compromised equitable distribution of benefits of biological diversity. It has broached this task within the context of the most applicable international legal instruments on the subject of biological diversity conservation and intellectual property rights.

In addressing the substantive research issues, the thesis has appraised the conceptual objectives of the CBD in relation to intellectual property rights. It analysed the North-South ideological foundation of intellectual property rights, showing how the identified ideological conflict is reflected in the extant international regimes on intellectual property namely, the WIPO and WTO/GATT-TRIPs. Identifying the TRIPs Agreement as the most authoritative intellectual property regime, it has isolated the conflicts between the TRIPs and the CBD, while evaluating the implications of those conflicts for the objectives of the CBD with particular regard to traditional knowledge. Finally, in addressing the research issues raised herein, it has explored options and prospects for attaining the objectives of the CBD. What follows are the conclusions reached.

[476] See Oddi, supra note 1.; see also supra note 58 and accompanying text.

II. ARTICULATING THE CONCLUSIONS

The disequilibrium between bioresource ownership and the technology for its exploitation as they lie within the respective domains of the South and the North compels the quest for fairness and equity in the sharing of the benefits of biological resources.[477] Added to this is the incontrovertible value of the traditional knowledge of indigenous peoples in modern scientific discoveries and the therapeutic application of bioresource components. Generally, the objective of the CBD in seeking to integrate traditional knowledge in the bioresource enterprise is commendable.

That would appear to be as far it goes. Apart from representing the boldest attempt so far to put the issue of traditional knowledge of indigenous and local communities on the bioresource and environmental agendas, the CBD's reliance on intellectual property rights in the pursuit of its objectives is fundamentally constrained but not necessarily without a remedy. First, the CBD is not an intellectual property regime and as such, could not incorporate authoritative or more technically detailed provisions on intellectual property rights. That responds to the strong criticism that it fails to provide for adequate mechanism as would be required to translate intellectual property rights toward the realisation of its objectives.[478] Second, intellectual property rights do not directly relate to the conservation of biological diversity; rather they merely constitute the socio-economic context for incentivising the conservation of biological diversity. Hence the expectation that the CBD has the potential to evolve an "intellectual property miracle" for addressing the imbalance of preponderance of wealth and technology in the North and biodiversity

[477] Developing countries are the repositories of the bulk of the earth's biological resources. They generally lack the technology to directly exploit them. See supra notes 14, 15 & 44 and accompanying text.

and poverty in the South may have been overstated. Furthermore, the CBD itself has yet to come to terms with the intellectual property relevance of traditional knowledge. It appears to put emphasis on compensation, which it bases on ownership of biological resources. By this approach, it overlooks the intellectual right that ought to attach to indigenous peoples' knowledge of the wild habitat on the merits.[479]

The case for a *sui generis* right, as has been discussed in the context of biological diversity, is essentially an attempt to avoid a realistic appreciation of the intellectual property status of traditional knowledge. It undermines the fact that only intellectual effort can attain intellectual property status and its attendant protection.[480] Therefore a short cut that undermines or completely denies the fact that traditional knowledge is a subject matter of intellectual property right is what all the various options for a *sui generis* right to traditional knowledge represent. Because they put a premium on compensation as opposed to control of resources, they are not in the best interest of resource owners. Intellectual property remains a sound framework for protecting and rewarding efforts that translate into useful exploitation of biological diversity and at the same time constitutes an incentive to foster conservation.[481] On its own, the issue of a *sui generis* biodiversity right devoid of an intellectual property element is more appropriately explored as an incidence of the right of permanent sovereignty over natural resources. It

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[478] See supra note 429 and accompanying text.
[479] The CBD's approach to indigenous knowledge is concerned more with the preservation of biological diversity, not necessarily with the intellectual property right to indigenous knowledge. See supra note 31 and accompanying text; see also note 451 and accompanying text.
[480] See supra note 35 and accompanying text.
[481] See supra notes 38 & 41 and accompanying text.

could not necessarily be a substitute to the intellectual property status of traditional knowledge.

The reliance of the CBD on the existing international intellectual property regime is a reference to the WIPO and TRIPs Agreement. The prevalence of two international regimes on intellectual property rights reflects the ideological debate that has dogged the North-South approach to intellectual property rights.[482] An ideology of intellectual property rights is a derivative or extension of the general concept of property rights.[483] The two international intellectual property regimes can be said to reflect the Southern and Northern approaches to intellectual property rights. The WIPO approach remained essentially nationalistic, vesting national governments with sufficient latitude to determine the basis and nature of intellectual property rights. This provided an opportunity to address the peculiar exigencies of developing countries, as well as to reflect their ideological approach to intellectual property rights. Through the exercise of power of compulsory license, enforcement of limited patent terms, and unilateral exclusion of certain necessities from the list of patentable subject matter,[484] developing countries enjoyed some degree of flexibility with regard to intellectual property. However, this sometimes creates the erroneous impression of nonchalance on the part of developing countries towards intellectual property rights.

[482] See supra note 37 and accompanying text. For the discussions on the North-South intellectual property ideological conflict, see supra at Pp.9-10; 18-27.
[483] See supra note 37 and accompanying text.
[484] See supra notes 172-173; 319-320 and accompanying text.

There is hardly a strict uniformity in approach to intellectual property among countries even where they fall within the same geopolitical divide. A nation's approach to intellectual property rights is in practical terms a reflection of its comparative advantage in innovation.[485] In the absence of such advantage, resort is often had to imitation or adaptation of the innovation of others. And perhaps most importantly, such an approach is often a reflection of a nation's primary ideological orientation. Because there is evident lack of uniformity on the score of comparative (dis)advantage in technological innovation, it is hardly appropriate to identify a generalised ideological perspective on intellectual property for both the South and the North.

What is often dismissed in the North as a loose intellectual property outlook of the South is actually a misreading of the Southern social interest approach to the subject of intellectual property rights. An extreme exhibition of this ignorance leads to the conclusion that intellectual property as a concept is virtually unknown in developing countries; and particularly irrelevant in Africa, whose tradition is said to have no need for intellectual property.[486] Unknown to many, intellectual property has been an aspect of traditional economic and socio-cultural life in most Southern countries including those in Africa. The tendency to describe intellectual property as weak or non-existent in the South is premised on the North's strict and privativistic approach to intellectual property, which represents the opposite of the social interest orientation in the South.

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[485] See supra note 46 at 21.
[486] See supra notes 82-86 and accompanying text.

The Southern ideological disposition to intellectual property rights has remained unacceptable to the North. The desire by the latter to maximise the benefit of its innovation and technology-driven economy through a strict intellectual property regime could not be reconcilable to the latitude allowed developing countries under the WIPO. The North perceived the need to shift intellectual property protection out of WIPO, which it perceived as pro-South. The post cold war economic realignments under the GATT provided the platform for the projection of a strictly northern perspective of intellectual property rights, instrumental to the advancement of international trade and globalisation.[487] In an effort to preserve the northern domination of the global economy, a universal code of intellectual property rights became compelling, irrespective of inherent ideological disparities regarding those concepts in the South.[488]

By its emergence, the TRIPs Agreement represented an effective checkmate to the WIPO dispensation, and marked the triumph of the North in the ideological war over intellectual property. In the guise of a regime to address the trade aspects of intellectual property rights, TRIPs represents the most comprehensive agreement on intellectual property to date exceeding its negotiation mandate albeit with a misleading nomenclature.[489] As an integral part of the WTO scheme, with its uniform dispute settlement and sanctions mechanism, TRIPs, to some extent, represents a consolidation of intellectual property agreements not excluding WIPO administered conventions. Both in its orientation, conception, purpose and evolution, the TRIPs Agreement is a Western agenda with all the trappings of Eurocentric free market ideology.

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[487] See supra notes 47-53; see also supra notes 163-166 and accompanying text.
[488] See supra notes 49, 53 & 94 and accompanying text.

As already noted, the CBD's reliance on international intellectual property regimes is for all practical purposes on the TRIPs Agreement. Essential to that reliance is the desire to integrate traditional knowledge in the bioresource enterprise. Inevitably, this objective carries with it the inherent Southern ideological approach to intellectual property rights. How this objective could be realised within the context of an intellectual property regime that arose from the perceived need to checkmate that ideological bent is at best described as a significant obstacle. Nowhere, for instance, does the TRIPs Agreement make provision for traditional knowledge.

Specifically, TRIPs provisions on patents incorporates Eurocentric jurisprudence and its developed precedents with regard to the nature of patent, the scope of patentable subject matter and tests of patentibility.[490] An analytical application of these TRIPs patent features to the nature of traditional knowledge shows them to be irreconcilable with the latter almost on all counts. Because the TRIPs provisions require uniform application, national governments are constrained from evolving a patent right that will be amenable to the unique features of traditional knowledge. The intricate socio-cultural harmony that integrates ethnobiological processes in the use of plants and other biodiversity components into indigenous cultures is incomprehensible to the Western tradition and scientific formalism. It is hardly surprising that TRIPs Eurocentric model gives no regard to traditional knowledge. This inability to comprehend the nature of traditional knowledge is often a deliberate approach by western countries for self-serving reasons.

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[489] See supra note 180.
[490] See supra note 225 and accompanying text.

This is manifested by their discriminatory approach against foreign prior art and the reluctance in the West to impeach a local patent on that basis. The insistence that foreign prior art must conform to formal scientific methods and documentation standard is the single most prominent reason for thriving biopiracy among western multinational corporations, to the detriment of the independent evolution of traditional knowledge of local communities. However, conflicting signals from the EU and the US on this subject coupled with the resolve of developing countries to jettison the era of traditional knowledge as part of "intellectual commons" reinforces the need for a lasting resolution of the conflict.

The TRIPs approach secures and shifts legal protection exclusively in favour of Western scientific formalism; its language is familiar to orthodox scientific process, but alien to the informal disposition of indigenous peoples in the bioresource endeavour. Therefore trans-national corporations are empowered to file sweeping patents[491], and breed a reign of creeping monoculture[492], unleashed through an unbridled "biopiracy"[493], with no regard to biodiversity conservation. The need for equitable sharing of the benefits of biological resources becomes moot in this state of affairs. Commercial considerations displace the imperative for conservation of biological diversity. With the resultant boost in genetically engineered products, wild species occurring in nature are threatened, while there is no guarantee for sustainability of these new products of genetic ingenuity as they are essentially strangers to the ecosystem.[494] Invariably, the traditional peoples' harmony

[491] See supra notes 305 & 306 and accompanying text.
[492] See supra notes 307 & 309 and accompanying text.
[493] See supra note 249.
[494] See supra notes 316 and accompanying text.

with the ecosystem and their commitment to a biodiversity friendly lifestyle is compromised. The prevalence of genetic engineered products makes traditional approach not only unviable, but creates a system that marginalises the custodians of the wild habitat and third world economies by breeding genetic alternatives to what had hitherto been export cash crops.[495] This aggravates the asymmetrical imbalance between the North and South and does not serve the cause of biological diversity conservation in the long run.

Regarding trade secret, the point has been made that the TRIPs Agreement remains the first ever attempt to elevate the trade secret regime of intellectual property rights to the international level. Because of the strict requirement of secrecy and independent economic value,[496] indigenous knowledge is constrained from fitting the criteria of a trade secret. Essentially within the quasi or partial public domain of a relevant "small public",[497] indigenous knowledge as a shared community resource [498]may not satisfy the high watermark of secrecy required of trade secret.[499] Even if it does, which is doubtful, the requirement of independent economic value may be difficult to meet. Construed from its social interest orientation, economic considerations or even competition is not a *sine qua non* to the nature of traditional knowledge. Its partial restriction is less a function of economic consideration or commercial competition than it is of loyalty to the dictates of ancestral tradition.

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[495] See supra note 311.
[496] See supra notes 336 & 340 and accompanying text.
[497] See supra note 234.
[498] See supra note 87 and accompanying text.
[499] More often than not, traditional ethnobiological knowledge and practices are published in research journals by Western scientists, without knowledge of the custodians, a situation that negates further its ability to satisfy the requirements of secrecy and novelty.

Trying to reconcile the TRIPs with the CBD on the basis of their intellectual property provisions appears to be an exercise in wishful contemplation.[500] For one reason, the thematic disposition of the two agreements is in conflict. While the CBD is disposed to a flexible approach to intellectual property if to so do will serve its objectives better, the TRIPs Agreement construes intellectual property rights as uncompromisingly critical to its free market ideal. Under TRIPs, a flexible approach to intellectual property risks being interpreted as an unreasonable restraint to trade.

Despite the observation that WIPO's approach to intellectual property is consistent with the CBD approach, it is however not possible to discount the TRIPs Agreement, which has incorporated by reference WIPO administered conventions.[501] The reality is that the TRIPs Agreement is an integral part of the WTO including the latter's sanctions mechanism and so, it is arguably, the most authoritative instrument in relationship to intellectual property rights.

The conflicting approach to intellectual property rights between the CBD and the TRIPs Agreement has been broached for resolution by the application of the priority rule.[502] Prima facie, the priority rule favours the TRIPs Agreement since it is the latest in time. However, this may not be taken as given because the extension of the priority rule to

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[500] See supra Chapter one at 10.
[501] For the relationship between the WIPO and TRIPs Agreement see supra Chapter two at 48 .In pursuing the analysis of the priority rule it need be reiterated that the CBD is not primarily an intellectual property convention per *se*, even though it depends on intellectual property rights to accomplish its objectives, hence it contains significant provisions on intellectual property rights. To that extent the priority rule has been explored. See supra Chapter four at 110.
[502] See supra notes 36-38.

subsequent decisions of the Meetings of the Conference of Parties of the CBD which may touch on intellectual property rights presents an unsettled scenario. A resort to the customary international law principle of *lex specialis*[503] provides no ready made option in resolving the conflicting approach to intellectual property right between the CBD and the TRIPs Agreement. It is unclear which of the two instruments is more "specialist" on the subject of intellectual property even as simple as that question appears. Clearly, a legalistic analytical approach to the two instruments can hardly resolve their differing approach to intellectual property rights.

From a practical perspective, the TRIPs Agreement holds the ace and cannot be ignored. Its integration into the GATT/WTO scheme leaves no option other than to acknowledge it, in the words of one writer, as "the only game in town".[504] The quest for achieving the objectives of the CBD boils down to a policy choice between ecological imperatives and the dictates of free market. Recently the need for synergy between the CBD and the TRIPs Agreement has taken the centre stage of the WTO Committee on Trade and Environment (CTE)[505] and the Conference of Parties (COP) Meetings of the CBD.[506] Unfortunately, this momentum is fast losing its steam within the CBD regime[507]. It would seem to have been sustained more at the CTE level[508] where however, the ideological stranglehold of the WTO continues to reflect in the lack of will on the part of the CTE to realistically address the concerns expressed in the CBD.[509] The latest platform for

[503] See supra Chapter four at 111.
[504] See Horton, supra note 9 at 27-28.
[505] See supra notes 393 & 394 and accompanying text.
[506] See supra notes 391& 392 and accompanying text.
[507] See supra note 401 & 402 and accompanying text.
[508] See supra note 406-408 and accompanying text.
[509] See supra note 397 and accompanying text.

deliberations on this matter is the TRIPs Council Meetings (a WTO forum). That is within the context of the on-going review of Article 27.3(b) of the TRIPs Agreement.[510] Unfortunately, the COP's original approach which sought to establish "co-operation between bodies associated with the two agreements"[511] limited those bodies to the COP and the CTE and did not seem to envisage the dramatic shift in discussions on this matter to the TRIPs Council. The latter, no doubt ought to take priority over the CTE with reference to "bodies associated with" the TRIPs Agreement and the CBD, and should have been directly involved in fashioning out "a procedure for consultation and co-operation",[512] so that it will work directly with the COP on this matter. The need for a concerted approach in tackling the tension between the CBD and the TRIPs Agreement lies partly on the fact that it would, on an extended analysis, contribute to resolving the conflicts inherent in the trade and environment interface. That interface may well represent the single most important challenge to the success of the global trade regime under the GATT/WTO initiative.

In attempting to find an approach through which the CBD could realise its objectives despite the constraints posed by its inherent shortcomings and particularly its relationship with the TRIPs Agreement, a number of possible solutions have been proffered. Most of these solutions seek to establish some form of *sui generis* right to traditional knowledge within the framework of the present instrument (i.e. the CBD itself), while another option favours a fresh protocol designed to "fix" the CBD.

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[510] See supra note 405-409 and accompanying text.
[511] See "Relationship and Synergies", supra note 388.

A biodiversity intellectual property protocol is unlikely to address the frustrations of the CBD.[513] The premise for the protocol is flawed given that a protocol must be within the ambit of a framework convention. Fixing the intellectual property objectives of the CBD in relation to traditional knowledge transcends the approach of a protocol. Intellectual property rights do not relate directly to the conservation of biological diversity. They merely constitute the socio-economic incentive to encourage conservation of biological diversity. Traditional knowledge of local communities is the subject of that socio-economic incentive within the contemplation of the CBD. That knowledge finds expression in the context of the peoples' sociological relationship with the ecosystem. The intricate nature of that relationship constitutes their way of life. This relationship, as well as traditional knowledge in itself appears incomprehensible to the Western ideological concept of intellectual property rights, which finds it difficult to come to terms with it. This ideological disparity is not necessarily or exclusively because of a flaw in the text of the CBD, that can to be remedied by a protocol. What may be required is a purposeful reconciliation of the ideological divide over intellectual property rights.

One possible solution is within the CBD itself. Biological diversity is subject to the right of permanent sovereignty of resource owning states over their natural resources.[514] Because national governments are closer to indigenous and local communities, they are in a better position to evolve an intellectual property policy that recognises the socio-cultural and economic context of such communities and their knowledge. An external and

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[512] Ibid at 7.
[513] Doubts about the viability of a biodiversity protocol is expressed in Chapter four under the sub-heading "A Biodiversity Protocol: How Viable?", supra at 124.
[514] See discussions on "Sovereign Rights to Natural Resources" in Chapter four, supra at 128.

prescriptive yardstick of intellectual property rights of universal application negates the legitimate right of states over the management, allocation and appropriation of their natural biodiversity. However, as indicated in Chapter four, the feasibility of national law initiatives is constrained by the demands of globalisation and the relative lack of bargaining power of many developing countries as compared to powerful multinational corporations. Notwithstanding this and other limitations inherent in differing national approaches already highlighted, those approaches may provide the basis for properly articulating the fine details of the evolving regional initiatives for the protection of traditional knowledge.

A national law approach neither detracts from the obligation of states to negotiate access to genetic resources nor does it negate the right of technology owning countries to express terms of technology transfer, in accordance with their own ideological perspective on intellectual property right.[515] The approach accommodates a pluralistic intellectual property ideology. Under it, intellectual property rights could inure to traditional knowledge on the basis of discovery alone. This is a step ahead of CBD's approach, which puts emphasis on compensation. It is also consistent with the idea of vesting control of biological resources in indigenous peoples.

A logical exercise of the right of permanent sovereignty over natural resources in relation to biological diversity raises a number of issues bordering on the often volatile and frosty relationship between sovereign states and their indigenous populations. The right to permanent sovereignty is, in principle, exclusive to a state and not its constituent local

communities.[516] However, increasing international concern over the rights of indigenous peoples or local communities[517] compels states to maintain fairness and equity as policy formulators and executors in this regard. The communal nature of indigenous knowledge and complex land tenure systems make states' roles critical on this count both as umpires of conflicting interests within and defenders against external predatory influences on indigenous knowledge, without.

An intellectual property right to traditional knowledge deriving from a national government initiative in logical exercise of right of permanent sovereignty over natural biodiversity resource does not necessarily create a *sui generis* right. This must be distinguished from a *sui generis* biodiversity right pursuant to certain articles of the CBD or under a protocol.[518] Both approaches are premised on an external intellectual property yardstick and on the need for compensation for indigenous knowledge. Most unfortunately, they would not recognise intellectual property rights in traditional knowledge. Because one would be the creation of a protocol and outside the most authoritative international intellectual property regime, it is more likely to be viewed as a device in restraint of trade.[519] A biodiversity intellectual property right or otherwise howsoever called,[520] needs to be an integral part of the global intellectual property framework, i.e. the TRIPs Agreement. This finds precedent in the Treaty on Intellectual Property Right in Respect of Integrated Circuits (IPIC).[521] Under this treaty, a new

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[515] See supra note 436.
[516] See supra note 457 and accompanying text. See generally Chapter four, supra at 137.
[517] See supra note 456 and accompanying text.
[518] See supra notes 461 & 463 and accompanying text.
[519] See TRIPs art. 8(2).
[520] For a proposal on a "biodiversity technology protocol" see supra note 470.
[521] See supra note 183.

category of intellectual property right is created covering the topography of integrated circuits, which has been recognised under the TRIPs Agreement.

The endorsement of intellectual property over traditional knowledge need not necessarily be on a concessionary or *sui generis* basis since it is established that the denial of intellectual property status to traditional knowledge is as a result of ideological constraints, not for lack of intellectual ingenuity. To be precise, a biodiversity intellectual property treaty to be incorporated into the TRIPs Agreement has become imperative to restore the vision of the CBD along the lines of its cardinal and secondary objectives.

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