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**Intellectual Property Rights in Plant
Genetic Resources: Farmers' Rights and Food
Security of Indigenous and Local Communities**

by

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INTELLECTUAL PROPERTY RIGHTS IN PLANT GENETIC RESOURCES: FARMERS' RIGHTS AND FOOD SECURITY¹ OF INDIGENOUS AND LOCAL COMMUNITIES²

*Chidi Oguamanam**

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1. See Ryerson Centre, Food Security Defined, <http://www.ryerson.ca/~foodsec/centreFSDefined.html> (last visited Oct. 11, 2006); see also University of Kwazulu-Natal, Program on Food Security <http://www.ukzn.ac.za/foodsecurity/definition.htm> (defining the concept as "a state of assuring physical availability and economic accessibility to enough food (in an environmentally and socially sustainable manner) in terms of quantity, quality and cultural acceptability for all people at all times for a healthy and active life."); Rebecca Huss-Ashmore & Solomom Katz, *Perspectives on the African Food Crisis*, in AFRICAN FOOD SYSTEMS IN CRISIS PART ONE: MICROPERSPECTIVES 3 (Rebecca Huss-Ashmore & Solomom Katz eds., 1989)

2. See Peter Fitzpatrick & Eve Darian-Smith, *Laws of the Postcolonial: An Insistent Introduction* in LAWS OF THE POSTCOLONIAL 1 (Peter Fitzpatrick & Eve Darian-Smith eds., 1999); see also Chidi Oguamanam, *Protecting Indigenous Knowledge in International Law: Solidarity Beyond the Nation-State*, 8 LAW TEXT CULTURE 191, 214 (2004) [hereinafter Oguamanam 1]. I use the term indigenous and local communities interchangeably in reference to both indigenous peoples of the enclave territories in Europe, Australasia and the Americas where there was no settler withdrawal and their local community counterparts in the developing countries or the Third World. No deliberate attempt is made to distinguish the two. Rather, I share the view that they are "the West's Other" in a bi-polar epistemic world order.

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I. INTRODUCTION

Traditional agricultural and farming practices, which started between ten and thirteen thousand years ago,³ and later day agricultural biotechnology (“agro-biotech”) are the two principal approaches to addressing global food security⁴ and tackling the burden of hunger.⁵ The two approaches are symbiotically linked. Modern agro-biotech, including scientific plant breeding, basically involves deliberate incorporation of specific or desired traits to create new or hybrid varieties using molecular techniques and other scientific information.⁶ Through careful reliance on and responses to ecological patterns and meticulous selections from accidental mutations in nature,⁷ traditional farming practices in indigenous and local communities have continued to boost genetic diversity that sustains hi-biotech activities in the agricultural sector.⁸ Indigenous peoples’ and other local

3. See B. GROOMBRIDGE & M. D. JENKINS, *GLOBAL BIODIVERSITY: EARTH’S LIVING RESOURCES IN THE 21ST CENTURY* 54-55 (2000) (giving a brief history of the evolution of agriculture).

4. See Ryerson Centre, *supra* note 1 (discussing the 5 principles guiding food security which are availability, accessibility, acceptability, adequacy and agency).

5. See Rome Declaration on World Food Security and World Food Summit Plan of Action, Nov. 13-17, 1996, <http://www.healthydocuments.info/nutrition/docs32.html>.

6. See ORGANIZATION FOR ECONOMIC COOPERATION AND DEVELOPMENT, *TRADITIONAL CROP BREEDING SERVICES: A HISTORICAL REVIEW TO SERVE AS A BASIS FOR ASSESSING THE ROLE OF BIOTECHNOLOGY* (1993).

7. See C.S. Srinivasan & Colin Thirtle, *The Impact of Terminator Technologies in Developing Countries: A Framework for Economic Analysis*, in *ECONOMIC AND SOCIAL ISSUES IN AGRICULTURAL BIOTECHNOLOGY* 159, 160-161 (R.E. Evenson, V. Santaniello & D. Zilberman, eds., 2002).

8. See THE CRUCIBLE GROUP, *PEOPLE, PLANTS AND PATENTS: THE IMPACT OF INTELLECTUAL PROPERTY ON BIODIVERSITY, CONSERVATION, TRADE AND RURAL SOCIETY* xvii (1994); Steven R. King et al., *Biological Diversity, Indigenous Knowledge, Drug Discovery and Intellectual Property Rights*, in *VALUING LOCAL KNOWLEDGE: INDIGENOUS PEOPLES AND INTELLECTUAL PROPERTY RIGHTS* 167, 179 (Stephen B. Brush & Doreen Stabinsky eds., 1996) (describing farmers’ fields as laboratories); see also The International Treaty on Plant Genetic Resources for Food and Agriculture, ¶ 6, Nov. 3, 2001, available at <http://www.ukabc.org/ITPGRRe.pdf> (“acknowledge[ing] that plant genetic resources for food and agriculture are raw mate-

communities' contributions to global food production arise in part from their near total dependence on the ecosystem.⁹ These communities are repositories and custodians of the world's biological diversity.¹⁰ However, industrialized countries supply requisite technologies for the exploitation of plant genetic resources ("PGRs") from our global biodiversity.¹¹ In doing this, they are driven by the ideology of market economy fostered through commercial exploitation of these vital resources. They are able to make ownership claims to what are considered global public goods by many in the indigenous and local communities.¹²

Given the relationship of dependence between traditional agriculture and modern agro-biotech, attempts to address the issue of appropriation and reward for their practitioners remain a topical subject.¹³ A major concern is the failure of such efforts to realize the importance of traditional agriculture and its need for protection in an increasingly expanding agro-biotech environment. For reasons of equity and sustainability, mechanisms for the protection of modern agro-biotech practices, including scientific plant breeding, must not undermine or otherwise work at cross-purposes with traditional farmers' desire for reward and protection of their knowledge of, and dealings with, PGRs.

Regrettably, despite the mutually beneficial relationship between traditional farming and modern agro-biotech, legal responses to the protection of knowledge in both arenas are framed in competitive and exclusionary terms. Under this framework, legitimate claims of practitioners of traditional agriculture for the protection of their knowledge are subordinated to those of their agro-biotech counterparts. Thus, one of the most contentious legal and policy issues in regard to global food security is the subject of a balanced and equitable proprietary or reward mechanism for the two major stakeholders, namely indigenous and local farmers and practitioners of modern agro-biotech.

This Article identifies and examines the international legal frameworks under which traditional farmers and practitioners of agro-biotech, including sci-

rials indispensable for crop genetic improvement whether by means of farmers' selection or classical plant breeding or modern biotechnologies") [hereinafter ITPGRFA].

9. See generally King, *supra* note 8, at 179; see also James D. Nations, *Deep Ecology Meets the Developing World*, in BIODIVERSITY 79-82 (E.O Wilson ed., 1988).

10. See Andrew Gray, *Impact of Biodiversity Conservation on Indigenous Peoples*, in BIODIVERSITY: SOCIAL AND ECOLOGICAL PERSPECTIVES 61, 66-7 (1991).

11. See, e.g., Graciela Chichilnisky, *Sustainable Development in North-South Trade*, in PROTECTION OF GLOBAL DIVERSITY: CONVERGING STRATEGIES 101, 102-4 (Lakshman D. Guruswamy & Jeffrey A. McNeely eds., 1998).

12. See Srinivasan & Thirtle, *supra* note 7, at 159. (In the market economy, private ownership claims to public goods is facilitated by intellectual property rights. On the contrary, traditional knowledge thrives in a socio-cultural context different from the market economy paradigm. This explains in part why it is reluctant to sanction private appropriation of public goods.)

13. *Id.*

entific plant breeders, seek to protect their knowledge of dealings with PGRs for food and agriculture. It focuses on intellectual property rights as a fundamental apparatus for allocation and protection of rights over knowledge and its products.¹⁴ Specifically, the article is concerned with how the two regimes of intellectual property rights, namely utility patents and the *sui generis* concept of plant breeders rights ("PBRs"), have been deployed by nations with a head start in agro-biotech to enhance their interests at the expense of traditional agricultural practitioners and practices in indigenous and local communities.¹⁵

This Article examines the evolution and nature of farmers' rights, as a putative counterbalancing response to intellectual property regimes in the PGRs arena, particularly within the paradigm enunciated in the 2001 International Treaty on Plant Genetic Resources for Food and Agriculture ("ITPGRFA").¹⁶ The conceptual indeterminacy and legal limitations inherent in farmers' rights, and how those undermine the concept's capacity to achieve a balance in the interests of traditional farmers with those of entrepreneurial agro-biotech concerns, is the principal focus of this Article. In general, this Article acknowledges that the elaboration and entrenchment of farmers' rights in an international legal instrument is a welcome result after almost two decades of struggle.¹⁷ Nonetheless, I argue that farmers' rights as presently conceived are not capable of moderating the inequities created by intellectual property in PGRs.

The manifest positive impact of agro-biotech on food supply may be a warrant for a strong and commensurate intellectual property regime in its sup-

14. See David R. Downes, *How Intellectual Property Could be a Tool to Protect Traditional Knowledge*, 25 COLUM. J. ENVTL. L. 253, 256 (2000).

15. See Rosemary J. Coombe, *The Recognition of Indigenous Peoples' and Community Traditional Knowledge in International Law*, 14 ST. THOMAS L. REV. 275, 284-5 (2001); Chidi Oguamanam, *Localizing Intellectual Property Rights in the Globalization Epoch: The Integration of Indigenous Knowledge*, 11 IND. J. GLOBAL LEGAL STUD. 135, 139-146 (2004) [hereinafter Oguamanam 2]; see also Ikechi Mgbеoji, *Patents and Traditional Knowledge of the Uses of Plants: Is A Communal Patent Regime Part of the Solution to the Scourge of Bio-Piracy?*, 9 IND. J. GLOBAL LEGAL STUD. 163, 170 (2001); Peter Drahos, *Indigenous Knowledge, Intellectual Property and Biopiracy: Is A Global Bio-Collecting Society the Answer?*, 22 EUR. INTELL. PROP. REV. 245, 245-6 (2000); Thomas Greaves, *Tribal Rights*, in VALUING LOCAL KNOWLEDGE: INDIGENOUS PEOPLE AND INTELLECTUAL PROPERTY RIGHTS 25, 36 (Doreen Stabinsky & Stephen B. Brush eds., 1996). As these articles demonstrate, the suitability of conventional intellectual property to so-called informal or traditional knowledge practices of indigenous and local communities remains a contentious issue. It constitutes the basis for the ongoing "crisis of legitimacy in the world intellectual property system." Coombe, *supra* note 15, at 275. It also drives, in part, the campaign for *sui generis* forms of intellectual property.

16. ITPGRFA, *supra* note 8.

17. See International Undertaking on Plant Genetic Resources, FAO Res. 8/83, 22nd Sess., U.N. Doc. C/83/REP (Nov. 23, 1983), <ftp://ftp.fao.org/ag/cgrfa/iu/iutextE.pdf> [hereinafter International Undertaking].

port. Interestingly, however, such a state of affairs cannot guarantee food security. According to the Ryerson Centre, food security incorporates access to “[culturally] acceptable foods” in a manner that gives regard to human dignity.¹⁸ In addition to acceptability, food security studies identify four other key factors, namely availability, accessibility, adequacy and agency that facilitate the realization of food security.¹⁹ Detailed elaboration of these is outside the scope of this paper.

Food security and sustainable agriculture cannot be achieved by an agrobiotech and a supporting legal/intellectual property framework which undermine the role of traditional farmers and other agricultural practices of indigenous and local communities. When intellectual property privileges cutting-edge agrobiotech practices at the expense of traditional agriculture, it fosters a culture of dependence by practitioners of traditional agriculture on corporate seed monopolies and proprietors of agrobiotech. Such culture compromises access to “acceptable foods” and, perhaps most importantly, diminishes human dignity and cultural integrity of dependents.

As currently elaborated in the ITPGRFA, farmers’ rights are subject to national intellectual property laws.²⁰ Those laws inequitably promote intellectual property rights in agrobiotech context. Often, this is done at the expense of traditional agricultural practices. Consequently, contrary to the expectation of its proponents, farmers’ rights do not in any significant manner counterbalance the effect of intellectual property rights in the PGRs arena. Nor do they promote the desire for food security, especially in indigenous and local communities.

II. PART I

A. Intellectual Property in PGRs

Intellectual property protection over dealings with, or so-called innovations in, PGRs for food and agriculture was motivated for the most part by the advent of formal scientific and entrepreneurial plant breeding some 125 years ago.²¹ Traditionally, there was no regard for intellectual property protection for informal genetic revolutions in traditional farmers’ fields. This was mainly a result of the communal nature of such practices, the indeterminacy of when and by whom a new genetic material was introduced, and general aversion to private

18. See Ryerson Centre, *supra* note 1.

19. *Id.*

20. See ITPGRFA, *supra* note 8, at Art. 9.2 & Preamble ¶8.

21. See Srinivisan & Thirtle, *supra* note 7 at 161.

ownership of life forms in indigenous and local communities.²² Today, in most communities which practice traditional agriculture, this attitude has yet to change. However, rapid advances in biotechnology, especially in the agricultural context, in the last three decades have implicated intellectual property rights in the misappropriation of indigenous knowledge in general and indigenous agricultural knowledge in particular.²³

Since the late twentieth century, genetic engineering and its multiplier effect on agriculture, health and the environment have made indigenous and local community practitioners of traditional agriculture and medicine take more than a passive interest in the role of intellectual property in the appropriation of their genetic resources. The last quarter of the twentieth century was a period of heightened awareness, especially by NGOs and some intergovernmental organizations, of the phenomenon of “biopiracy”²⁴ and its harbinger, “bioprospecting.”²⁵ Academic-writing, public interest literature and the popular media focused on cases of inappropriate patents granted to transnational agro-biotech, pharmaceutical, or commercial research organizations. Those patents were based on pre-existing knowledge obtained from indigenous and local communities in questionable circumstances.²⁶ A combination of these and similar trends, as well as the aggressive nature of expansion of patentable subject matters in industrialized countries,²⁷ awakened indigenous and local communities to the need to take the intellectual property question seriously.

22. See Oguamanam 2, *supra* note 15, at 142-3; Naomi Roht-Ariazza, *Of Seeds and Shamans: The Appropriation of the Scientific and Technical Knowledge of Indigenous and Local Communities* 17 MICH. J. INT'L L. 919 (1996).

23. See Gray, *supra* note 10, at 61, 66-9; RAFI, *Biopiracy-Sixth Annual Update*, RAFI COMMUNIQUE, 2, Issue #65 (2002), available at http://www.etcgroup.org/upload/publication/32701/com_biopiracy.pdf.

24. See Susan K. Sell, *Post-TRIPS Developments: The Tension Between Commercial and Social Agendas in the Context of Intellectual Property*, 14 FLA. J. INT'L L. 193, 202 (2002); see also VANDANA SHIVA, *BIOPIRACY: THE PLUNDER OF NATURE AND KNOWLEDGE* 4-5 (1997); see IKECHI MGBEJI, *GLOBAL BIOPIRACY: PATENTS, PLANTS, AND INDIGENOUS KNOWLEDGE* 13 (2005) (defining biopiracy as “the unauthorized commercial use of biological resources and/or traditional knowledge . . . without compensation.”).

25. See SHIVA, *BIOPIRACY*, *supra* note 24, at 72-9 (defining bioprospecting as “the exploration of commercially valuable genetic and biochemical resources,” and discussing the pros and cons of such practice on the environment and biodiversity generally).

26. See RAFI, *supra* note 23 (noting the list of crops and livestock that have been targets of controversial patents and subject of biopiracy charges include, but are not limited to, the Zimbabwian Tuli Cattle, West African Sweet Genes, Mexican “Enola” bean, etc); see also Marcia Ellen DeGeer, Note, *Biopiracy: The Appropriation of Indigenous Peoples' Cultural Knowledge* 9 NEW ENG. J. INT'L & COMP. L. 179, 180-2 (2002).

27. See, e.g., *Diamond v. Chakrabarty*, 44 U.S. 303 (1980) (holding that a non-naturally occurring human-made bacterium designed to breakdown components of crude oil was a patentable

The reluctance to extend intellectual property rights or claims of private ownership over PGRs was not a sentiment peculiar to indigenous and local communities. Indeed, in its historical origin in the West in the fourteenth century,²⁸ conventional intellectual property, especially patents, focused on technical or industrial inventions,²⁹ and did not apply to living materials such as plants or plant varieties. After over five centuries, however, judicial, legislative and policy initiatives in the United States engineered a radical revolution in patent jurisprudence.³⁰ They also inspired the emergence of *sui generis* intellectual property regimes such as PBRs. These developments unequivocally brought PGRs within the ambit of intellectual property and, consequently, private ownership.

America's interest in the extension of intellectual property rights to PGRs was motivated by its head start in plant breeding and agro-biotech in general.³¹ Initial reluctance or restraint on the part of European countries could not be sustained.³² This was a result of the pressure by private sector interests in plant breeding in those regions whose desire to be competitive with their American counterparts could not be ignored. Moreover, as nations made progress in new technologies, their interest in intellectual property in those areas increased.³³ By the middle of the 1990s a majority of individual European countries have enacted versions of plant variety protection legislation that extended private proprietary

subject matter under U.S. law. This case opened judicial floodgate endorsing patentability of life forms both in the U.S. and, to some extent, globally).

28. See BRUCE W. BUGBEE, GENESIS OF AMERICAN PATENT AND COPYRIGHT LAW 12 (1967) (claiming the origin of "state protection of intellectual property [rights began] in Renaissance Italy."); Adam Mossoff, *Rethinking the Development of Patents: An Intellectual History 1550-1800*, 52 HASTING L.J. 1255 (2001) (discussing England's patent history); *An Economic Review of the Patent System*: Hearing before the Subcommittee on Patents, Trademarks, and Copyrights of the Senate Committee on the Judiciary, 85th Congress, (Statement of Fritz Malchup).

29. Malchup, *supra* note 28; See Mossoff, *supra* note 28, at 1255 (noting that early English patents focused on dispensation and abuse of royal favour through creation of monopolies rather than on actual innovation). However, for the most part, the Venetian Patent regime, which is said to be the genesis of modern patent, applied to innovations. See Ikechi Mgbeoji, *The Juridical Origins of the International Patent System: Toward a Historiography of the Role of Patents in Industrialization*, 5 J. HIST. INT'L L. 403, 413 (2003) [hereinafter Mgbeoji 3].

30. See, e.g., Plant Patents Act of 1930, 35 U.S.C.A. § 163 (2006); Plant Variety Protection Act of 1970, 7 U.S.C.A. § 2321 (2006).

31. See Chidi Oguamanam, *Genetic Use Restriction (or Terminator) Technologies (GURTs) in Agricultural Biotechnology: The Limits of Technological Alternatives to Intellectual Property*, 4 CAN. J. L. & TECH. 59, 61 (2005) [hereinafter Oguamanam 3].

32. *Id.*

33. See William P. Alford, *How Theory Does- and Does Not- Matter: American Approaches to Intellectual Property Law in East Asia*, 13 UCLA PAC. BASIN. L. J. 8, 12 (1994).

claims over PGRs.³⁴ In 1961 a group of mainly industrialized countries embraced a multilateral framework for advancing private ownership of PGRs through the Geneva-based International Union for the Protection of Plant Varieties (“UPOV”).³⁵

The UPOV was, to some extent, a step in the internationalization of America’s bid to extend intellectual property to PGRs. The UPOV introduced an international regime of PBRs to supervise proprietary control over innovation in PGRs. Subsequent revisions of the UPOV text have continued to consolidate intellectual property jurisprudence in the PGRs context, shifting it progressively from its *sui generis* status to one which mirrors, as closely as possible, the conventional or utility patent.³⁶

America’s commitment to a global intellectual property regime fashioned to reflect its domestic regime was further advanced in the Agreement on Trade-Related Aspects of Intellectual Property (“TRIPS”).³⁷ One of the hallmarks of that Agreement is the expansion of the scope of intellectual property protection without discrimination to any field of technology.³⁸ Specifically, Article 27.3(b) provides in part that “[m]embers shall provide for the protection of plant varieties either by [utility] patents or by effective *sui generis* system or combination thereof” By virtue of this provision, proprietary stakeholders in agro-biotech may now explore multiple protection options, including *sui generis* and conventional intellectual property regimes, for PGRs.

In sum, progressive extension of intellectual property rights to PGRs was for the most part an American-championed initiative. From its roots in America’s domestic law, intellectual property over PGRs was gradually extended to the international arena, first through the UPOV. It now appears to have crystallized as part of international intellectual property jurisprudence under the TRIPS

34. See Srinivasan & Thirtle, *supra* note 7, 64; see also Oguamanam 3, *supra* note 31, at 62.

35. International Convention for the Protection of New Varieties of Plants, Dec. 2, 1961, 33 U.S.T. 2703, 815 U.N.T.S. 89 (as revised at Geneva on Nov. 10, 1972, Oct. 23, 1978) [hereinafter UPOV 1961/1978]. The Mar. 19, 1991, revisions are available at <http://www.upov.int/en/publications/conventions/1991/content.htm> [hereinafter UPOV 1991].

36. Dan Leskien & Michael Flitner, *Intellectual Property Rights and Plant Genetic Resources: Options for Sui Generis System*, ISSUES IN GENETIC RESOURCES #6 (1997), available at <http://www.ipgri.cgiar.org/publications/pdf/497.pdf>; see also Sell, *supra* note 24, at 203-208.

37. See Final Act Embodying the Results of the Uruguay Round of Multilateral Trade Negotiations, Apr. 15, 1994, 33 I.L.M. 1125, 1197 (1994) [hereinafter Final Act].

38. See Final Act, *supra* note 37, at Art. 27(2) (33 I.L.M. at 1208) (defining exemptions from patentability for reasons of “protect[ing] order public . . . [such as] protect[ing] human, animal or plant life or health or to avoid serious prejudice to the environment,” making it optional for members to exclude from patentability “diagnostic, therapeutic and surgical methods,” as well as plants and animals).

Agreement. Even before it reared its head in the TRIPS Agreement, however, this singular initiative fueled North-South ideological and political conflict over the control of PGRs.³⁹ As will become clearer in this Article, this ideological tension has ramifications for food security, especially in indigenous and local community practitioners of traditional agriculture.

*B. PGRs and Farmers' Rights: From International Undertaking
to International Treaty*

The inclination in industrialized countries, as led by America, to subject PGRs to private ownership through the instrumentality of intellectual property did not yield similar enthusiasm in developing countries of the global South. Apart from the South's general support for a weaker intellectual property system, culturally-entrenched popular opinions in most countries of the region were averse to private proprietary claims over life forms considered sacred even from cross-cultural perspectives.⁴⁰ For these reasons and other cultural ramifications, developing countries considered PGRs to be global public goods and part of the heritage of mankind.⁴¹

While the ingrained practice in industrialized countries was to extend private ownership to PGRs, a converse perspective prevailed in the developing countries. These two conflicted approaches to PGRs came to a head in regard to

39. See JACK RALPH KLOPPENBURG JR., *FIRST THE SEED: THE POLITICAL ECONOMY OF PLANT BIOTECHNOLOGY*, 1492-2000 170-5 (1998).

40. See, e.g., Laurie Anne Whitt, *Indigenous Peoples, Intellectual Property & the New Imperial Science*, 23 OKLA. CITY U. L. REV. 211, 238 (1998) (noting that indigenous groups such as the Maori, view genomes as containing a life spirit which is a part of the whole community, not individual property).

41. See Michael Bowman, *The Nature, Development and Philosophical Foundations of the Biodiversity Concept in International law*, in *INTERNATIONAL LAW AND CONSERVATION OF BIOLOGICAL DIVERSITY* 5, 12-13 (Michael Bowman & Catherine Redgwell eds., 1996) (discussing changes in the international legal system concerning the environment); see also *Convention on Biological Diversity of the United Nations Conference on the Environment and Development*, June 5, 1992, U.N. Doc DPI/1307, reprinted in 31 I.L.M. 818 (entered into force Dec. 29, 1993), Preamble (noting, technically, PGRs within the border of sovereign nations are outside the ambit of the common heritage of mankind doctrine, even though for reasons of their ecological or environmental significance to the rest of the biosphere, the need for their conservation is considered in international law as a common concern for mankind) and Art. 3 (recognizing states' rights over the genetic resources that exist in their territories while it endorses a global commitment to conservation of biodiversity as a common concern of mankind), available at <http://www.biodiv.org/convention/convention.shtml> [hereinafter CBD]; see also *International Undertaking*, *supra* note 17, at Annex III (clarifying that "the concept of mankind's heritage, as applied in the International Undertaking on Plant Genetic Resources, is subject to the sovereignty of states over their plant genetic resource . . .").

the exploitation of publicly held PGRs and those obtained from centers of biodiversity and held in *ex situ* seed banks under the Consultative Group on International Agricultural Research ("CGIAR").⁴² The latter is a creature of private and public sector collaboration in the 1970s. It manages the use and access to samples of PGRs stored in *ex situ* gene banks for agricultural research, including plant breeding and other useful endeavors.⁴³

Taking advantage of prevailing intellectual property regimes in their various countries, as well as the UPOV, seed breeding and allied agro-biotech corporations in the North have continued to exploit publicly held PGRs as well as those in CGIAR *ex situ* seed banks obtaining intellectual property rights, especially PBRs.⁴⁴ They are able to effectively exclude natural and original suppliers of these PGRs from benefiting in the resulting innovations. Apart from the CGIAR scenario, it is tenable under the prevailing regime to *freely* obtain and then exploit/improve PGRs from centers of biodiversity without any legal obligation to the natural suppliers or custodians of the original PGRs. While traditional farmers in indigenous and local communities supplied PGRs to transnational agro-biotech and allied corporations, the latter seized proprietary control over their dealings with those resources and profited.⁴⁵ In the supplying communities, there was virtually no mechanism for protecting farmers' valuable knowledge or for rewarding their contributions in the generation of important PGRs which are the mainstay of modern entrepreneurial agricultural biotechnology.⁴⁶

42. See CGIAR, <http://www.cgiar.org/who/index.html> (stating "the Consultative Group on International Agricultural Research (CGIAR) is a strategic alliance of countries, international and regional organizations, and private foundations supporting 15 international agricultural Centers that work with national agricultural research systems and civil society organizations including the private sector. The alliance mobilizes agricultural science to reduce poverty, foster human well being, promote agricultural growth and protect the environment . . .").

43. See LAURENCE R. HELFER, *INTELLECTUAL PROPERTY RIGHTS IN PLANT VARIETIES: AN OVERVIEW WITH OPTIONS FOR NATIONAL GOVERNMENTS* ¶ 1.3.5.2. (2002), <http://www.fao.org/Legal/Prs-OL/Ipo31.pdf> (explaining this network houses world's largest stock of *ex situ* inventory of PGRs for food and agriculture) [hereinafter Helfer 1].

44. See Gregory Rose, *International Regimes for the Conservation and Control of Plant Genetic Resources*, in *INTERNATIONAL LAW AND THE CONSERVATION OF BIOLOGICAL DIVERSITY* 145, 159 (Michael Bowman & Catherine Redgwell eds., 1996).

45. See Daniel Alker & Franz Heidhues, *Farmer's Rights and Intellectual Property Rights – Reconciling Conflicting Concepts*, in *ECONOMIC AND SOCIAL ISSUES IN AGRICULTURAL BIOTECHNOLOGY* 61, 62 (R.E. Evenson, V. Santaniello, & D. Zilberman eds., 2002) ("farmers see their traditional practices of replanting and exchanging seeds endangered through modern PVP").

46. See Helfer 1, *supra* note 43, at ¶ 1.3; Alker & Heidhues, *supra* note 45; Charles R. McManis, *Intellectual Property, Genetic Resources and Traditional Knowledge Protection: Thinking Globally, Acting Locally*, 11 *CARDOZO J. INT'L. & COMP. L.* 547, 548, 552, 556 (2003) (explaining it was only in 1992 that a concrete effort was made at the international level toward recognizing/protecting traditional knowledge of indigenous and local communities and equitable benefit-

In the 1980s, the inequity arising from the exclusion of indigenous and local farmers and their communities in the PGRs enterprise entered the agenda of the Food and Agricultural Organization ("FAO")'s Commission on Genetic Resources for Food and Agriculture ("CGRFA").⁴⁷ The CGRFA is the principal forum for international negotiations on PGRs. The outcome of the resulting negotiation at the CGRFA was a first major attempt to address concerns arising from the exclusion of informal generators of PGRs from having access to proprietary varieties. This was expressed in the non-binding International Undertaking on Plant Genetic Resources of 1983 ("International Undertaking").⁴⁸ Article 1 of the International Undertaking provides as follows:

The objective of this Undertaking is to ensure that plant genetic resources of economic and/or social interest, particularly for agriculture, will be explored, preserved, evaluated and made available for plant breeding and scientific purposes. This Undertaking is based on the universally accepted principle that plant genetic resources are a heritage of mankind and consequently should be available without restriction.⁴⁹

Clearly this provision, especially its prohibition of restrictions on free access and its endorsement of the heritage of mankind in relation to PGRs, is antithetical to the operating objectives of the UPOV. The latter's *raison d'être* is the promotion of private ownership and, consequently, restriction of access to PGRs through intellectual property rights - specifically PBRs.⁵⁰ Understandably, a majority of the member countries of the UPOV were opposed to the International Undertaking because of this apparent conflict with the UPOV. Consequently, they expressed reservation over the instrument. Arising from their pressure, the CGRFA quickly found a superficial quick-fix to this crucial conflict. In

sharing arising from the use of biological resources by the CBD. Although the CBD's emphasis is on traditional biodiversity-related knowledge, it has ramification for all forms of local knowledge, including traditional farming given the holistic nature of indigenous knowledge. Indeed, biodiversity and respect for ecological order are pivotal to the practice and underlying philosophies of local knowledge forms).

47. See Graham Dutfield, *The Role of Traditional Knowledge in Intellectual Property Diplomacy* (2005) (note: this is a paper presented at the 2005 Annual Conference of the Association for Advancement Teaching and Research in Intellectual Property (ATRIP), Montreal, Canada, July 11-13, 2005); see also JOHN BRAITHWAITE & PETER DRAHOS, *GLOBAL BUSINESS REGULATION* 405 (2000); Laurence R. Helfer, *Regime Shifting: The TRIPS Agreement and New Dynamics of International Intellectual Property Lawmaking*, 29 *YALE J. INT'L L.* 1, 35 (2004) [hereinafter Helfer 2].

48. See International Undertaking, *supra* note 17.

49. *Id.* at Art. 1.

50. See UPOV website, <http://www.upov.int/> (last visited Oct. 17, 2006) (stating "The objective of the Convention is the protection of new varieties of plants by an intellectual property right.").

1989, an interpretative amendment to the International Undertaking held that "Plant Breeders' Rights as provided under [the] UPOV . . . are not incompatible with the International Undertaking."⁵¹ It also overrode the International Undertaking's prohibition of restrictions on access to PGRs by providing that "a state may impose only such *minimum restrictions* on the free exchange of materials covered by . . . the International Undertaking as are necessary for it to conform to its national and international obligations."⁵²

The practical implication of these provisions is that the International Undertaking was not able to significantly mitigate the shortchanging of traditional farmers and informal suppliers of PGRs by industrialized country claims of private ownership of PGRs. The International Undertaking preserved those countries' domestic and international legal obligations. Already, we have noted that national laws in most of the industrialized countries have entrenched both conventional (patent) and *sui generis* (PBRs) regimes of intellectual property rights in regard to PGRs. In 1989, a crucial international legal obligation of these countries was their commitment to the UPOV which was preserved by the International Undertaking. The weakness of the International Undertaking may not justify much outcry, however; after all, it was a non-binding instrument and general statement of desirable principles.

Apart from its restatement of PGRs as the heritage of mankind and approval of unrestricted access to PGRs, another high point, and perhaps the most symbolic provision, of the International Undertaking is the endorsement of the concept of farmers' rights.⁵³ From its preamble, the text of Annex II on farmers' rights unveils the underlying motivations for the concept. It refers to the unrewarded contributions of farmers to the improvement, generation, conservation and dissemination of PGRs. It recognizes that most farmers from developing countries, which are the most common origins of PGRs, deserve to benefit from the "improved and increased use of natural resources they preserved."⁵⁴ This is in order to, among other things, ensure continued conservation of PGRs and to foster sustainable agriculture while strengthening the capacity of developing countries to develop and use PGRs.

From the above premise the International Undertaking provides an elaborate but vague definition of farmers' rights as: "rights arising from the past, present and future contributions of farmers in conserving, improving, and making available plant genetic resources, particularly those in the centres of ori-

51. See International Undertaking, *supra* note 17, at Annex 1.

52. *Id.* It is instructive to note that the Interpretative Amendment did not give a clue as to what would amount to "minimum restriction."

53. See International Understanding, *supra* note 17, at Annex II.

54. *Id.*

gin/diversity.”⁵⁵ For several years, within the limits of its modest status as a non-binding regime, the International Undertaking had continued to globally promote the imperative for PGRs conservation and its financing in a manner aimed at benefiting farmers in indigenous and local communities.⁵⁶

Over twenty years after its enunciation in the International Undertaking, the recognition of farmers' rights was adopted in Article 9 of the 2001 ITPGRFA in the exact words. Given the binding nature of the treaty and its automatic displacement of the International Undertaking as the core FAO legal instrument on plant PGRs, its endorsement of farmers' rights compels scrutiny. Already, we have noted the limitations of the International Undertaking in addressing the privatization of PGRs to the exclusion of traditional farmers. The concept of farmers' rights endorsed by both the International Undertaking and the ITPGRFA is perhaps the most concrete strategy to address the exclusion of traditional/local farmers and farming communities from benefiting from PGRs they conserve. It requires examining the extent to which that objective may or may not be accomplished through the instrumentality of farmers' rights.

As defined, farmers' rights raise both conceptual and interpretative questions. Pertinent questions include what is the nature and scope of farmers' rights? Are they a form of intellectual property rights or, in the alternative, what is their relationship with intellectual property rights? What are their limitations? To what extent can the concept of farmers' rights deliver on the expectations of its proponents? Before addressing these questions, a quick comment on the evolution of the concept of farmer's rights may be appropriate.

Even though the 1983 International Undertaking was the first major instrument to use the terminology, the ideas underlying farmers' rights predate that initiative. While the pressure for incorporation of farmers' rights into the politics of PGRs exploitation is associated with developing countries, in their bid to check UPOV plant breeders' rights scheme,⁵⁷ the UPOV text itself illustrates an earlier tendency to grant concessions/exemptions to farmers even though it did not use the terminology of rights. Thus, the inequitable nature of the use of intellectual property rights in the PGRs context to the exclusion of traditional farmers is a fact known to the beneficiaries of those rights. The crucial issue is the unsatisfactory manner of the response to the inequity.

55. *Id.* In the vision of the International Undertaking, “[t]hese rights are vested in the international community as a trustee for present and future generations of farmers, for the purpose of ensuring full benefits to farmers, and supporting the continuation of their contributions, as well as the attainment of the overall purpose of the International Undertaking” *Id.*

56. See McManis, *supra* note 46, at 552, 555.

57. See Dutfield, *supra* note 47.

Such response was expressed in Article 5(3) of the 1961 UPOV in the following provisions:

Authorization by the breeder or his successor in title shall not be required either for the utilization of the new variety [by farmers or others] as an initial source of variation for the purpose of creating other new varieties or for the marketing of such varieties. Such authorization shall be required, however, when the repeated use of the new variety is necessary for the commercial production of another variety.⁵⁸

The effect of this provision which survived the 1972 and 1978 revisions of the UPOV is that plant breeders' rights do not extend to use by farmers or others of protected varieties when used as sources of newer varieties so long as no repeated use is made of such protected varieties for commercial objectives. Thus, farmers and others are allowed one-time use of protected varieties and the extent of their commercial dealings in such varieties is radically curtailed. In a pattern of progressive plugging of the scope of so called farmer's privilege or exemption, Article 14(5)(a)(i) of the 1991 revisions of the UPOV provides that farmers' generation of "varieties which are *essentially derived* from the protected variety" are outside the scope of farmers' privilege,⁵⁹ and subject to plant breeders' rights.⁶⁰

The foregoing evinces a reluctance to incorporate farmers into the reward regime inherent in the extension of intellectual property rights to PGRs. At best, what is evident is a lame attempt to acknowledge such a need. Also, farmers and other users of PGRs are not expected to engage in commercial exploitation of the PGRs they are crucial partners in generating. Further, despite the symbolic nature of the window open to farmers, and other informal users or generators of PGRs, their interests are made subject to the ultimate benefit of holders of PBRs.

For instance, Article 15(2) of the 1991 UPOV revisions allows farmers only to "use for propagating purposes, on their own holdings, the product of the harvest which they have obtained by planting [a protected variety] on their own holdings"⁶¹ However, farmers can take advantage of this opportunity"subject [only] to the safeguarding of the legitimate interests of the breeder"⁶² Unlike previous UPOV regimes, under the extant revisions breeders' rights unequivocally trump farmers' privileges. By virtue of Article 15, member states

58. See UPOV 1961/1978, *supra* note 35.

59. UPOV 1991, *supra* note 35, at Art. 14(5)(a)(i); see Srinivisan & Thirtle, *supra* note 7, at 163-164 (explaining the provision in the following words: "where the protected variety is not itself an essentially derived variety." This is designed to curb the phenomenon of "cosmetic breeding," a practice by which imitators took advantage of research exemptions under the 1978 UPOV to breed new varieties that are identical to protected varieties).

60. See Srinivisan & Thirtle, *supra* note 7, at 163-4.

61. See UPOV 1991, *supra* note 35, at Art. 15(2).

62. *Id.*

of the UPOV have the option to provide for a farmers' exemption in their individual national laws. Expectedly, in implementing these revisions, in almost the whole of Europe, farmers' privilege have ceased to exist save for cases of small farmers;⁶³ while breeders' right now extend to even harvested materials⁶⁴ and those essentially derived therefrom.⁶⁵

In sum, the response to the need to protect and reward farmers' knowledge of, and dealings with, PGRs follows a pattern of cosmetic acknowledgment and gradual erosion. From the 1961 UPOV to the 1991 revisions, responses to the yawning equity gap in addressing informal farmer contribution to PGRs venture is one of motion without movement. Such responses are far from satisfactory. It remains to consider whether the enunciation of farmers' rights outside the so-called UPOV's farmers' privilege is capable of providing a way out of this cul-de-sac.

III. PART II

A. Farmers' Rights As A Conceptual Morass

The nature of farmers' rights is not articulated in the text of the ITPGRFA. At best, the treaty only leaves some clue for speculation in this regard. However, given the framework nature of the treaty, state parties' responses in implementing its provisions through domestic legislation and policies have the potential to provide details of the nature and content of farmers' rights.⁶⁶ According to the treaty text, farmers' rights issue from "the past, present and future contributions of farmers . . . in conserving, improving and making available" plant genetic resources.⁶⁷ It follows that farmers' rights (whatever they may be) are inherent, automatic and arguably inalienable. Thus, theoretically, farmers' rights under the treaty are far stronger than their status as a "privilege" or exemption in the UPOV.

In regard to the scope of farmers' rights, again, the treaty is silent and does little save to leave the details to general academic speculation, legislative

63. See Srinivanson & Thirtle, *supra* note 7 at 164.

64. See UPOV 1991, *supra* note 35, at Art. 14(2) (this is tenable in circumstances where the holder of breeders' right was not able to enforce his/her right over the genetic material at an earlier stage); see also Srinivisan & Thirtle, *supra* note 7, at 164.

65. See UPOV 1991, *supra* note 35, at Art. 14(5)(a)(i).

66. See Genetic Resources Action International (GRAIN), Biodiversity Rights Legislation (BRL) Project, <http://www.grain.org/brl/?page=2> (last visited Oct. 11, 2006) (describing the BRL as a "collection of emerging laws . . . [designed to] . . . [spell out] who can control biodiversity at the local level.").

67. See ITPGRFA, *supra* note 8, at Preamble ¶ 7.

and policy initiatives in member states. What rights are inherent in the contributions of farmers in their dealings with PGRs? Analysts agree that the right to save and replant saved seeds is fundamental to farmers' dealings with PGRs.⁶⁸ Unrestricted exercise of this right is at the root of farmers' historic contributions to PGRs and capacity to sustain such contributions. Contingent upon this right is farmers' entitlement to "receive information on duplicate samples of the [genetic] materials collected by third parties."⁶⁹ Indeed, free flow and exchange of information is an innate imperative in farmers' dealings with PGRs. Other useful informal farming practices, including those that promote conservation, sound environmental, or healthy ecological and socio-cultural practices fall within the ambit of farmers' rights. Article 9 of the ITPGRFA—discussed in some detail below—gives further clue to the scope and content of farmers' rights. Apart from right to save, use, exchange and sell farm-saved seeds and other propagating materials, it recognizes farmers' stake in both equitable sharing of benefits deriving from PGRs and in participating in decision-making in these and other matters.⁷⁰

It is important to emphasize that culturally-contingent farming practices of indigenous and local communities, including farmers' dealings with PGRs (i.e., those at the centers of origin/biodiversity) are sites for the elaboration of farmers' rights. This is also acknowledged in Article 9.⁷¹ Such practices represent epistemic approaches to agriculture that constitute alternatives to modern-day scientific plant breeding and agro-biotech practices. They are components of a more embracing indigenous and local knowledge, incorporating aspects of peoples' cultural expression, self-identification and general ecological-centered worldview. These ingredients facilitate the procurement of "acceptable foods" in an environment that meets the requirement of human dignity for members of indigenous and local communities in their dealings with PGRs at the centers of origin/biodiversity. As will become clearer in subsequent analysis, sustainable practice of traditional agriculture in indigenous and local communities is critical to the concept of food security for their members.

68. See ITPGRFA, *supra* note 8, at Preamble ¶8; see Carlos M. Correa, *Options for the Implementation of Farmers' Rights at the National Level*, SOUTH CENTRE WORKING PAPERS #8, 22 (2000); see also Samantha M. Ohlgart, *The Terminator Gene: Intellectual Property Rights vs. Farmers' Common Law Right to Save Seed*, 7 DRAKE J. AGRIC. L. 473, 482 (2002); Jeremy P. Oczek, *In the Aftermath of the "Terminator" Technology Controversy: Intellectual Property Protections for Genetically Engineered Seed and the Right to Save and Replant Seed*, 41 B. C. L. REV. 627, 647 (2000).

69. Correa, *supra* note 68, at 22.

70. ITPGRFA, *supra* note 8, at Art. 9.

71. *Id.*

1. *Farmers' Rights vs. Intellectual Property Rights*

The next question is whether farmers' rights are intellectual property rights or, in the alternative, what is the relationship between the two concepts? The campaign for farmers' rights was motivated as a counterbalancing response to intellectual property rights in the PGRs arena, particularly PBRs.⁷² However, this approach underlines the conceptual morass which plagues the notion of farmers' rights. Given its role as a counterweight, it may be tenable to argue that farmers' rights are not intellectual property. But that is not as simple as it seems. The concept of farmers' rights taps into some of the underlying logic of intellectual property rights with the result that the relationship between the two concepts is a complicated one.

The preamble to the International Undertaking's provisions on farmers' rights echoes the reward and incentive theory of intellectual property rights.⁷³ One of the underlying justifications for intellectual property is its ability to reward creative or inventive endeavors and consequently, stimulate the human propensity to innovation and possibly, its sustainability.⁷⁴ Similarly, farmers' rights are presented as a mechanism to reward contributions of farmers to the generation, improvement and dissemination of PGRs.⁷⁵ Reward in this context is a form of incentive with an overarching objective to foster capacity building and sustainable agricultural practices by farmers, especially those in developing countries.

Another common feature of intellectual property and farmers' rights lies in the argument from equity. Intellectual property operates to check the exploitation or misappropriation of knowledge and its product even though it is complicit in so doing.⁷⁶ By ensuring that owners of valuable knowledge are rewarded and not fleeced, intellectual property serves the cause of equity.⁷⁷ However, a critical

72. See Helfer 2, *supra* note 47, at 35-7; see also Helfer 1, *supra* note 43, ¶ 1.3.6.2.

73. See William Fisher, *Theories of Intellectual Property*, in *NEW ESSAYS IN THE LEGAL AND POLITICAL THEORY OF PROPERTY* 168, 174 (Stephen R. Munzer ed., 2001); Adam D. Moore, *A Lockean Theory of Intellectual Property*, 12 *HAMLIN L. REV.* 65 (1997); see generally PETER DRAHOS, *A PHILOSOPHY OF INTELLECTUAL PROPERTY* (1996) (surveying various theories of property).

74. See W.L. Hayhurst, *Intellectual Property Laws in Canada: The British Tradition, the American Influence and the French Factor*, 10 *INTELL. PROP. J.* 265, 267 (1996).

75. See ITPGRFA, *supra* note 8, at Preamble ¶ 7.

76. This is the core argument of the utilitarian theory and to some extent of the natural rights approach. See, e.g., Moore, *supra* note 73, at 68 *et seq.* (discussing the rule-utilitarian intellectual property approach).

77. See WALTER V. REID ET AL., *An Intellectual Property Rights Framework for Biodiversity Prospecting*, in *BIODIVERSITY PROSPECTING: USING GENETIC RESOURCES FOR SUSTAINABLE DEVELOPMENT* 160, 178 (Walter V. Reid, eds., 1993).

issue in intellectual property jurisprudence is its ability to equitably mediate the private claims to knowledge, especially those in the public domain, with the legitimate claims of the public to protected knowledge.⁷⁸ Not directly related to the present discussion, this debate will not detain us.

Provisions for farmers' rights in relevant documents which articulate the *raison d'être* for the concept emphasize the need to retroactively address farmers' past, as well as to value their present and future, contributions to PGRs. According to Correa

[t]he development of the concept of Farmers' Rights may be regarded, in this context as, as a result of *equity* considerations: there is a moral obligation to ensure that traditional farmers receive a fair share of the benefits arising from the use of plant genetic resources that they conserve and improve.⁷⁹

Ironically, intellectual property rights, especially PBRs, are acknowledged as complicit in undermining farmers' contributions to PGRs. Despite the ambiguous role of intellectual property in promoting equity, to the extent that intellectual property serves equitable causes, equity represents a common feature in the relationship between farmers' rights and intellectual property rights.

The language of rights is yet another common feature of farmers' rights and intellectual property rights. Without delving into the jurisprudence of rights, it may be noted that in the Hohfeldian sense, rights attract correlative duties or obligations on the part of third parties.⁸⁰ Indeed, "[a]ll property rights place the rightholder in a juridical relation with others."⁸¹ Users of intellectual property rights have an obligation to exploit them subject to the interests of rights holders. For instance, patent is the basis of a patentee's exclusive rights over his/her invention. Third parties have an obligation not to appropriate or otherwise replicate the patented product or process except under terms permissible by the patent

78. See Keith E. Maskus & Jerome H. Reichman, *The Globalization of Private Knowledge Goods and the Privatization of Global Public Goods*, in INTERNATIONAL PUBLIC GOODS AND TRANSFER OF TECHNOLOGY UNDER A GLOBALIZED INTELLECTUAL PROPERTY REGIME 3, 16-17 (Keith Maskus & Jerome H. Reichman eds., 2005); Carys J. Craig, *Locke, Labour and Limiting the Author's Right: A Warning Against A Lockean Approach to Copyright Law*, 28 QUEEN'S L. J. 1, 5-6 (2002) (discussing whether it is an author-work or a public-work under copyright law); see generally Lawrence Lessig, *The Creative Commons*, 55 FLA. L. REV. 763 (2003) (analyzing the current state of copyright law and its impact on the public).

79. See Correa, *supra* note 68, at 11 (emphasis in original).

80. *Id.* at 22; see generally R.M.W. DIAS, A BIBLIOGRAPHY OF JURISPRUDENCE 23-26 (3d ed., 1979).

81. See Peter Drahos, *The Universality of Intellectual Property Rights: Origins and Developments*, INTELLECTUAL PROPERTY AND HUMAN RIGHTS - WIPO PUBLICATION NO. 762(E) (1999), available at <http://www.wipo.int/tk/en/hr/paneldiscussion/papers/word/drahos.doc>.

owner/holder. The same is true in varying details of copyrights, trade marks, design and diverse provinces of intellectual property.

In regard to farmers' rights, first under the International Undertaking, because the instrument is non-binding, farmers' rights do not give rise to a binding legal obligation. Under the ITPGRFA, the farmers' rights' concept is designed to pursue open access to PGRs.⁸² It does not create any negative obligation on those who exploit farmers' contributions to PGRs. The ITPGRFA aims at creating a mechanism that will facilitate open access to PGRs. To the extent, if any, that the ITPGRFA creates obligations, it requires those who exploit PGRs in the common pool to fund benefit-sharing, conservation and sustainability programs that support informal farming communities.⁸³ In sum, it requires that farmers' rights be recognized and promoted. A generous view of this is that any obligation in this context is an indirect one. This is not in the sense in which intellectual property rights create negative obligation on rights' users.

A major point of departure between intellectual property and farmers' rights is the exclusive nature of the former and the inclusive nature of the latter. Unlike intellectual property rights, farmers' rights are presented as rights not to be restricted but to be encouraged and made accessible and available to exploitation so long as those who commercially deploy farmers' contributions to PGRs commit to the latter's promotion and sustainability. According to Helfer,

[t]he ITPGR's principal aim is to facilitate the exchange of seeds and other germplasm between member states to be used for research, breeding and crop development. The treaty promotes this development by establishing a "multilateral system" to which member states and their nationals will be granted "facilitated access." In essence, the multilateral system is a communal seed treasury composed of 35 food and 29 seed crops now held by governments (both *in situ* and *ex-situ* in national seed banks) and by the CGIAR in its extensive *ex situ* seed collections.⁸⁴

Despite incorporating features of intellectual property rights, as a non-exclusive mechanism, farmers' rights are conceptualized as a counterweight to intellectual property rights (especially plant breeders' rights) in the PGRs arena. They are not "dependent, like IPRs, on the creation of extraordinary rent through exclusive market positions but, to the contrary, on an open system of exchange and circulation of [genetic] materials."⁸⁵ The exclusive nature of intellectual property rights is at the root of their privileging private claims over knowledge,

82. See Helfer 1, *supra* note 43, at ¶ 4.3.2.

83. See ITPGRFA, *supra* note 8, at Art. 13.2(d)(ii), Art. 19.3(f) (stating the expected funding arrangement is payment of a percentage of their profit into a fund to be managed by the treaty's Governing Body.).

84. See Helfer 1, *supra* note 43, at ¶ 4.3.1 (emphasis in original)

85. See Correa, *supra* note 68, at 12.

their freezing of the commons and general restrictions of public claims thereto. This distinction between farmers' rights and intellectual property rights is perhaps the most crucial in trying to grasp the nature and emerging jurisprudence of farmers' rights.

The ambiguity in the relationship between farmers' rights and intellectual property rights are located in a few other critical areas. First, I have noted the conceptual vagueness in regard to the deployment of language of rights to describe farmers' claims. Aside from the question of suitability of "rights," the nature of rights claimed focus on compensation and benefit-sharing in the use, generation, conservation and sustainability of PGRs. In contrast, intellectual property rights confer *exclusive proprietary rights* to holders, subject of course, to complex details. Second, the primary beneficiaries or title holders to farmers' rights are farming communities "at centre of origin/diversity" in indigenous and local communities or their state agents and possibly other indeterminate stakeholders.⁸⁶ Intellectual property rights accrue to "physical-juridical persons," corporate or individual.⁸⁷

Third, the subject matters of farmers' rights, i.e., their "past, present and future contributions" to PGRs are not precisely defined in the relevant instruments.⁸⁸ Unlike intellectual property rights that apply to clearly defined subject matters, categories of farmers' contributions are not closed. Such practices may be geographically or culturally specific. Similarly, while intellectual property applies to concrete and identifiable innovations, farmers' rights encompass potential and indeterminate endeavors. Lastly, while farmers' rights may exist in perpetuity, for the most part intellectual property rights are subject to a fixed term.

2. Efficacy of Farmers' Rights: Textual Scrutiny

The attempt in the last section to juxtapose farmers' rights with intellectual property rights leaves us with one inescapable conclusion. There is a conceptual morass surrounding the idea of farmers' rights. And interpreting farmers' rights is like navigating a slippery terrain littered with banana peels. A combination of the conceptual quagmire that plagues farmers' rights with their recent entry to our legal lexicon provides the reason why the jurisprudence around farmers' rights is yet to crystallize and is in need of continued interrogation and elaboration. Putting aside the evolving nature of the underlying jurisprudence, the present section analyzes relevant sections of the ITPGRFA text to determine the

86. ITPGRFA, *supra* note 8, at Preamble ¶ 7.

87. See Correa, *supra* note 68, at 16.

88. ITPGRFA, *supra* note 8, at Preamble ¶ 7.

extent to which farmers' rights are capable of accomplishing the objectives and expectations of its proponents.

Part III of the ITPGRFA is exclusively devoted to farmers' rights. It has only one article, 9, which contains three subsections. That article states the rationale for farmers' rights as echoed in the ITPGRFA's Preamble and the International Undertaking.⁸⁹ In an open-ended fashion, it associates farmers' rights with traditional knowledge in the context of PGRs for food and agriculture. Also, it identifies farmers' rights with rights to benefit-sharing in the utilization of PGRs and the right of farmers to participate in the fashioning of national policy on matters incidental to conservation and sustainable use of PGRs for food and agriculture.⁹⁰

Under Article 9.2, the responsibility for realizing farmers' rights as they relate to PGRs for food and agriculture vests in national governments. In discharging such responsibility, national governments' commitment to the attainment of farmers' rights should be moderated "in accordance with their needs and priorities . . . and subject to [their] national legislation."⁹¹ With specific reference to perhaps the most crucial of farmers' rights, Article 9.3 provides that "[n]othing in this Article shall be interpreted to limit any rights that farmers have to save, use, exchange and sell farm-saved seed/propagating material, *subject to national law and as appropriate*."⁹² These provisions are consistent with the preambular affirmation that "nothing in this Treaty shall be interpreted as implying in any way a change in the rights and obligations of the Contracting Parties under other international agreements."⁹³

Evidently, under the foremost international juridical elaboration of farmers' rights, i.e. the ITPGRFA, contracting parties are free to determine the extent to which they are inclined to protect those rights. The treaty recognized three key factors that would moderate contracting parties' commitment or lack thereof to farmers' rights. These are: their i) national priorities, ii) national laws and iii) international obligations. These three factors are interrelated.

National laws of states are intertwined with their national priorities. At the international level, for the most part, states use international treaty or policy making forums to advance their national priorities. For instance, industrialized and developing countries' opposing disposition toward stronger intellectual prop-

89. See ITPGRFA, *supra* note 8, at Art. 9; International Undertaking, *supra* note 17, at Annex II.

90. See ITPGRFA, *supra* note 8, at Art. 9.2(a)-(c).

91. *Id.* at Art. 9.2.

92. *Id.* at Art. 9.3 (emphasis added).

93. See *id.* at Preamble ¶10.

erty regime mirrors the prevailing priorities in individual states.⁹⁴ Industrialized countries', especially the United States', head start and vested interest in plant breeding and agricultural biotechnology correlate to their interest in championing the entrenchment of intellectual property rights in PGRs.⁹⁵

The United States, more than any other country, spearheaded the pushing of the intellectual property envelope, lifting it from its historical restraint to accommodate private claim over life forms. In regard to PGRs, this was accomplished through the introduction of plant breeders' rights, first to cover dealings with asexually reproducing plants and then to their sexually propagating counterparts.⁹⁶ This national initiative received its international imprimatur in the UPOV Act. It is not surprising that early signatories to the UPOV were mainly developed countries.⁹⁷ Rapid increase in developing countries' membership of the UPOV in recent times arise more from pressure exerted by industrialized countries than from voluntary choice.⁹⁸

In addition to plant breeders' rights —a *sui generis* form of intellectual property —the United States adopts a permissive approach to conventional intellectual property, specifically utility patents, extending the same to "anything under the sun that is made by man," including PGRs.⁹⁹ This marked the entrenchment of a regime of multiple intellectual property protection option over PGRs. It has since been extended as a globally endorsed standard under the TRIPS Agreement.¹⁰⁰

Because of their traditional strength in technological innovations in general and biotechnology in particular, it is logical that national laws and priorities of many industrialized countries support a stronger intellectual property regime in PGRs. This imperative also informs those countries' support for a stronger multilateral and international regime on PGRs, one that promotes an exclusive system of rights as opposed to the non-exclusive scheme envisaged under the farmers' rights framework. Accordingly, under the UPOV and the TRIPS Agreements —two principal sources of states' international obligations on PGRs,

94. See Alford, *supra* note 33, at 15.

95. Oguamanam 3, *supra* note 31, at 61.

96. See *id.* at 61-2.

97. See World Intellectual Property Organization, Contracting Parties – UPOV Convention, http://www.wipo.int/treaties/en/ShowResults.jsp?lang=en&treaty_id=27 (last visited Oct. 17, 2006).

98. See Jean-Frédéric Morin, *Bilateral IP Treaties*, (2005) (note: this paper presented at Annual Congress of the Association for Advancement of Teaching and Research in Intellectual Property (ATRIP), Montreal, July 12, 2005); see also GRAIN, TRIPS-PLUS THROUGH THE BACK DOOR: HOW BILATERAL TREATIES IMPOSE MUCH STRONGER RULES FOR IPRs ON LIFE THAN THE WTO 2, 6 (2001), http://www.grain.org/briefings_files/trips-plus-en.pdf.

99. See Diamond, *supra* note 27, at 309 (citations omitted).

100. See Final Act, *supra* note 37, at Annex 1(C) (33 I.L.M. at 1197).

especially those relevant to food and agriculture —there is a strong commitment to plant breeders' and patent rights over PGRs.¹⁰¹ Already, we have noted that in its treatment of farmers' privilege or farmers' exemption the UPOV made such dispensation subject to the overarching interest of the holders of plant breeders' rights. Not surprisingly, the TRIPS agreement is silent on farmers' rights. Unlike the UPOV, from the outset it extends plant breeders right to *all* genetic resources.¹⁰²

Industrialized countries' commitment to the realization of farmers' rights under the ITPGRFA is subject to their national priorities, laws and international obligations.¹⁰³ Such national laws, priorities and international obligations of states are largely those supportive of an exclusive proprietary right, including patent and PBRs over PGRs. Because of the exclusive nature of these regimes of rights and their focus on industrial, scientific plant breeding and other agro-biotech innovations, they undermine and exploit farmers' informal contribution to PGRs. It is basically for this reason that the movement for farmers' rights arose as a counterweight to the inequity arising from the entrenchment of intellectual property rights in PGRs.

Under the ITPGRFA, farmers' rights appear to have left undisturbed all pre-existing national laws and international obligation of states.¹⁰⁴ In most states, especially those of the industrialized countries, such obligations, including their national priorities, are supportive of a stronger intellectual property rights system, particularly patents and PBRs, on PGRs. One conclusion becomes compelling: whether farmers' rights can serve as an effective checkmate to intellectual property rights in PGRs is at best doubtful and at worse unfeasible.

An alternative opening for effective deployment of farmers' rights appears to lie with national governments in developing countries. After all, the re-

101. See ETC Group, *Who Calls the Shots at UPOV?*, (2003), <http://www.etcgroup.org/upload/publication/161/01/genoupovterm.pdf>. TRIPS does not require mandatory patents on plant varieties. Such patents are optional at the instance of member states. However, TRIPS sanctions the extension of intellectual property rights to any field of technology without discrimination. With industrialized countries' support for terminator or genetic use restriction technologies and the prospects for the latter's commercialization, patents or PBRs on PGRs may no longer be attractive. The self-enforcing nature of terminator technologies make them more attractive alternative to conventional intellectual property.

102. See Final Act, *supra* note 37, Annex 1(C), §5, Art. 27 (33 I.L.M. at 1208); see Helfer 1, *supra* note 43, at ¶¶ 2.1-2.2 (discussing the phase in protections under the UPOV). Traditionally, the UPOV (from its 1978 revisions) requires gradual extension of protection to a number of genera or species. Under the 1991 revisions members are to extend protection to 15 genera or species from the time of the Act's coming into force and subsequently, to all plant genera or species within 10 years. See UPOV 1991, *supra* note 35.

103. See ITPGRFA, *supra* note 8, Preamble ¶¶ 9-11, Art. 4.

104. *Id.* at Art. 9.2.

sponsibility for realizing farmers' rights is entrusted with national governments. The exploration of that potential is outside the scope of this paper.¹⁰⁵ However, many developing countries are increasingly signing on to the UPOV and are already members of the WTO and, consequently, the TRIPS Agreement.¹⁰⁶ As such, their international obligations in regard to patents or plant breeders' rights are often at cross purposes with their national priority which understandably is in favor of farmers' rights.

There is yet another crucial flaw in the ITPGRFA that undermines the advancement of farmers' rights. In an attempt to restrict their effect on PGRs, the treaty, in Article 12.3(d) bars claims to intellectual property rights on PGRs "for food and agriculture, or *their genetic parts or components in the form received from the Multilateral System.*"¹⁰⁷ It is apparent from this provision that useful plant varieties for food and agriculture include their genetic materials. In effect, genes or genetic materials isolated or purified from germplasms in the common seed pool could not be the subject of exclusive claims under intellectual property rights.

If this were conclusive, it would have meant a significant victory for architects of farmers' rights and their pursuit of a non-exclusive access regime to PGRs. However, the qualifying phrase, namely "in the form received from the Multilateral System" was put into the provision at the instance of industrialized countries to undermine whatever their developing country counterparts stood to gain from the definition of plant varieties to include their artificial genetic transformation. According to Helfer, "the critical question is whether the act of extracting a gene from a seed is, in itself, a sufficient alteration of the seed's genetic material such that the extracted genetic is no longer 'in the form' received from the multilateral system" and so entitled to intellectual property protection.¹⁰⁸ Proponents of non-exclusive access to genetic materials argue that under the pro-

105. See GRAIN, *supra* note 66 (organizing biodiversity-related law by either country or type of law). A number of countries as well as regional organizations have enacted legislation or draft instruments pursuant to the realization of farmers' rights particularly within the broader framework for the protection of indigenous/local knowledge, access and benefit sharing under the CBD. The extent to which those laws could enable them realize farmers' rights where majority of industrialized countries are free to undermine those rights by appeal to their international obligations and national priorities remains to be seen.

106. See note 98 and accompanying text.

107. ITPGRFA, *supra* note 8, at Art. 12.3(d) (emphasis added); see Helfer 1, *supra* note 43, at ¶ 4.3.2.3. This is one of the contentious subjects in the negotiation of the treaty. While developing countries were inclined to bar intellectual property claims over isolated and purified genes derived from germplasms in the common pool, industrialized countries (led by the United States and Japan) opposed any such ban. The resulting provision was a compromise proposed by the European Union.

108. See Helfer 1, *supra* note 43, at ¶ 4.3.2.4.

vision both seeds and their genetic materials should be freely available.¹⁰⁹ Their opponents counter that the article's prohibition of intellectual property rights over PGRs applies "to raw germplasm, not to individual genes or DNA fragments that are isolated and purified and thus altered from their natural state."¹¹⁰

Like the qualifications that limit contracting parties' commitment to the realization of farmers' rights, Article 12.3(d) represents yet another weakness in the ITPGRFA in regard to the attainment of farmers' rights. Given the two credible but competing interpretations of the article, it is expected that the treaty's Governing Body will clarify this apparent ambiguity.¹¹¹ Pending such development, national laws, priorities and international obligations (in regard to PGRs) of countries, especially the industrialized ones, are mostly in conflict with an interpretation of Article 12.3(d) that bars intellectual property over isolated/purified genes or DNA fragments from plant germplasm. Gene-related patents are permissible under the national laws of most developed countries.¹¹² As part of their international obligations, the extension of intellectual property to PGRs and all technologies (including biotechnology/genetic engineering) without discrimination as to form is part of national obligation of states under the UPOV and TRIPS Agreement.

Summing up, the use of intellectual property in PGRs by developed countries gives rise to undeniable inequities. At the receiving end are indigenous and local farming communities whose dealings with PGRs at the centers of origin/biodiversity are not adequately recognized let alone rewarded. A combination of conceptual ambiguity and textual flaws and limitations conspire to undermine the ITPGRFA's attempts to use an alternative concept of farmers' rights to address the exclusion of farmers from proprietary claims over innovations in PGRs. After over twenty years of introduction of farmers' rights in CGRFA, the concept's ability to achieve the objectives of its proponents remains in serious jeopardy. The implications for food security and cultural security of indigenous and local communities are serious if the reward mechanism for innovations in PGRs only caters for scientific plant breeding and agro-biotech endeavors at the expense of farmers' contributions to the generation and conservation of PGRs.

109. *Id.*

110. *Id.*

111. *Id.*

112. See e.g., *Diamond*, 447 U.S. at 309 (discussing the enactment and interpretation of the 1930 Plant Patent Act; see also *Commissioner of Patents v. President and Fellows of Harvard College and Others* [2002] 4 S.C.R. 45; *Schemeiser et al. v. Monsanto Canada Inc. et al.* [2004] 1 S.C.R. 902 (both discussing Canada's Patent Act).

IV. PART III

A. Farmers' Rights: The Food Security Dimension

1. Farming as Indigenous/Traditional Knowledge

To understand the implication for food security in indigenous and local communities of a weak farmers' rights regime or an ineffective reward scheme for farmers' contributions to PGRs requires spotlighting a vital element of that regime under the ITPGRFA. In both the latter's general text and specifically Article 9, farmers' right is associated with *traditional knowledge* in the PGRs for food and agriculture milieu. Traditional farming practices and associated experience is a crucial aspect of indigenous or traditional epistemology writ large. For example, in virtually all cultures, more so in indigenous and local circles, there is a faint border between food and medicine. Thus, "[t]he food upon which Indigenous people around the world depended for life was also their medicine."¹¹³ Similarly, "[t]he Third-World farmer appreciates his dependence on biodiversity . . . [from which] [h]e gathers edible fruits, wild animals for protein, fiber for clothing and ropes, incense for religious ceremonies, natural insecticides, fish poisons, wood for houses, furniture, and canoes, and medical plants . . ."¹¹⁴ The short point here is that apart from being a pivotal aspect of traditional knowledge of PGRs for food and agriculture, informal farming practices encompass other vital aspects of indigenous and local knowledge, such as traditional medicine.

Because of the holistic nature of traditional knowledge, indigenous and local communities are reluctant to embrace a fragmentary or reductionist approach to their knowledge system. Such an approach is preferred by the dominant culture in its attempt to fit indigenous epistemologies, even those it cannot understand, into Western categories.¹¹⁵ It is an approach readily inclined to conceive traditional farming practice in isolation from its affinity with other aspects of indigenous knowledge and associated internalized belief systems.

As a holistic phenomenon, indigenous knowledge, including traditional farming practices, is a site of indigenous peoples' and other local communities'

113. See GREGORY CAJETE, *NATIVE SCIENCE: NATURAL LAW OF INTERDEPENDENCE* 115 (2000); see also HARRIET V. KUHNLEIN & NANCY J. TURNER, *TRADITIONAL PLANT FOODS OF CANADIAN INDIGENOUS PEOPLES: NUTRITION, BOTANY AND USE* 1(1991).

114. Nations, *supra* note 9, at 79-80.

115. See Roy Ellen & Holly Harris, *Introduction*, in *INDIGENOUS ENVIRONMENTAL KNOWLEDGE AND ITS TRANSFORMATIONS: CRITICAL ANTHROPOLOGICAL PERSPECTIVES* 14-15 (Roy Allen et al. eds., 2000); see generally MARIE BATTISTE & JAMES [SA'KE'] YOUNGBLOOD HENDERSON, *PROTECTING INDIGENOUS KNOWLEDGE AND HERITAGE: A GLOBAL CHALLENGE* 35-41(2000).

dialogue with the West in the post/neocolonial era. For convenience, the underlying framework of Western and non-Western (indigenous) epistemology corresponds to scientific and non-scientific/indigenous knowledge.¹¹⁶ In this paradigm, so called Western science and its indigenous knowledge counterparts depict two competing worldviews.¹¹⁷ In practical terms, the two worldviews embody opposing alternatives and sometimes complementary approaches to humanity's dealing or relationship with the environment, ecological forces and, by extension, their agricultural philosophies.

For indigenous peoples or the rest of the West's "Others," knowledge, including traditional agricultural practices, is critical to their identity, self-determination and cultural survival.¹¹⁸ As expressions of indigenous knowledge, traditional farmers' dealings with plants and other natural elements, their knowledge of seasons and their guided mediations in the complex interactions that occur in nature reflect the ethos of ecological sanctity and commitment to environmental harmony.¹¹⁹ Essentially, farming is conducted through established social networks, as sacred communal, spiritual and cultural endeavors often in a ritualized and ceremonial manner. It is not surprising that in many indigenous and local communities knowledge of endemic PGRs is considered a global public goods and part of cultural/natural heritage, first of the community, and, then of the entire humankind.

The cultural components and inherent symbolisms of traditional farm crops and agricultural practices have larger implications for indigenous and local

116. See, Cajete, *supra* note 111, at 14; MARTHA JOHNSON, LORE: CAPTURING TRADITIONAL ECOLOGICAL KNOWLEDGE 6-10 (1990); Arun Agrawal, *Indigenous and Scientific Knowledge: Some Critical Comments*, INDIGENOUS KNOWLEDGE & DEV. MONITOR 3(3), 5 (1995), available at <http://www.nuffic.nl/ciran/ikdm/3-3/articles/agrawal.html>; see generally Arun Agrawal, *Dismantling the Divide Between Indigenous and Scientific Knowledge*, 26 DEV. & CHANGE 413, 439 (1995). Literally, science translates to a way of knowing. Since each culture has a way knowing, the use of the term "scientific" to describe western epistemologies to the exclusion of indigenous or other non-western knowledge systems is an intellectually barren and misleading approach that has come under disrepute.

117. See BATTISTE & HENDERSON, *supra* note 113, at 35; see also Graham Hingangaroa Smith, *Protecting and Respecting Indigenous Knowledge*, in RECLAIMING INDIGENOUS VOICE AND VISION 209, 212-3 (Mary Battiste ed., 2000).

118. See Erica-Irene Daes, *The Concepts of Self-Determination and Autonomy of Indigenous Peoples in the Draft United Nations Declaration on the Rights of Indigenous Peoples*, 14 ST. THOMAS L. REV. 259, 263-264 (2001); see also Benedict Kingsbury, *Reconciling Five Competing Conceptual Structures of Indigenous Peoples' Claims in International and Comparative Law*, 34 N.Y.U.J. INT'L L. & POL. 189, 217 (2001).

119. Indigenous or non-Western world views and epistemology derive, for the most part, from their interactions and lived experiences with ecological forces. Thus ecological consciousness rooted in unique configuration of belief/religious systems or spiritual outlook is the central plank of indigenous knowledge and worldviews.

communities. Collectively, those features implicate indigenous epistemic world-views and are integral to indigenous identity, cultural sovereignty and quest for self-determination.¹²⁰ In the postcolonial era, the latter concept has undergone a transition from initial emphasis on end-state and political autonomy to indigenous cultural and epistemic empowerment.¹²¹ Thus, knowledge is a crucial site of indigenous renaissance.¹²² It is critical to the continuing re-enactment of indigenous encounter with the dominant culture in the global constitutive process.¹²³ Indigenous people have linked the subject of intellectual property and the protection of their knowledge with “much bigger issues including [their] sovereignty and self-determination . . . the protection of culture, food security, biodiversity, sustainable development, health policy and biotechnology.”¹²⁴

The importance accorded to indigenous knowledge in international law and policy is evident in the recognition of its role in global environmental sustainability. Key international environmental instruments, especially the Rio set of agreements¹²⁵ and preeminently the Convention on Biological Diversity,¹²⁶ have elevated indigenous knowledge and its protection as the received wisdom of international environmental law.¹²⁷ For indigenous peoples, their knowledge and lived ecological experiences as holistic endeavors are perhaps their most depend-

120. See note 116, *supra*, and accompanying text.

121. See *id.*; see also Oguamanam 1, *supra* note 2, at 203.

122. See Siegfried Weissner, *Rights and Status of Indigenous Peoples: A Global Comparative and International Legal Analysis*, 12 HARV. HUM. RTS. J. 57, 109 (1999).

123. *Id.* at 100; Chidi Oguamanam, *Indigenous Peoples and International Law: The Making of a Regime*, 30 QUEEN'S L. J. 348, 353-355 (2004).

124. See Drahos, *supra* note 81, at 20; See Kingsbury, *supra* note 116, at 205. The International Bill of Rights, namely the Universal Declaration of Human Rights, the International Covenant on Civil and Political Rights and the International Covenant on Economic, Social and Cultural Rights in their various provisions and references to cultural, scientific, artistic rights and advancement of the community provide the bases for empowering of indigenous knowledge as aspects of the indigenous peoples' overlapping claim to self-determination and minority rights. Kingsbury, *supra* note 118, at 203-5.

125. They are the *Rio Declaration, Agenda 21*, and the *Non-Legally Binding Authoritative Statement of Principles for the Global Consensus on the Management, Conservation and Sustainable Development of All Types of Forests* (Forest Principles). Others are the *CBD*, the *Convention to Combat Desertification in those Countries Experiencing Serious Drought and/or Desertification, Particularly in Africa*. For texts of these documents, see 31 I.L.M. (1992); see also *CBD*, *supra* note 41.

126. The *CBD* is perhaps the most authoritative instrument yet that recognizes the role of traditional knowledge of indigenous and local communities. Its principal objectives as stated in Article 1 include “[t]he fair and equitable sharing of the benefits arising out of the utilization of genetic resources . . .” *Id.*, 31 I.L.M. at 823. Its core provision is Article 8(j) which enjoins parties to “respect, preserve, and maintain knowledge, innovation and practices of indigenous and local communities embodying traditional lifestyles . . .” *Id.*, 31 I.L.M. at 826.

127. See Oguamanam 1, *supra* note 2, at 209-212.

able battle cry for cultural survival and sovereignty as well as an embodiment of their human dignity.¹²⁸

For the most part, farming practices in indigenous and local communities are conducted in an ancestral ecological arena common to a cultural group and it depicts their irrevocable affinity with the land.¹²⁹ Many of these groups enjoy a great diversity of cultural ecosystems in which they grow foods that are part of their collective knowledge and lived experience.¹³⁰ Most food crops are both ecologically and culturally determined, contributing to not only dietary and plant genetic diversity but also dietary and health patterns.¹³¹ Agricultural production in indigenous and local communities involves the coalescing of culture, ecology, land, spiritual and other multifarious affinities.

2. Food Security: Acceptability, Dependence and Human Dignity

As a result of the concluding observation in the last section, indigenous and local communities' interests in food security transcend conventional concern in that parlance about food availability, accessibility, adequacy and agency. Indeed, traditional farmers' contribution to PGRs which has been the focus of farmers' rights movement is only secondary to the importance of traditional agriculture as a vehicle for indigenous socio-cultural survival and for safeguarding their human dignity.

It is hardly surprising that the ITPGRFA associated farmers' rights with traditional knowledge. From this perspective, conceivably the most critical concern of indigenous and local communities in regard to food security is one of acceptability. Indigenous and local communities are interested in culturally acceptable food within an environment and process that is respectful of human dignity and socio-cultural norms.

The use of intellectual property rights in the PGRs arena to promote scientific plant breeding and other agro-biotech innovations at the expense of traditional farmers' contributions advances a food culture anchored in the Western scientific model. This phenomenon is consistent with the colonial approach which relegated agricultural production in indigenous communities to the provision of raw materials for the core industrial countries.¹³²

128. *Id.* at 203-4.

129. *See* Drahos, *supra* note 81, at 19 (stating "the connections between land, knowledge and art form part of organic whole").

130. *See* KUHNLEIN AND TURNER, *supra* note 111, at 5.

131. *Id.* at 6.

132. *See* Huss-Ashmore & Katz, *supra* note 1 at 12.

One of the principal motivations of colonialism is the control of natural resources. This is evident in the so-called international division of labor in which colonized regions supplied raw materials for the colonizing powers. Generally, colonialism promotes the idea of nature exploitation for the servicing of manufacturing concerns or factories, commerce and the market economy. The Western knowledge system which drives the colonial framework is associated with a set of values based on power and industrial capitalism. In the neo/post colonial era, intellectual property rights are a crucial weapon in the sustenance of the colonial status quo in which indigenous resources or contributions to knowledge are deployed and coveted as raw materials to advance Western proprietary interests.

It has rightly been observed that the knowledge and power nexus which constitutes part of the hallmark of colonial and post/colonial experiences of indigenous and local communities "generates inequities and domination by the way such knowledge is generated and structured, the way it is legitimized and alternatives [i.e. indigenous knowledge systems] are de-legitimized, and the way in which such knowledge transforms nature and society."¹³³ In the postcolonial era, indigenous agricultural practices have continued to contribute to the enrichment and supply of vital plant genetic diversity which constitute core raw materials for agro biotech industries in developed countries. Under this framework, as in the colonial era, sustainable agricultural practices and food security in indigenous communities are hardly a priority.¹³⁴ Rather, via the instrumentality of agro-biotech, effort is expended on how insights deriving therefrom can be exploited and reframed in Western scientific narrative, for instance, to secure vital utility patents or PBRs in order to ensure external control of local food supply. Consequently, those communities are rendered dependent on industrialized countries for food while they also gratify the much-needed export food market.

Agro-biotech intervention in food production is an industrial and instrumental model in which genetic resources are deployed, manipulated and stretched to yield foods that satisfy mainly market targets of proprietary interest holders. The industrial agro-biotech tendency to genetically manipulate life forms in plant crops represents alternative ecological as well as epistemological approach to PGRs. This approach contrasts with indigenous agro-knowledge forms. The latter are based on observation and nurturing of naturally occurring ecological patterns and mutations. With emphasis on market and economic potentials of genetically engineered crops, agro-biotech promotes monoculture often at the expense of crop genetic diversity common to traditional agriculture.¹³⁵

133. See VANDANA SHIVA, *MONOCULTURES OF THE MIND: PERSPECTIVES ON BIODIVERSITY AND BIOTECHNOLOGY* 9 (1993).

134. *Id.*

135. *Id.*

As we have seen, intellectual property rights in PGRs mainly target entrepreneurial plant-breeding activities and agro-biotech. Attempts to employ the concept of farmers' rights to address traditional farmers' contribution to PGRs as counterweight to intellectual property are far from satisfactory. In addition, the high-yielding and customized nature of agro-biotech crops, resulting large volume of harvest and subsidization of farm products in industrialized countries are factors that combine to make traditional farming less attractive.¹³⁶ Whether as imports or locally grown, agro-biotech crops are now the major source of food supply in many indigenous and local communities.¹³⁷ Consequently, traditional farming practices and farm crops in indigenous and local communities are under threat of displacement by a more competitive agricultural regime whose methodologies and agency have little or no indigenous involvement or cultural component.

A biotechnology-driven food system envisages a future in which indigenous and local communities depend on industrialized countries or their local agents for most of their food needs. Hardly would they be independent participants in the growing of such foods. This is because the underlying agricultural philosophy in the raising and dissemination of such crops is alien to the prevailing epistemological outlook of indigenous and local communities. Under this equation, there is a disconnection between food, its production, consumption and culture as known in indigenous circles. Worse still, both in their production process and as end products these food products are not "acceptable foods" that satisfy a vital element of food security. Further, a culture of dependence in an area as critical as food harms the human dignity of dependants. Traditional farming and agricultural practices in general constitute a site for practical expression of indigenous epistemic experience in its holistic form. Indigenous and local communities have rightly associated their knowledge with their identity, cultural sovereignty and survival, all of which collectively correlate with their human dignity.¹³⁸

In sum, intellectual property in PGRs targets agro-biotech. As a Western scientific phenomenon, the epistemic basis of agro-biotech contrasts with that of traditional agriculture. Agro-biotech promotes monoculture and an industrial

136. See e.g., *Stop the Dumping! How EU Agricultural Subsidies are Damaging Livelihoods in the Developing World*, Oxfam Briefing Paper No. 31 (2002), <http://www.globalpolicy.org/soecon/trade/subsidies/2002/10stopdumping.pdf>.

137. See Srinivasan & Thirtle, *supra* note 7 at 168. For instance, the largest global transnational life sciences corporations that now capitalize on the convergence of crop biotechnology with agrochemical and seed production are based in the industrialized countries of Europe and North America. They are Monsanto, Astra-Zeneca, Dow, Novartis, Bayer CropScience, Dupont and AgrEvo.

138. See Daes, *supra* note 118, at 265; Kingsbury, *supra* note 118, at 217.

approach to agriculture. Because it is potentially the major source of global food supply, it compromises access to acceptable food as a crucial component of food security in indigenous and local communities.

V. CONCLUSION

International legal structures for the protection of innovations in PGRs focus on agro-biotech and other scientific plant breeding endeavors. Little attention is given to protecting immemorial genetic revolutions that go on in traditional farmers' fields. Yet the relationship of dependence between modern day agro-biotech and traditional farming practices suggest that both epistemic approaches are indispensable in tacking the burden of hunger and in addressing the food security crisis.

Contrary to expectation, the weakness in the attempt to use the concept of farmers' rights to counter the inequitable effects of intellectual property in the PGRs arena is not significantly mediated by the ITPGRFA. But all hope is not lost. At the very least, a two-pronged approach can be adopted in keeping the subject of sustainable management and equitable exploitation of PGRs on the burner. First, the framework nature of the ITPGRFA gives room for state parties, especially developing countries, to flesh out the details of farmers' rights and to address the loopholes in their realization through creative national legislation.¹³⁹ Second, the Governing Body of the treaty, which is yet to be inaugurated since the treaty came into force, should as a matter of priority (when it convenes) clarify or interpret the provisions of Article 12.3(d) in a manner that would not undermine the expectations of developing countries.¹⁴⁰ Whether and how that can be done remains to be seen. Nonetheless, unless developed countries recognize the essence of multiple epistemic approaches to agriculture, and the importance of traditional farming practices, they are unable to commit to a pragmatic re-thinking of the extant international legal regime on intellectual property rights in

139. See ITPGRFA, *supra* note 8, at Art. 19.3(b) (stating that each ratifying country is required to develop legislation and supplementary regulation designed to implement the treaty.).

140. Article 19 provides for the governing body of the treaty. However, since the treaty came into force on June 29, 2004 it has been administered by the CGRFA as interim governing body. The principal mandates of the governing body (Article 19.3) include taking decisions on how the treaty is implemented, consideration of issues around parties' compliance with the treaty, formulation of standard material transfer agreements and financial strategies. Since 2002, the CGRFA has been involved in setting the framework for the operation of the governing body. In this regard, there is currently in place a number of foundation documents, including draft rules of procedure for the governing body, draft financial rules and procedure to promote compliance with the treaty. These aim at facilitating the interim operationalization of the treaty and eventual take off of the governing body. Certainly, issues regarding interpretation of the treaty are not to be dealt with at the interim level.

the PGRs arena. Because of this state of affairs, it is hardly surprising that despite continued effort in different policy environments, advances in agrobiotechnology and increased food production, food security and hunger have continued to escalate assuming a crisis of global proportion. The first casualties of this predicament are members of indigenous and local community who are steeped in traditional farming practices.